Amplify Desmos Math
NEW YORK

Assessment Guide Sampler

Grade 6

Inside you'll find:

- Unit Assessments
- Exit Tickets

For Review Only.
Not Final Format.

Amplify Desmos Math
NEW YORK

Grade 6

Assessment Sampler

About Amplify

Amplify is dedicated to collaborating with educators to create learning experiences that are rigorous and riveting for all students. Amplify creates K–12 core and supplemental curriculum, assessment, and intervention programs for today's students.

A pioneer in K–12 education since 2000, Amplify is leading the way in next-generation curriculum and assessment. All of our programs provide teachers with powerful tools that help them understand and respond to the needs of every student.

Cover illustration by Caroline Hadilaksono.

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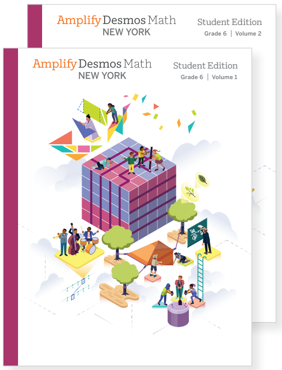
Assessment Overview

Unit Assessments | Including Pre-Unit Checks, Sub-Unit Quizzes, and End-of-Unit Assessments.

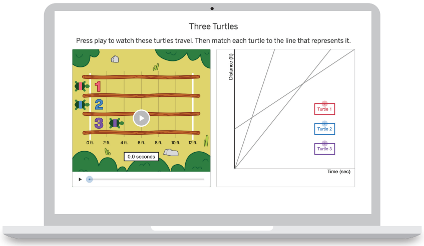
Exit Tickets | Including Exit Tickets from all lessons in every unit.

Amplify Desmos Math New York program resources

Student bundle includes:



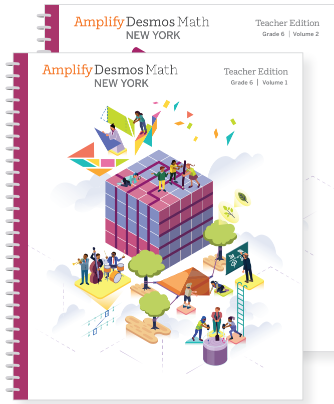
NY Student Edition,
multivolume, consumable



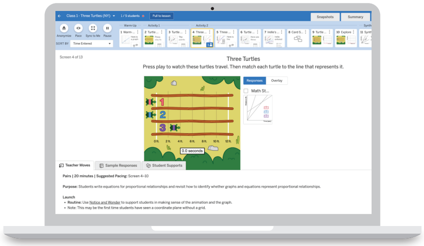
NY Digital Experience (English and Spanish), featuring:

- Interactive Student Activity Screens
- Enriched feedback
- Collaboration tools

Teacher bundle includes:



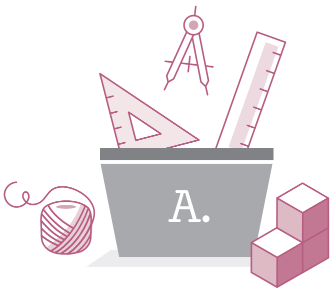
NY Teacher Edition,
multivolume, spiral-bound



NY Digital Experience (English and Spanish), featuring:

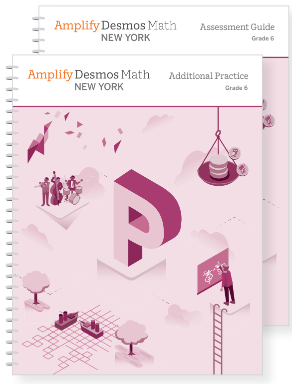
- Facilitation and progress monitoring tools
- Presentation Screens
- Instructional supports
- Assessment

Optional:



Middle School Manipulative Kit (Grades 6–8)

Extra Practice and Assessment Blackline Masters



Additional components and features may roll out over time.

Program architecture

Course

I mCLASS beginning-of-year diagnostic screener

I Interim Assesments

UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8
21 days	20 days	19 days	20 days	22 days	22 days	18 days	22 days

Unit

A Pre-Unit Check

A Sub-Unit Quiz

End-of-Unit Assessment A

Sub-Unit 1	Sub-Unit 2 Practice Day	Sub-Unit 3 Practice Day
1 2 3 4 5 6 7	8 9 10 11 12 PD	13 14 15 16 17 18 19 20 PD

Note: The number of sub-units and lessons vary from unit to unit; this depiction shows the general structure of a unit.

Lesson

Warm-up	Activity 1	Activity 2	Synthesis	Exit Ticket	Practice
5 min	15 min	15 min	5 min	5 min	timing varies

Note: The number of activities and timing vary from lesson to lesson; this depiction shows the general structure of a lesson.

Key:

Independent
Small Groups
Pairs
Whole Class

Our robust assessments drive learning and inform instruction.

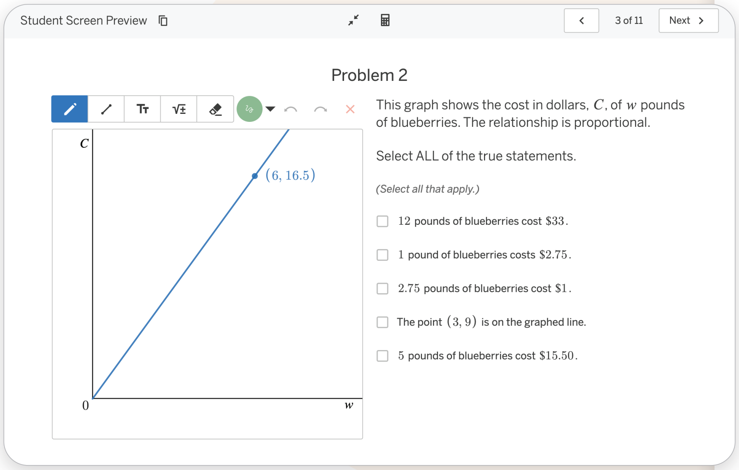
A variety of performance data in Amplify Desmos Math New York provides evidence of student learning, while helping students bolster their skills and understanding.

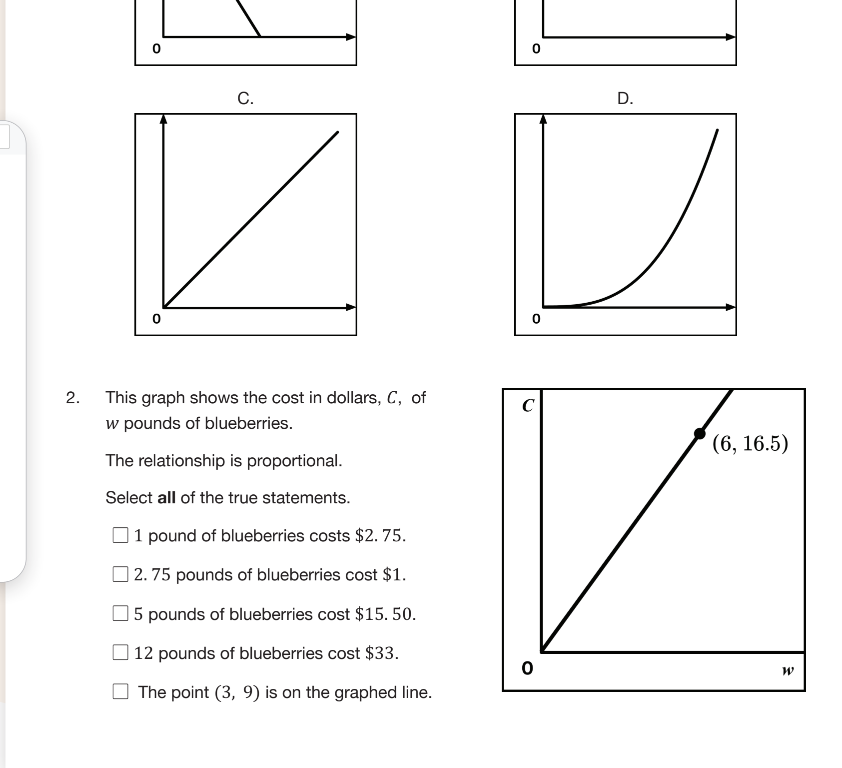
Throughout lessons, units, and the entire program, you'll find summative and formative assessments meant to provide insights into students' conceptual understandings. Student learning is never a surprise at the end of a unit—with Amplify Desmos Math New York, understanding is made continually visible.

Course-level assessments

Our beginning-of-year digital diagnostic tool measures what students know and how they think, providing teachers with targeted, actionable insights and instructional guidance. These assessments identify areas to target for students who need additional support and opportunities to extend for students who would benefit from more challenge.

- **mCLASS beginning-of-year diagnostic screener:** This tool measures the critical skills and concepts aligned to standards that are predictive of future math success. Innovative problem types reveal the processes required for math reasoning and the problem-solving strategies that go beyond the conceptual and procedural knowledge of grade-level math. They also help teachers identify students at risk for math difficulty (including difficulties related to dyscalculia) and provide detailed information about what students know and in which areas they need support. This diagnostic is in the process of being fully validated through third-party research studies conducted by WestEd.
- **Ongoing interim assessments:** These pre-generated and assignment-ready practice sets review critical moments in instruction. Teachers can create their own assessments and practice sets through the online item bank.





Digital and print assessment examples

Unit-level assessments

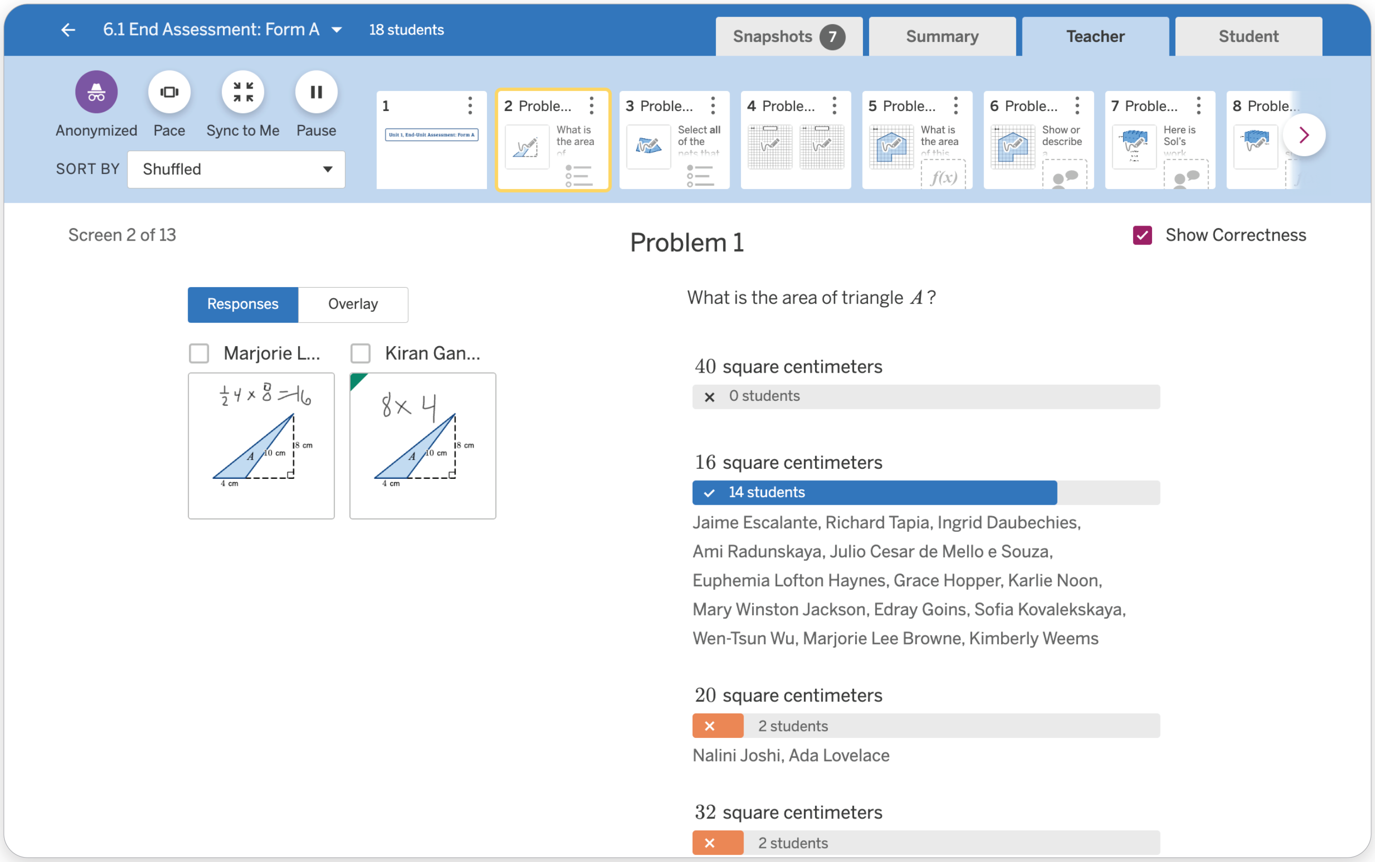
Our embedded unit assessments offer key insights into students' conceptual understanding of math. These assessments provide regular, actionable information about how students are thinking about and processing math, with both auto-scoring and in-depth rubrics that help teachers anticipate and respond to students' learning needs.

- **Pre-unit check:** Each unit begins with a check to determine student proficiency with prerequisite skills needed for success in the upcoming unit. This check is agnostic to the standards covered in the following unit and serves not as a deficit-based acknowledgement of what students do not know, but rather as an affirmation of the knowledge and skills with which they come in.
- **Sub-unit quizzes:** Student understanding never comes as an end-of-unit surprise with regular sub-unit quizzes. In these checks, students are assessed on a subset of conceptual understandings from the unit, with rubrics that help illuminate where students are and insight into what supports they need to get where they need to go.
- **End-of-Unit Assessment:** Students engage with rigorous grade-level mathematics through a variety of formats and tasks in the End-of-Unit Assessment. A combination of auto-scored and rubric-scored items provide deep conceptual insight.

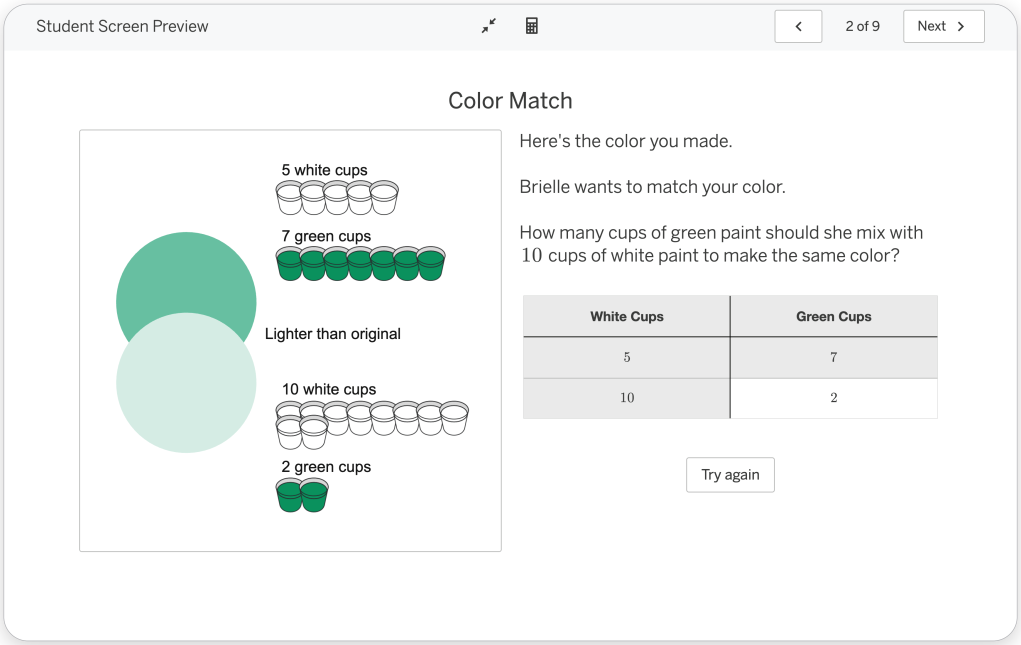
Lesson-level assessments

Amplify Desmos Math New York lessons are centered around sense-making and in-the-moment feedback. Daily moments of assessment provide valuable evidence of learning for both the teacher and student.

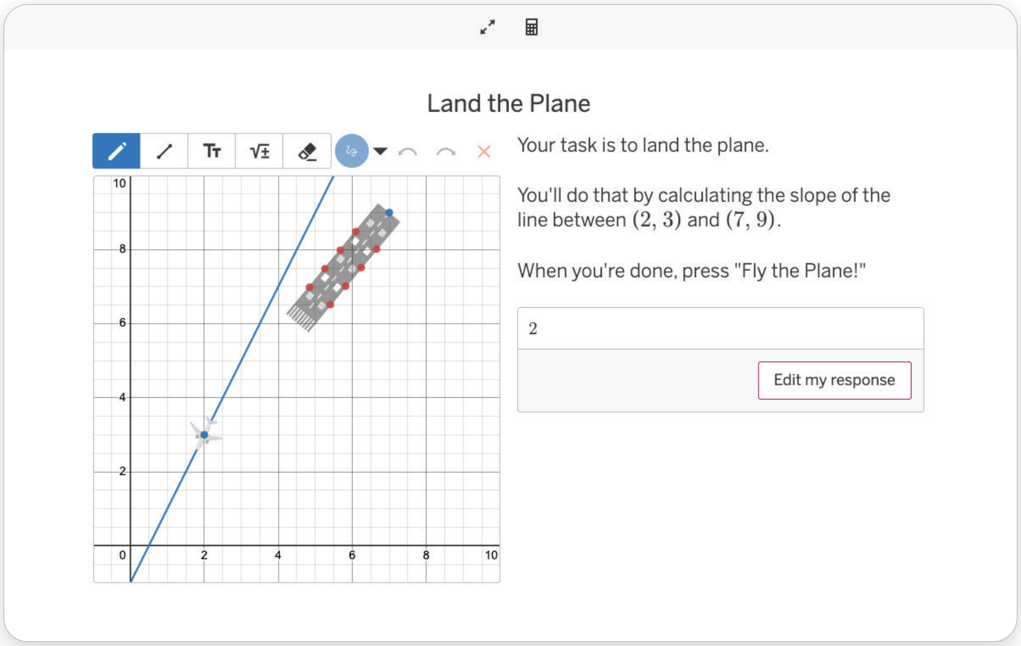
- **Exit Tickets:** Each lesson has an Exit Ticket focused on one of the key concepts in the lesson. Exit Tickets are carefully designed to minimize the time they take to complete while maximizing the insight the teacher receives on a daily basis in order to attend to student needs during the following class.
- **Enriched feedback:** We harness the power of digital math and graphing tools to show students the meaning of their thinking in context.



Enriched feedback motivates students and engages them in the learning process.



Rather than telling a student if their paint ratio is right or wrong, we mix the colors for them.



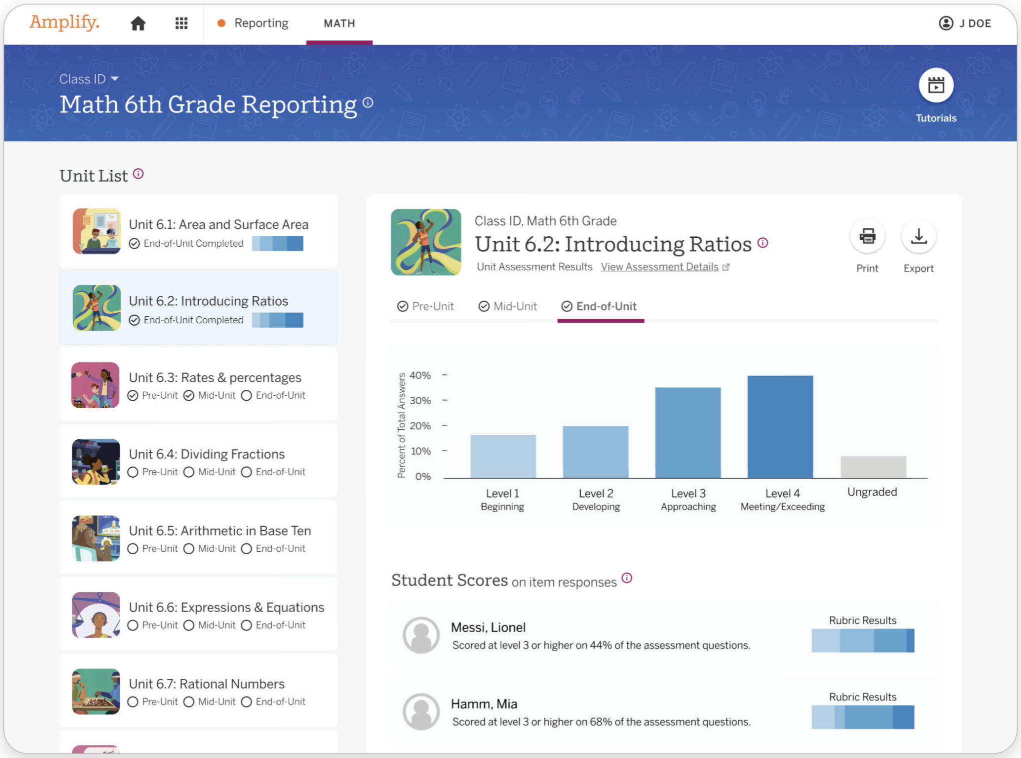
Rather than telling a student if their slope is correct, we use it to land a plane.

Reporting tools monitor progress and provide insight into learning.

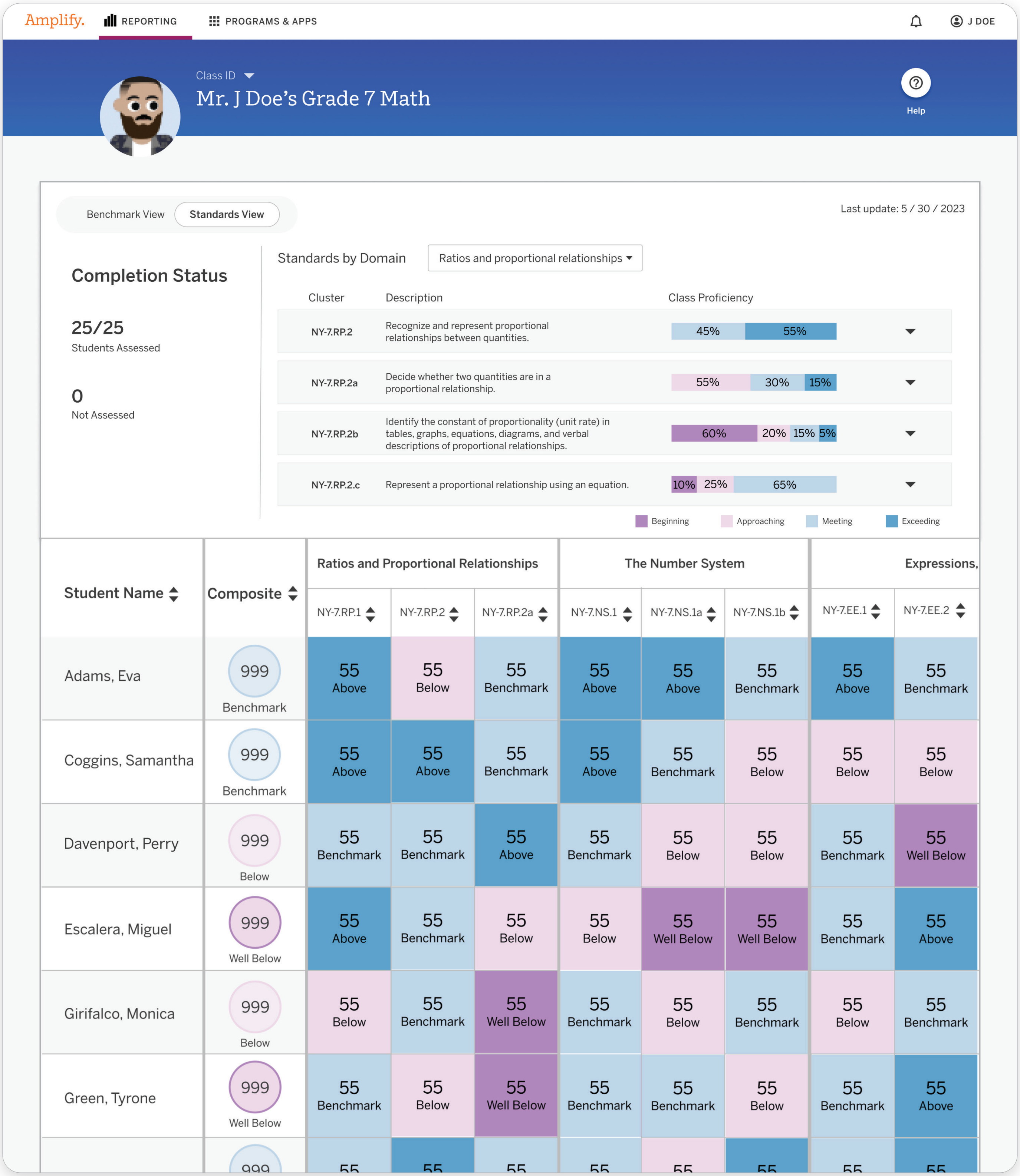
Amplify Desmos Math New York provides teachers and administrators with unified reporting and insights so that educators have visibility into what students know about grade-level math—and can plan instruction accordingly for the whole class, small groups, and individual students.

Our reports show proficiency and growth by domain, cluster, standard, and priority concept using performance data from unit assessments, then highlight areas of potential student need to allow teachers to modify their instruction and target differentiated support.

The program also includes reports on student usage, performance on benchmark assessments, school and district data, and information for caregivers. Our team will partner with you to meet the specific data and reporting needs of New York City Public Schools.



At-a-glance views of unit-level assessment results inform instructional planning, and you can also drill down to item-level analysis.



Our standards report allows you to monitor proficiency at the class and individual student levels.

GRADE 6

Amplify Desmos Math
NEW YORK

Assessment Sampler

This section includes all unit-level assessments from Amplify Desmos Math New York for Units 1–8.

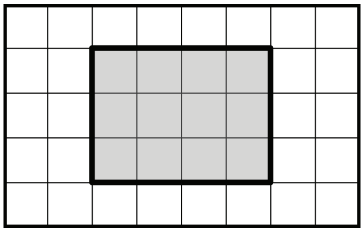
- **Pre-unit Readiness Checks** are designed to help teachers see which concepts and skills from previous units and grades need to be bolstered in order for students to be successful.
- **Sub-unit Quizzes** are formal measures of what students know and can do for the lessons that immediately precede the quiz.
- **End-of-Unit Assessments** are formal measures of what students know and can do for all the lessons in the unit, with an emphasis on the critical concepts and skills of the unit.

Unit 6.1, Readiness Check Name ______________________________

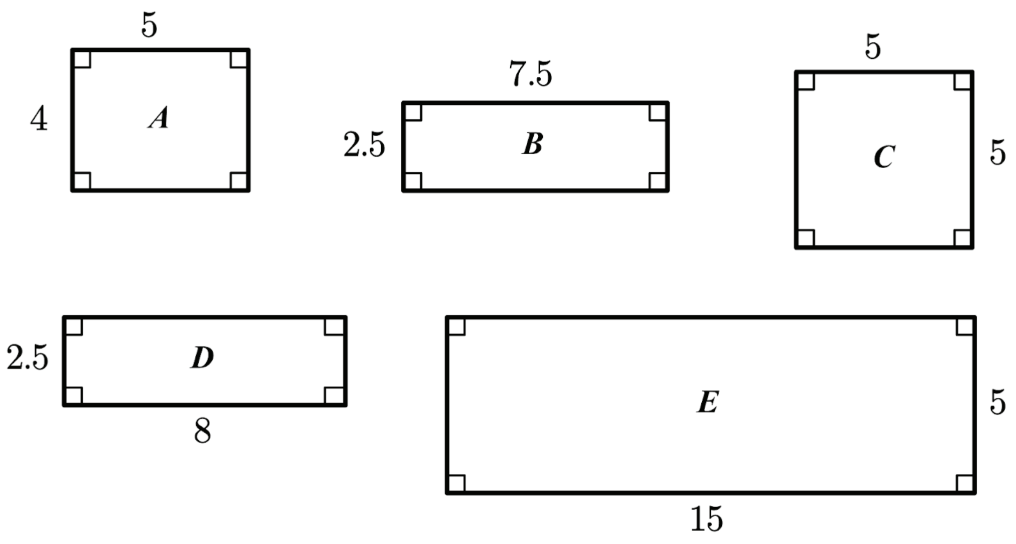
1. What are some things you know about the area of shapes?

Each small square in the graph paper represents 1 square centimeter.

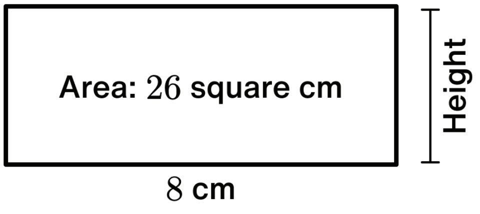
2. Determine the area of the rectangle.



3. Circle all of the rectangles that have an area of 20 square units.



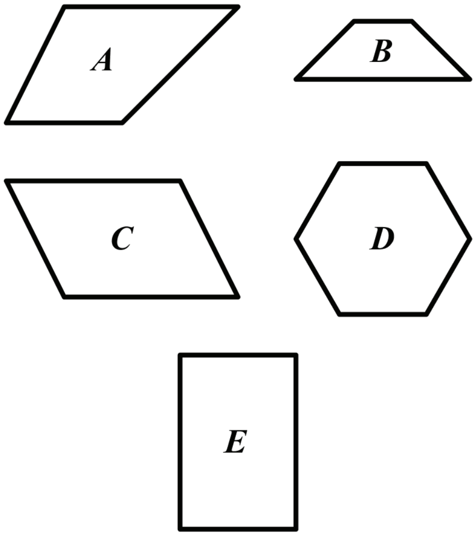
4. Determine the height of this rectangle.



Height: ______ centimeters

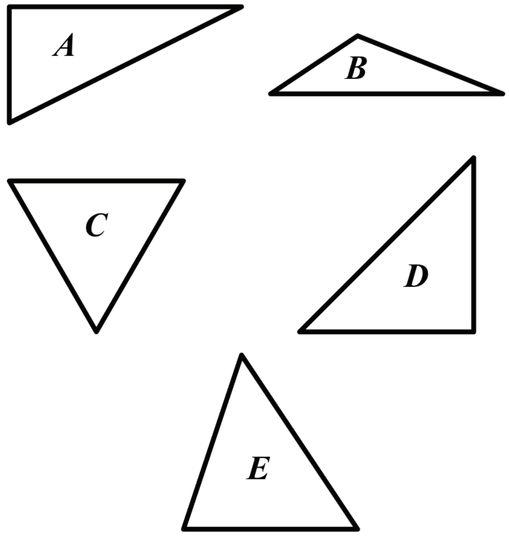
Name ____

5.1 Circle **all** the figures that look like parallelograms.

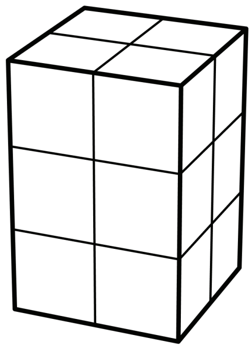


Explain your thinking.

5.2 Circle **all** the figures that look like right triangles.



6. Determine the volume of this prism.



Volume: ______ cubic units

Show or explain your thinking.

7. Which measure could be found by calculating the volume of an object?

A. The amount of paint needed to cover a box.

B. How many cubes will fit in a box.

C. How much a box weighs.

D. How many faces a box has.

Answer Key

1. *Responses vary.*
   - Area is the amount inside of a shape, not around it.
   - Area is length times width.
   - Area is how many squares fit inside of a shape.

2. 12 square centimeters

3. A, D

4. 3.25 centimeters

5.1 C, E

Explanations vary. C and E are parallelograms because both pairs of opposite sides are parallel.

5.2 A, D

6. 12 cubic units

Explanations vary. Volume is the number of cubic units in a prism, so I counted all the cubes and got 12.

7. B

Unit 6.1, Readiness Check Summary

For teachers who choose to spread out the questions, consider assigning the following:
- Problems 1 and 2 before Lesson 1
- Problem 3 before Lesson 2
- Problem 4 before Lesson 4
- Problem 5 before Lesson 3
- Problems 6 and 7 before Lesson 9

Problem 1

(Standard: **3.MD.C**)

This question is intended to surface what students already know about the concept of area. This content first appears in Lesson 1: Shapes on a Plane, where students informally discuss and calculate areas.

Suggested Next Steps: If students struggle . . .
- Before Lesson 1, Activity 1, Screen 4, consider inviting students to share what they know about area.

Problem 2

(Standards: **3.MD.C.6, MP7**)

This question is intended to surface what students already know about calculating area using the structure of a grid. This content first appears in Lesson 1: Shapes on a Plane, where students are asked to determine the area of the rectangle by making use of the structure of the grid.

Suggested Next Steps: If students struggle . . .
- Before Lesson 1, Activity 1, Screen 4, consider using the dashboard's teacher view to display students' responses. Invite students to share strategies they used to calculate the area of the rectangle.

Problem 3

(Standards: **3.MD.C.7.B, 5.NF.B.4.B**)

This question is intended to surface what students already know about calculating areas of rectangles without the aid of a grid. This content first appears in Lesson 2: Letters, where students use strategies to calculate areas of complex shapes.

Suggested Next Steps: If students struggle . . .
- After Lesson 2's Warm-Up, consider reviewing this problem by inviting students to explain why each rectangle does or does not have an area of 20 square units.

Problem 4

(Standard: **4.MD.A.3**)

This question is intended to surface what students already know about reasoning flexibly with area. This content first appears in Lesson 2: Letters, where students use strategies to calculate areas of complex shapes.

Suggested Next Steps: If students struggle . . .

- After Lesson 2's Warm-Up, consider inviting them to share the relationship between the base, height, and area of a rectangle.

Problem 5

(Standards: **4.G.A.2, 5.G.B.4, MP6**)

This question is intended to surface what students already know about how to identify parallelograms and right triangles. Students attend to precision as they defend their choices. This content first appears in Lesson 3: Exploring Parallelograms and Lesson 5: Exploring Triangles, where students informally calculate the areas of parallelograms.

Suggested Next Steps: If students struggle . . .

- After Lesson 3's Warm-Up, consider reviewing Problem 5.1 as a class. Create an anchor chart as a class with different types of triangles and quadrilaterals. Consider reviewing Problem 5.2 after Lesson 5's Warm-Up.
- **Math Language Development** While students have not formally been introduced to parallelograms yet, consider asking them what they think the word *parallelogram* means and what word they see that is part of this word (parallel).

Problem 6

(Standards: **5.MD.C.4, MP7**)

This question is intended to surface what students already know about how to determine the volume of a rectangular prism. Students make use of the structure of the unit cubes shown in the prism. This content first appears in Lesson 9: Renata's Stickers, where students informally calculate the volume and surface area of rectangular prisms.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this screen as a class before Lesson 9's Warm-Up. Invite students to share strategies and create an anchor chart as a class with the definition of *volume*.

Problem 7

(Standard: **5.MD.C.3**)

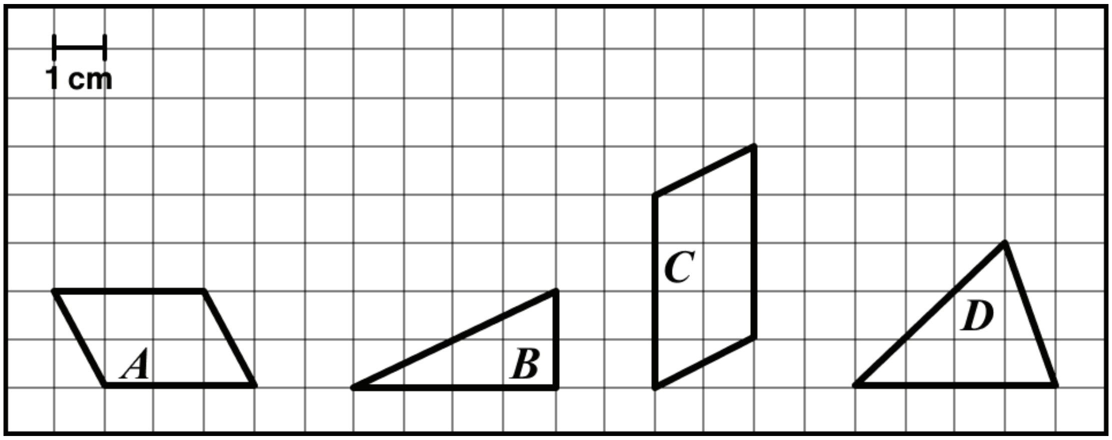
This question is intended to surface what students already know about volume. This content first appears in Lesson 9: Renata's Stickers, where students informally calculate the volume and surface area of rectangular prisms.

Suggested Next Steps: If students struggle . . .

- Consider using physical manipulatives like unit cubes or tissue boxes to discuss the difference between volume and surface area as it arises during Lesson 9.

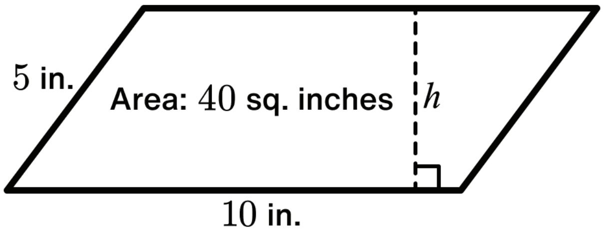
Unit 6.1, Quiz: Lessons 1–8 Name ______________________________________

1. Which shape has an area of 8 square centimeters? ______



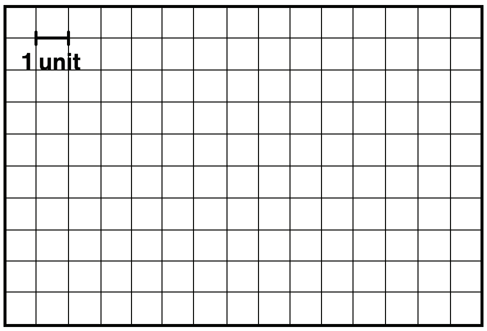
2. Which is a height of the parallelogram?

   A. 4 inches
   B. 5 inches
   C. 25 inches
   D. 50 inches

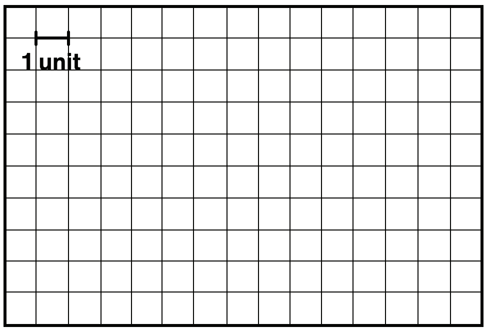


3.1 Draw two different triangles that each have an area of 12 square units.

Triangle 1



Triangle 2



3.2 Write a base and a height for each triangle.

Triangle 1

Base: _________ Height: _________

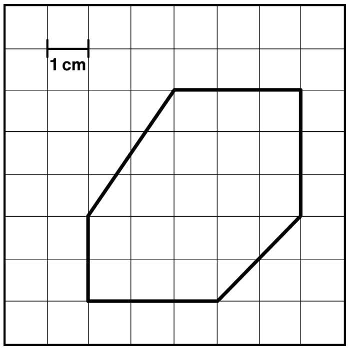
Triangle 2

Base: _________ Height: _________

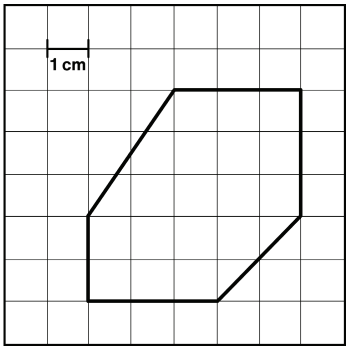
 Name ________________________________

4.1 Determine the area of this polygon. Use appropriate units.

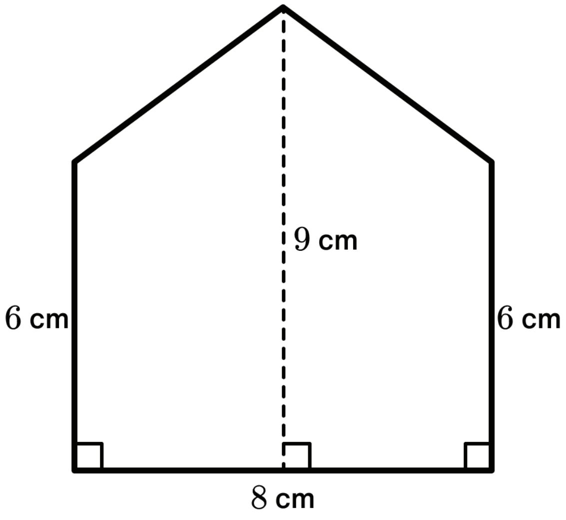
Show or describe your thinking.



4.2 Show or describe a different way to determine the area of the same polygon.



5. Determine the area of this polygon. Show all of your thinking. Use appropriate units.



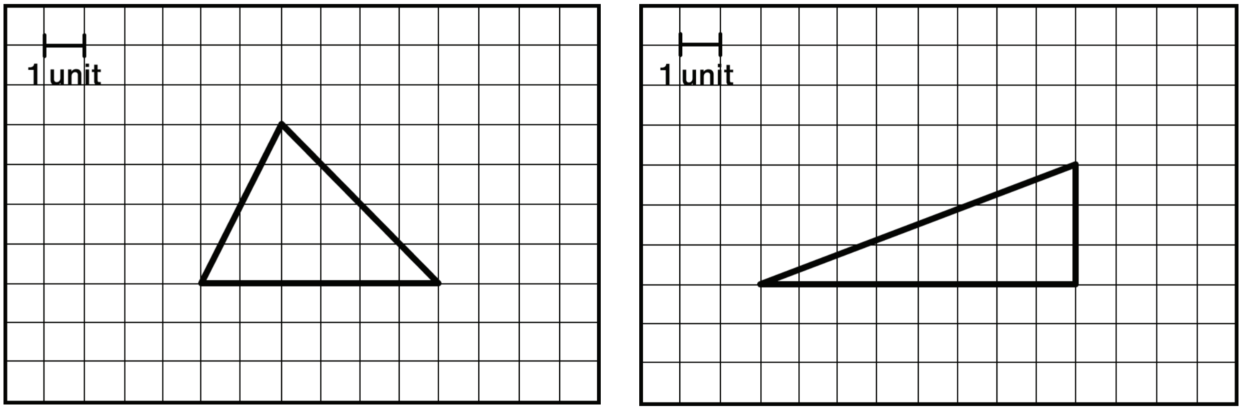
Area: _________

Answer Key

1. C

2. A

3.1 *Triangles vary.*



3.2 *Responses vary*. The base and height should be positive numbers with a product of 24.

4.1 20 square centimeters

Explanations vary. I counted all the whole squares and got 15. Then I found the area of each triangle and added to get 20.

4.2 *Responses vary*. I drew a box around the shape and found its area to be 25 square centimeters. Then I subtracted the areas of the two triangles and got 20.

5. 60 square centimeters

Unit 6.1, Quiz: Summary and Rubric

Content Standards Summary

Standard	6.G.A.1	6.EE.A.2.A	6.EE.A.2.C
Problems	1, 2, 3, 4, 5	4	2

Problem 1

(Standards: **6.G.A.1, MP7**)

In this problem, students calculate areas on a grid. Students make use of the structure of the grid to determine which shape has the given area. This problem corresponds most directly to the work students did in Lesson 6: Triangles and Parallelograms.

Suggested Next Steps: If students struggle . . .

- **Math Language Development** Consider using the mathematical language routine Critique, Correct, Clarify to help students understand and communicate why shapes A, B, and D do not have an area of 8 square centimeters.
- Consider revisiting Lesson 6, Activity 1.

Problem 2

(Standards: **6.EE.A.2.C, 6.G.A.1**)

In this problem, students calculate the area of a parallelogram, the length of a base, or a height given the other two measurements. This problem corresponds most directly to the work students did in Lesson 4: Off the Grid.

Suggested Next Steps: If students struggle . . .

- Consider asking students to calculate the area of a parallelogram with a base of 10 in. and a height of 5 in. and compare this area to the area of the parallelogram in Problem 2.
- Consider revisiting Lesson 4, Activity 1.

Unit 6.1, Quiz: Summary and Rubric

Problem 3
(Standards: **6.G.A.1, MP7**)

In this problem, students reason about the areas of triangles. Students make use of the structure of the grid to draw the two different triangles, given the same area. This problem corresponds most directly to the work students did in Lesson 5: Exploring Triangles.

Suggested Next Steps: If students struggle . . .
- Students will have more opportunities to practice drawing in future lessons and units.
- Consider asking students what the area is for the base and height they wrote.
- Consider revisiting Lesson 5.

Problem 4
(Standards: **6.EE.A.2.A, 6.G.A.1**)

In this problem, students describe strategies for calculating the area of a polygon composed of rectangles and triangles on a grid. This problem corresponds most directly to the work students did in Lesson 8: Piles of Polygons.

Suggested Next Steps: If students struggle . . .
- Consider asking students how they could cut the polygon into pieces with areas that are more familiar.
- Consider revisiting Lesson 8, Activity 2.

Problem 5
(Standards: **6.G.A.1, MP6**)

In this problem, students calculate the area of a polygon without a grid. Students attend to precision by being careful about which measurements they use to calculate the area of each part of the polygon. This problem corresponds most directly to the work students did in Lesson 7: Off the Grid Part 2 and Lesson 8: Piles of Polygons.

Suggested Next Steps: If students struggle . . .
- Consider asking students how they could cut the polygon into pieces with areas that are more familiar.
- Consider revisiting Lesson 7, Activity 2 and Lesson 8, Activity 2.

Unit 6.1, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.G.A.1, MP7	Correct choice. • C			Incorrect choice. *Students who select B may have multiplied the base of the triangle by the height.*	Did not attempt.
2	6.EE.A.2.C, 6.G.A.1	Correct choice. • 4 inches			Incorrect choice. *Students who select 50 inches may have multiplied the side lengths.*	Did not attempt.
3.1	6.G.A.1, MP7	Sketches both show triangles with area of 12 square units.	Sketches show triangles that both meet **one criteria**. *Students may sketch congruent triangles with area of 12 square units.*		Sketches show triangles that meet **no criteria**. Sketches meet one or more criteria but are **not triangles**.	Did not attempt.

Unit 6.1, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.2	6.G.A.1	Work is complete and correct.	Work shows **conceptual understanding**, with some errors. *E.g., Students who correctly measure one length and incorrectly measure a second length may have miscounted.*	Work shows **incomplete understanding** with significant errors. *E.g., Students who measure a diagonal side of a triangle may not understand that the base and height of a triangle are perpendicular.*	Work shows **limited understanding** of determining the base and height of a triangle.	Did not attempt.
3.3	6.G.A.1	Work is complete and correct.	Work shows **conceptual understanding**, with some errors. *E.g., Students who correctly measure one length and incorrectly measure a second length may have miscounted.*	Work shows **incomplete understanding** with significant errors. *E.g., Students who measure a diagonal side of a triangle may not understand that the base and height of a triangle are perpendicular.*	Work shows **limited understanding** of determining the base and height of a triangle.	Did not attempt.

Unit 6.1, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
4.1	6.EE.A.2.A, 6.G.A.1	Correct answer with correct explanation. • 20 square centimeters *E.g., I counted all the whole squares and got 15. Then I found the area of each triangle and added their area to 15 to get 20.*	Work shows **conceptual understanding**, with some errors. *E.g., 20 square centimeters because I counted the squares.*	Work shows **incomplete understanding** with significant errors. *E.g., 23 square centimeters because the shape is in 23 of the squares.*	Work shows **limited understanding** of determining the area of a polygon on a grid.	Did not attempt.
4.2	6.EE.A.2.A, 6.G.A.1	Correct answer with correct explanation that is different from 4.1. • 20 square centimeters *E.g., I drew a box around the shape and calculated its area to be 25 square centimeters. Then I subtracted the areas of the two triangles and got* $25 - 5 = 20$.	Work shows **conceptual understanding**, with some errors. *E.g., 20 square centimeters because I counted the squares.*	Work shows **incomplete understanding** with significant errors. *E.g., 23 square centimeters because the shape is in 23 of the squares.*	Work shows **limited understanding** of determining the area of a polygon on a grid.	Did not attempt.
5	6.G.A.1, MP6	Correct answer. • 60 square centimeters	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors.	Incorrect answer. *Students who write 72 may have multiplied the base of the polygon by the height.*	Did not attempt.

Unit 6.1, End-of-Unit Assessment: Form A Name ______________________________

1. What is the area of triangle A?

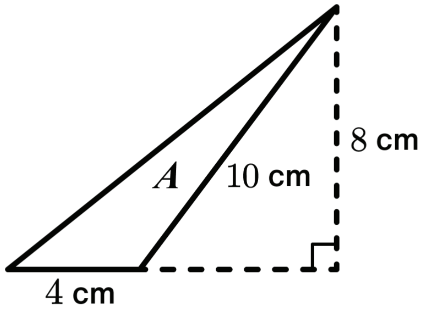
   A. 40 square centimeters

   B. 16 square centimeters

   C. 20 square centimeters

   D. 32 square centimeters

Triangle Area: $b \times h \div 2$



2. Which is the length of the base of this parallelogram?

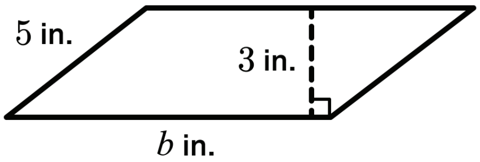
   A. 15 inches

   B. 8 inches

   C. 9 inches

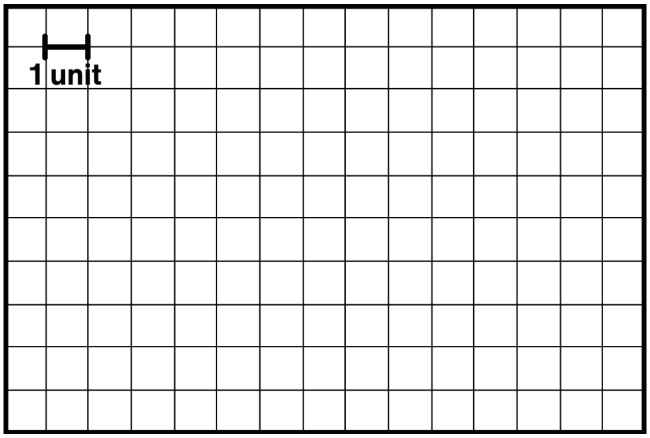
   D. 24 inches

Area: 27sq. inches

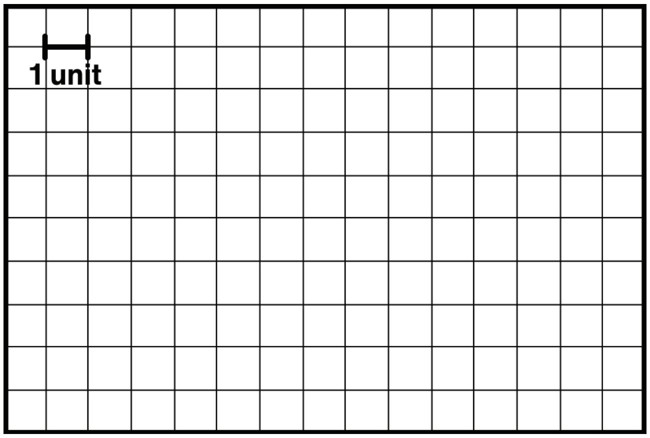


3. Draw two different parallelograms that each have an area of 18 square units.

Parallelogram 1



Parallelogram 2



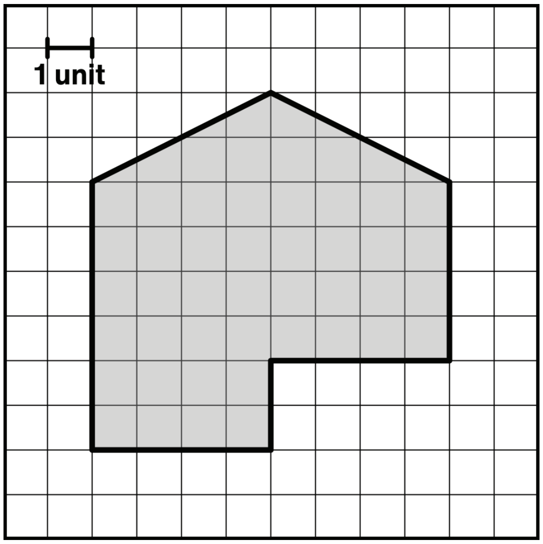
Unit 6.1, End-of-Unit Assessment: Form A

Name ________________________________

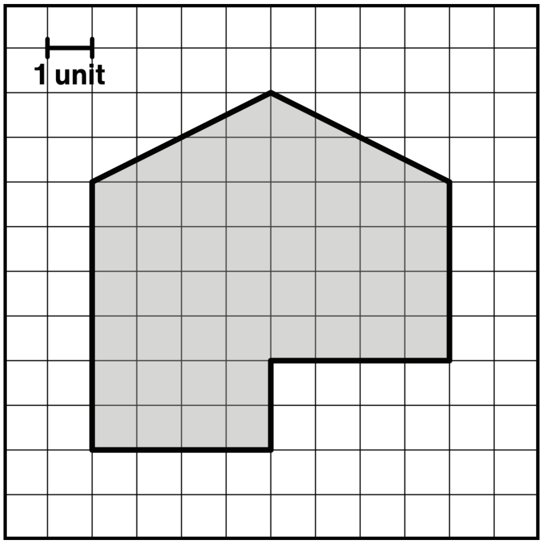
4.1 What is the area of this shape?

Area: ______ square units

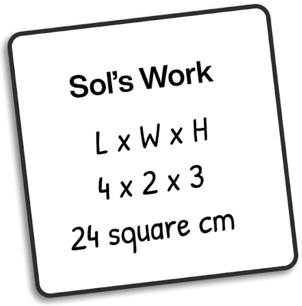
Show or describe your thinking.

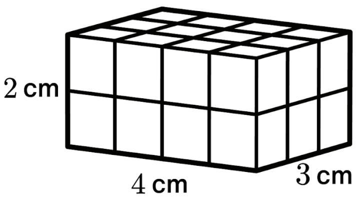


4.2 Show or describe a different way to determine the area of the same shape.



Here is the expression Sol wrote to calculate the surface area of this rectangular prism.



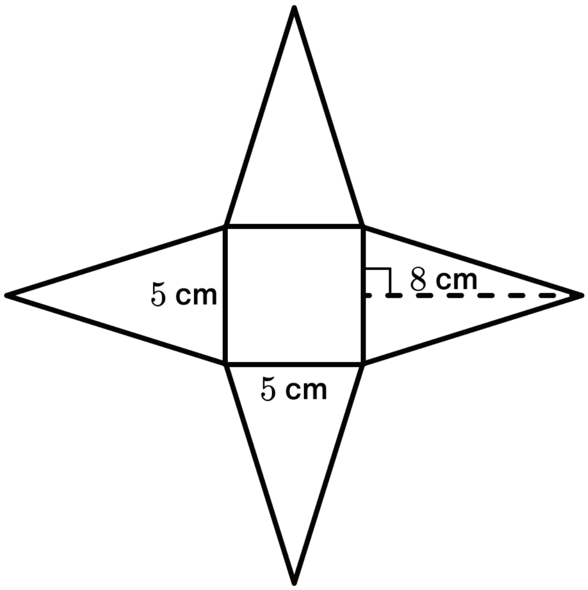


5.1 Describe the mistake that Sol made.

5.2 What is the surface area of this prism? Explain or show your reasoning.

Unit 6.1, End-of-Unit Assessment: Form A Name ________________________________

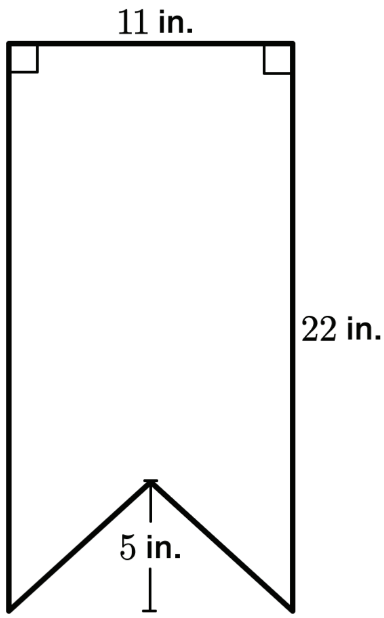
Here is a net made of four identical triangles and a square.



6.1 If this net were folded, what type of polyhedron would it make?

6.2 What is the surface area of that polyhedron? Show or describe your thinking.

Joel is going to use this board to make a sign.



7.1 What is the area of the front of Joel's sign? Show or describe your thinking.

7.2 Joel found a kit of rainbow paint that covers 100 square inches. How many kits would he need to cover **the front and the back** of the sign?

Unit 6.1, End-of-Unit Assessment: Form A Name ______________________________

Reflection: Select a question to answer.

- [ ] What is something you are proud of from this unit?

- [ ] Write what you know about a topic from this unit that you weren't asked about today.

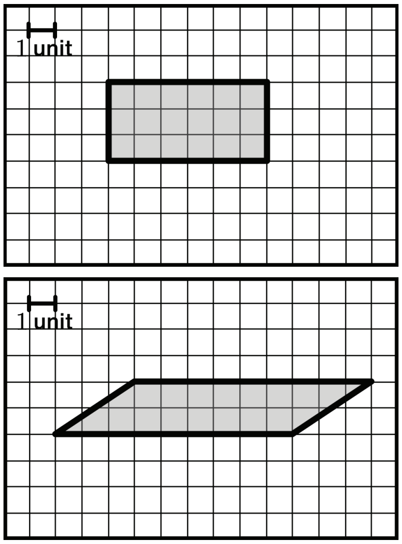
- [ ] Describe or show one strategy you found helpful in this unit.
  Name any students who helped you with this strategy.

- [ ] What else would you like your teacher to know?

1. B. 16 square centimeters

2. C. 9 inches

3. *Parallelograms vary.*



4.1 48 square units
Explanations vary. I divided the shape into two rectangles and a triangle. For the rectangles, I calculated $b \times h$ for each and then added them together and I got 40 square units. For the triangle, I calculated $b \times h \div 2$ and got 8 square units. The total area is $40 + 8 = 48$.

4.2 *Explanations vary*. I drew a square around the shape and used $b \times h$ to determine its area was 64 square units. Then I calculated the area of each triangle to subtract using $b \times h \div 2$ and got 4 square units per triangle. Next, I counted the squares in the remaining rectangle and got 8 square units. The area is $64 - 4 - 4 - 8 = 48$ square units.

5.1 *Responses vary.*
- Sol calculated the volume of the prism instead of the surface area. He should have calculated the area of each face and added them together.
- Sol wrote the wrong expression, he should have written: $2 \times l \times w + 2 \times l \times h + 2 \times w \times h$.

5.2 52 square centimeters
Explanations vary. In this prism, $h = 2$, $l = 4$, and $w = 3$. There are two faces whose areas are $h \times l = 8$ square centimeters, two faces whose areas are $h \times w = 6$ square centimeters, and two faces whose areas are $l \times w = 12$ square centimeters. So the surface area is $8 + 8 + 6 + 6 + 12 + 12 = 52$ square cm.

6.1 Square pyramid or rectangular pyramid

6.2 105 square centimeters
Explanations vary. The area of the square base is $l \times w = 25$ square cm. There are four triangles whose areas are $b \times h \div 2 = 20$ square cm each. The surface area is $20 + 20 + 20 + 20 + 25 = 105$ square centimeters.

7.1 214.5 square inches
Explanations vary. I made a rectangle around the sign whose area is $b \times h = 11 \times 22 = 242$ square inches. Then I subtracted the area of the missing triangle, $b \times h \div 2 = 27.5$, to get 214.5 square inches.

7.2 5 kits or 4.29 kits

Unit 6.1, End Assessment Summary and Rubric: Form A

Content Standards Summary

Standard	6.EE.A.2.A	6.EE.A.2.C	6.G.A.1	6.G.A.4
Problems	4.1, 4.2, 5.1	1, 2, 5.2, 6.2, 7.1	1, 2, 3, 4.1, 4.2, 7.1, 7.2	5.1, 5.2, 6.1, 6.2

Problem 1

(Standards: **6.EE.A.2.C**, **6.G.A.1**)

In this problem, students calculate the area of a triangle. This problem corresponds most directly to the work students did in Lesson 7: Off the Grid Part 2.

Suggested Next Steps: If students struggle . . .

- **Math Language Development** Consider using the mathematical language routine Critique, Correct, Clarify to help students understand and communicate why the area of the triangle is neither 32 nor 40 square centimeters.
- Consider revisiting Lesson 7, Activity 2.

Problem 2

(Standards: **6.EE.A.2.C, 6.G.A.1**)

In this problem, students calculate the area of a parallelogram, the length of a base, or a height given the other two measurements. This problem corresponds most directly to the work students did in Lesson 4: Off the Grid.

Suggested Next Steps: If students struggle . . .

- Consider asking students to calculate the area of a parallelogram with a base of 5 in. and a height of 3 in. and compare this area to the area of the parallelogram in Problem 2.
- Consider revisiting Lesson 4, Activity 1.

Unit 6.1, End Assessment Summary and Rubric: Form A

Problem 3

(Standards: **6.G.A.1, MP7**)

In this problem, students reason about the areas of parallelograms. Students use the structure of the grid to draw two different parallelograms with the given area. This problem corresponds most directly to the work students did in Lesson 3: Exploring Parallelograms.

Suggested Next Steps: If students struggle . . .

- Consider asking students what the area for their base and height is and compare it to the area given in the problem.
- Consider revisiting Lesson 3.

Problem 4

(Standards: **6.EE.A.2.A, 6.G.A.1, MP7**)

In this problem, students calculate the area of a polygon composed of rectangles and triangles. Students use the structure of the grid and the structure of the shape to determine the area of the shape. This problem corresponds most directly to the work students did in Lesson 8: Piles of Polygons.

Suggested Next Steps: If students struggle . . .

- Consider asking students how they could cut the polygon into pieces with areas that are more familiar.
- Consider revisiting Lesson 8, Activity 2.

Problem 5

(Standards: **6.EE.A.2.A, 6.EE.A.2.C, 6.G.A.4, MP3**)

In this problem, students calculate the surface area of a rectangular prism. Students study another's work and describe the mistake in their reasoning. This problem corresponds most directly to the work students did in Lesson 9: Renata's Stickers.

Suggested Next Steps: If students struggle . . .

- **Math Language Development** Consider using the mathematical language routine Critique, Correct, Clarify to help students understand and communicate Sol's mistake and how it could be corrected.
- Consider revisiting Lesson 9, Activity 1.

Problem 6

(Standard: **6.EE.A.2.C, 6.G.A.4**)

In this problem, students represent three-dimensional figures using nets made up of rectangles and triangles to calculate the surface area of these figures. This problem corresponds most directly to the work students did in Lesson 12: Face Value.

Suggested Next Steps: If students struggle . . .

- Consider asking students to visualize the folds and the net being folded together. Provide access to physical or digital materials for students to manipulate.
- Consider revisiting Lesson 12, Activity 2.

Problem 7

(Standard: **6.EE.A.2.C, 6.G.A.1**)

In this problem, students apply area techniques to solve a problem in context. This problem corresponds most directly to the work students did in Lesson 7: Off the Grid Part 2 and Lesson 8: Piles of Polygons.

Suggested Next Steps: If students struggle . . .

- Consider asking students how they could cut the polygon into pieces that would be helpful.
- Consider revisiting Lesson 7, Activity 2 and Lesson 8, Activity 2.

Unit 6.1, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
1	6.EE.A.2.C 6.G.A.1	Correct choice. • 16 square centimeters			Incorrect choice. *Students who select 20 square centimeters may have used 10 centimeters as the height.* *Students who select 32 square centimeters may have calculated the area of a parallelogram.*	Did not attempt.
2	6.EE.A.2.C 6.G.A.1	Correct choice. • 9 inches			Incorrect choice. *Students who select 15 inches may have multiplied the given lengths.*	Did not attempt.
3	6.G.A.1 MP7	Sketches both show parallelograms with area of 18 square units.	Sketches show **conceptual understanding** with some errors. Sketches show parallelograms that both meet **one criterion.** *Students may sketch congruent parallelograms with area of 18 square units.*	Sketches show **incomplete understanding** with significant errors. *Student draws two figures with an area of 18 square units that are not parallelograms.* *Student draws one parallelogram with an area of 18 square units.*	Sketches show **limited understanding**. Sketches show parallelograms that meet **no criteria**. Sketches meet one or more criteria but are **not parallelograms**.	Did not attempt.

Unit 6.1, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
4.1	6.EE.A.2.A 6.G.A.1, MP7	Correct answer with correct explanation. • 48 square units *E.g., I divided the shape into two rectangles and a triangle. For the rectangles, I calculated $b \times h$ for each and then added them together and I got 40 square units. For the triangle, I calculated $b \times h \div 2$ and got 8 square units. The total area is $40 + 8 = 48$.*	Work shows **conceptual understanding**, with some errors. *E.g., 48 square units because I counted the squares.*	Work shows **incomplete understanding** with significant errors. *E.g., Students who write 52 square units may have counted every square unit that is at least partly shaded.*	Work shows **limited understanding.**	Did not attempt.
4.2	6.EE.A.2.A 6.G.A.1, MP7	Correct answer with correct explanation that is different from 4.1. *E.g., I drew a square around the shape and used $b \times h$ to determine its area was 64 square units. Then I calculated the area of each triangle to subtract using $b \times h \div 2$ and got 4 square units per triangle. Next, I counted the squares in the remaining rectangle and got 8 square units. The area is $64 - 4 - 4 - 8 = 48$ square units.*	Work shows **conceptual understanding**, with some errors. *E.g., 48 square units because I counted the squares.*	Work shows **incomplete understanding** with significant errors. *E.g., 52 square units because the shape is in 52 squares.*	Work shows **limited understanding.** *E.g., Student uses the same explanation as in 4.1.*	Did not attempt.

Unit 6.1, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5.1	6.EE.A.2.A 6.G.A.4 MP3	Work is complete and correct. *E.g., Sol wrote the wrong expression. He should have written:* $2 \times l \times w + 2 \times l \times h + 2 \times w \times h$.	Work shows conceptual understanding and mastery, with minor errors. *E.g., Student writes that Sol should have calculated* $b \times h$ *of each face, but does not mention the sum of the areas.*	Work shows a developing but incomplete conceptual understanding, with significant errors. *E.g., Students who write that Sol should have multiplied by* 2 *may recognize that there are* 2 *of each face.*	Weak evidence of understanding.	Did not attempt.
5.2	6.EE.A.2.C 6.G.A.4	Work is complete and correct. • 52 square centimeters *E.g., In this prism,* $h = 2$, $l = 4$, *and* $w = 3$. *There are two faces whose areas are* $h \times l = 8$ *square centimeters, two faces whose areas are* $h \times w = 6$ *square centimeters, and two faces whose areas are* $l \times w = 12$ *square centimeters. So the surface area is* $8 + 8 + 6 + 6 + 12 + 12 = 52$ *square cm.*	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of area. *E.g., Students who write* 26 *square centimeters may have calculated the sum of the areas of the visible surfaces only.*	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.

Unit 6.1, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.1	6.G.A.4	Work is complete and correct. • Square pyramid or rectangular pyramid	Work shows conceptual understanding and mastery, with minor errors. *E.g., Students who write "pyramid" may recognize that the net folds into a pyramid, but have forgotten to include the base in the name.*	Work shows a developing but incomplete conceptual understanding, with significant errors. *E.g., Students who write "triangular prism" may have recognized that both triangular prisms and rectangular pyramids have faces that are rectangles and triangles.*	Weak evidence of understanding.	Did not attempt.
6.2	6.EE.A.2.C 6.G.A.4	Work is complete and correct. • 105 square centimeters The area of the square base is $l \times w = 25$ square cm. There are four triangles whose areas are $b \times h \div 2 = 20$ square cm each. The surface area is $20 + 20 + 20 + 20 + 25 = 105$ square centimeters.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation. *E.g., Students who write 185 square cm may not have divided by 2 when calculating the area of each triangle.*	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of area. *E.g., Students who write 45 square cm may have calculated the sum of the areas of the square and one triangle.*	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.

Unit 6.1, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
7.1	6.EE.A.2.C 6.G.A.1	Work is complete and correct. • 214.5 square in. *E.g., I made a rectangle around the sign whose area is* $b \times h = 11 \times 22 = 242$ *square inches. Then I subtracted the area of the missing triangle,* $b \times h \div 2 = 27.5$*, to get* 214.5 *square inches.*	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation. *E.g., Students who write* 269.5 *square inches may have added the area of the missing triangle at the bottom of the sign instead of subtracting it.*	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of area. *E.g., Students who write* 187 *square inches may have calculated the area of the triangle at the bottom of the board as a parallelogram.*	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.
7.2	6.G.A.1	Work is complete and correct. • 5 kits • 4.29 kits	Work shows conceptual understanding and mastery, with minor errors. *E.g., Students who write* 4 *kits may have rounded down to the nearest kit.* *E.g., Students who write* 3 *kits may have thought they only needed to cover one side of the sign.*	Work shows a developing but incomplete conceptual understanding, with significant errors. *E.g., Students who write* 429 *kits may have calculated the total area of the front and back of the sign.*	Weak evidence of understanding.	Did not attempt.

Unit 6.2, Readiness Check Name ____

1. A cookie recipe says there should be 3 times as much flour as there is sugar. I have 6 cups of sugar. Which expression represents how much flour I need?

   A. $6 + 3$
   B. $6 - 3$
   C. $6 \cdot 3$
   D. $6 \div 3$

A box of brownie mix calls for 2 eggs and $\frac{1}{2}$ cup of oil.

2.1 How many eggs and how much oil would you need for 2 boxes of brownie mix?

2.2 How many eggs and how much oil would you need for 3 boxes of brownie mix?

Here are three fractions: $\frac{2}{3}$, $\frac{4}{5}$, and $\frac{6}{9}$.

3.1 Two of these fractions are equivalent. Which ones are they?

Explain how you know.

3.2 Write two fractions that are equivalent to $\frac{3}{4}$.

4. Label each tick mark with its value on the number line.

5. At the store, a bag of 4 avocados costs $\$2$.
How much does each avocado cost?

Explain your reasoning.

6. Complete each equation with a number that makes it true.

$4 \cdot$ ______ $= 20$ $8 \cdot$ ______ $= 32$ $32 \cdot$ ______ $= 8$ $20 \cdot$ ______ $= 4$

There are 5 children and 3 adults going on a trip.

7.1 What fraction of the people going on the trip are children? Explain your thinking.

7.2 What fraction of the people going on the trip are adults?

Unit 6.2, Readiness Check

1. $6 \cdot 3$

2.1 4 eggs and 1 cup of oil

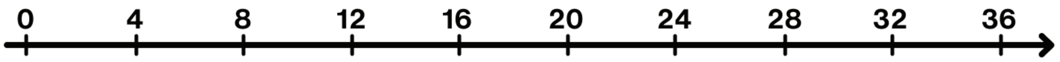
2.2 6 eggs and $1\ \frac{1}{2}$ cups of oil (or equivalent)

3.1 $\frac{2}{3}$ and $\frac{6}{9}$

Explanations vary. The numerator and denominator of $\frac{2}{3}$ can be multiplied by 3 to equal $\frac{6}{9}$. $\frac{2}{3} \times \frac{3}{3} = \frac{6}{9}$.

3.2 *Responses vary.* $\frac{6}{8}$, $\frac{30}{40}$

4.



5. $\$0.50$

Explanations vary. Since there are 4 avocados, each avocado must cost less than $\$1$. $4 \cdot \$0.50 = \$2$.

6. 5, 4, $\frac{1}{4}$, $\frac{1}{5}$

7.1 $\frac{5}{8}$

Explanations vary. There are $5 + 3 = 8$ people total on the trip, and 5 out of the 8 people are children.

7.2 $\frac{3}{8}$

Unit 6.2, Readiness Check Summary

This readiness check can be given before the unit begins or spread out throughout the unit.

For teachers who choose to spread out the questions, consider assigning the following:
- Problem 1 before Lesson 1
- Problems 2 and 3 before Lesson 3
- Problem 4 before Lesson 5
- Problem 5 before Lesson 6
- Problem 6 before Lesson 10
- Problem 7 before Lesson 12

Problem 1
(Standard: **4.OA.A.1**)

This question is intended to surface what students already know about multiplicative relationships. This content first appears in Lesson 1: Pizza Maker, where students informally explore ratios in context.

Suggested Next Steps: If students struggle . . .
- Consider spending extra time on Screen 7 of Lesson 1. Invite students to share the strategies they used to determine the ingredients needed to make 6 pizzas.

Problem 2
(Standards: **4.OA.A.2, 5.NF.B.5**)

This question is intended to surface what students already know about scaling recipes up and down. This content first appears in Lesson 3: Rice Ratios, where students scale ratios by doubling, tripling, and halving in context.

Suggested Next Steps: If students struggle . . .
- Consider reviewing Problem 2 after Activity 1 of Lesson 3. If possible, consider making connections between the strategies students use on this problem and the language of equivalent ratios.

Problem 3
(Standards: **4.NF.A.1, MP3**)

This question is intended to surface what students already know about equivalent fractions. Students construct arguments as they justify whether two fractions are equivalent or not. This content first appears in Lesson 3: Rice Ratios, where students explain equivalent ratios.

Suggested Next Steps: If students struggle . . .
- Consider reviewing Problem 3 after Activity 1 of Lesson 3. If possible, consider inviting students to share how equivalent fractions are similar to and different from equivalent ratios.

Problem 4

(Standards: **2.MD.B.6, MP6**)

This question is intended to surface what students already know about number lines. Students attend to precision when labeling the number line. This content first appears in Lesson 5: Balancing Act, where students use double number lines to solve problems with equivalent ratios.

Suggested Next Steps: If students struggle . . .

- Consider reviewing Problem 4 before Activity 1 of Lesson 5. Consider writing an incorrect solution and using a routine like Clarify, Critique, Correct.

Problem 5

(Standard: **4.NF.B.3**)

This question is intended to surface what students already know about prices for groups of items. This content first appears in Lesson 6: Product Prices, where students calculate and use unit prices.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time during Activity 1 of Lesson 6 sharing strategies for calculating unit prices.

Problem 6

(Standard: **5.NF.B.4**)

This question is intended to surface what students already know about the relationship between dividing by a whole number and multiplying by a fraction. This content first appears in Lesson 10: Balloons, where students solve problems by reasoning about tables of equivalent ratios and double number line diagrams.

Suggested Next Steps: If students struggle . . .

- Consider reviewing Problem 6 before students begin Lesson 10. Consider asking a question like: *How are the second and third equations related?*

Problem 7

(Standard: **5.NF.B.5**)

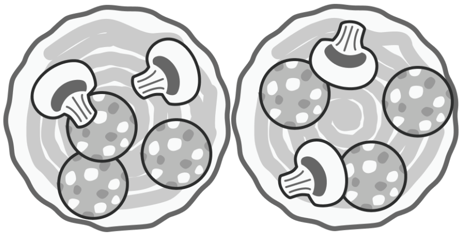
This question is intended to surface what students already know about relationships between parts and wholes. This content first appears in Lesson 12: Mixing Paint Part 2, where students explore part-to-part ratios.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time on Lesson 12's Warm-Up. Invite students to determine what fraction of the total paint is made of blue paint and yellow paint for different mixes.

Unit 6.2, Quiz: Lessons 1–6 Name ______________________________

Here are some personal pizzas.



1. Which statement is true?

   A. The ratio of pizzas to mushroom slices is 4 to 2.
   B. The ratio of mushroom slices to pizzas is 2 to 1.
   C. There are two pizzas for every pepperoni.
   D. There are six pepperoni for every pizza.

2. Select **all** of the ratios that are equivalent to $8 : 6$.

   ☐ $10 : 8$ ☐ $4 : 3$ ☐ $6 : 4$ ☐ $40 : 30$ ☐ $16 : 12$

You can make pancakes with just eggs and bananas! Here is one recipe.

3.1 How many eggs do you need if you have 6 bananas?

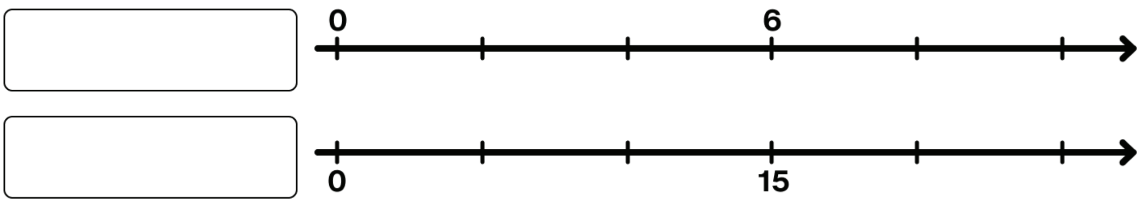
Two-Ingredient Pancakes *Serves* 4 *People* • 6 eggs • 2 bananas

3.2 How many eggs and how many bananas do you need to serve 6 people?

4. A recipe for lemonade uses 5 scoops of mix for every 4 cups of water.

   Mai says, “No matter how much lemonade you make, there is always one more scoop of mix than cups of water.” Is she correct? Explain your reasoning.

At the stationery store, it costs $\$15$ for 6 notebooks.



5.1 Label each number line with a title and units to represent the situation.

5.2 Fill in the missing values on the double number line.

5.3 Write a question you could answer using the double number line.

5.4 Answer your question.

Unit 6.2, Quiz: Lessons 1–6

Answer Key

1. B. The ratio of mushroom slices to pizzas is 2 to 1.

2.
   - ✓ $4 : 3$
   - ✓ $40 : 30$
   - ✓ $16 : 12$

3.1 18 eggs

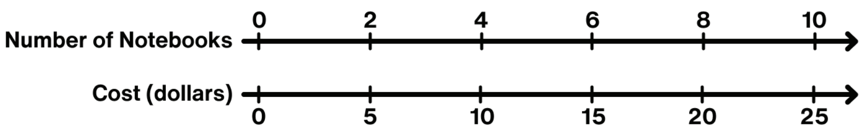
3.2 9 eggs, 3 bananas

4. No.

   Explanations vary. If you double the recipe, then you would have 10 scoops of mix and 8 cups of water. This doesn't follow Mai's rule.

5.1 Top number line: Number of Notebooks
Bottom number line: Cost (dollars)

5.2



5.3 *Responses vary.*
- How many notebooks can I buy for $\$20$?
- How much does it cost to buy 10 notebooks?

5.4 *Responses vary depending on students' questions from 5.3.*

Unit 6.2, Quiz: Summary and Rubric

Content Standards Summary

Standard	6.RP.A.1	6.RP.A.3	6.RP.A.3.A
Problems	1, 2, 4	2	3, 5

Problem 1

(Standard: **6.RP.A.1**)

In this problem, students interpret language that describes a ratio. This problem corresponds most directly to the work students did in Lesson 2: Ratio Rounds.

Suggested Next Steps: If students struggle . . .

- Consider asking students to write the ratios of mushrooms to pepperoni and pizzas to pepperoni then revisiting the choices.
- Consider revisiting Problem 1 of Lesson 2's notes.

Problem 2

(Standards: **6.RP.A.1 and 6.RP.A.3**)

In this problem, students demonstrate their understanding of what equivalent ratios are. This problem corresponds most directly to the work students did in Lesson 4: Fruit Lab.

Suggested Next Steps: If students struggle . . .

- Consider asking students to explain how to create each ratio from $8 : 6$.
- Consider revisiting Lesson 4, Activity 2, Screen 6.

Unit 6.2, Quiz: Summary and Rubric

Problem 3

(Standard: **6.RP.A.3.A**)

In this problem, students use ratio reasoning to solve real-world problems. This problem corresponds most directly to the work students did in Lesson 5: Balancing Act.

Suggested Next Steps: If students struggle . . .

- Consider asking students to describe in words what they would need to do to the original recipe to create the new one.
- Consider moving on, as students will continue to work with ratio reasoning throughout this unit and the next unit.

Problem 4

(Standards: **6.RP.A.1, MP3**)

In this problem, students demonstrate their understanding of what happens when a ratio scales. Students critique the reasoning of another student. This problem corresponds most directly to the work students did in Lesson 3: Rice Ratios.

Suggested Next Steps: If students struggle . . .

- **Math Language Development** Consider using the mathematical language routine Critique, Correct, Clarify to help students understand and communicate the mistake that Mai made and how it could be corrected.
- Consider revisiting Lesson 3, Activity 1, Problem 4.

Problem 5

(Standards: **6.RP.A.3.A, MP6**)

In this problem, students attend to precision when labeling the double number lines using correct units of measure. This problem corresponds most directly to the work students did in Lesson 5: Balancing Act and Lesson 6: Product Prices.

Suggested Next Steps: If students struggle . . .

- Consider inviting to describe out loud what each number line represents, then labeling the number lines as a class.
- Consider revisiting Lesson 5, Activity 2, Screen 13.

Unit 6.2, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.RP.A.1	Correct choice. • B. The ratio of mushroom slices to pizzas is 2 to 1.			Incorrect choice. *Students who selected "The ratio of pizzas to mushroom slices is 4 to 2" may have reversed the order of the ratio.*	Did not attempt.
2	6.RP.A.1, 6.RP.A.3	**All correct** choices and **no incorrect** choices. • 4 : 3 • 40 : 30 • 16 : 12	**Two correct** choices and **no incorrect** choices. **Three correct** choices and **one incorrect** choice.	**Two correct** choices and **one incorrect** choice.	**Only incorrect** choices. **Two or more incorrect** choices with some correct choices.	Did not attempt.
3.1	6.RP.A.3.A	Correct answer. • 18 eggs			Incorrect answer. *Students who wrote 2 eggs may have divided 6 by 3 instead of multiplied.*	Did not attempt.

Unit 6.2, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.2	6.RP.A.3.A	Table is complete and correct. • 9 eggs • 3 bananas		Work shows **incomplete understanding** with significant errors. *Student correctly completes one of the table cells.*	Work shows **limited understanding** of solving problems involving equivalent ratios. *Students who wrote 8 eggs and 4 bananas may have added 2 to each ingredient.*	Did not attempt.
4	6.RP.A.1, MP3	Correct answer with correct explanation. • No *E.g., If you double the recipe, then you would have 10 scoops of mix and 8 cups of water. This doesn't follow Mai's rule.*	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding**, with significant errors.	Work shows **limited understanding** of scaling ratios.	Did not attempt.
5.1	6.RP.A.3.A, MP6	**All correct** answers. • Number of Notebooks • Cost (dollars)	**One correct** answer and **one incorrect** answer.		**Only incorrect** answers.	Did not attempt.

Unit 6.2, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
5.2	6.RP.A.3.A	**All correct** answers. • 2, 4, 8, 10 • 5, 10, 20, 25	Work shows **conceptual understanding**, with some errors. *E.g., Student shows mostly correct answers with minor errors in calculation.*	Work shows **incomplete understanding** with significant errors. *E.g., Student shows one correct number line and one incorrect number line.*	Work shows **limited understanding** of representing ratio situations with double number lines.	Did not attempt.
5.3	6.RP.A.3.A	Correct answer • *How many notebooks can I buy for $20?*	Work shows **conceptual understanding**, with some errors. *E.g., Student writes a question that uses the double number line but doesn't reference notebooks and costs.*	Work shows **incomplete understanding** with significant errors. *E.g., Student writes a question related to notebooks and cost that can't be solved using the double number line.*	Work shows **limited understanding** of using double number lines to solve problems.	Did not attempt.
5.4	6.RP.A.3.A	Correct answer • *Responses vary depending on students' questions from 5.3.*	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors.	Work shows **limited understanding** of using double number lines to solve problems.	Did not attempt.

Unit 6.2, End-Unit Assessment: Form A Name ________________________________

1. Makayla's recipe for Orange Surprise uses 2 cans of orange juice for every 3 liters of soda water. How much soda water would Makayla need if she used 12 cans of orange juice?

   A. 8 liters of soda water

   B. 13 liters of soda water

   C. 15 liters of soda water

   D. 18 liters of soda water

2. Select **all** of the ratios that are equivalent to $20:12$.

   ☐ $60:36$ ☐ $10:2$ ☐ $5:2$ ☐ $30:18$ ☐ $24:16$

Caleb's favorite shade of green uses a ratio of 5 cups of blue paint to 3 cups of yellow paint.

3.1 Caleb bought 12 cups of yellow paint. How much blue paint will he need to make his green?

3.2 Caleb needs 40 cups of green paint to paint his room. How much of each color will he need?

A sign at the store says 3 oranges cost $\$2.25$.

4.1 At this rate, what would 12 oranges cost?

4.2 At this rate, what would 7 oranges cost? Explain or show your thinking.

5. While playing basketball, Ava's heart beat 80 times in 30 seconds.
While running, her heart beat 60 times in 20 seconds.

Which activity made Ava's heart beat faster? Explain your reasoning.

Jayden is saving up for $\$100$ concert tickets. For every 5 hours they work, they get paid $\$40$. They made a table to figure out how many hours they need to work to earn $\$100$, but it has a mistake.

6.1 What did Jayden do well?

Describe Jayden's mistake.

Hours	Dollars Earned
5	40
1	8
100	800

6.2 Determine how many hours Jayden needs to work to earn $\$100$.

Metropolis requires that for every 5 plots of land used for buildings, 2 plots of land must be left for green space.

7.1 A company bought 70 plots of land. How many plots can it use for buildings?

7.2 Write a question about this situation whose answer is 30 plots of land.

Unit 6.2, End-Unit Assessment: Form A Name ______________________________

Reflection: Select a question to answer.

- ☐ What is something you are proud of from this unit?

- ☐ Write what you know about a topic from this unit that you weren't asked about today.

- ☐ Describe or show one strategy you found helpful in this unit.
  Name any students who helped you with this strategy.

- ☐ What else would you like your teacher to know?

Answer Key

1. 18 liters of soda water

2. ✓ $60:36$
   ✓ $30:18$

3.1 20 cups

3.2 25 cups of blue paint and 15 cups of yellow paint

4.1 $\$9$

4.2 $\$5.25$
Explanations vary. I figured out that it costs $\$0.75$ for each orange, so 7 oranges would cost $\$0.75 \cdot 7 = \$5.25$.

5. Running
Explanations vary. Ava's heart beat 3 times per second when she was running. If it beat 3 times per second when she was playing basketball, it would have been $3 \cdot 30 = 90$ times. Since it only beat 80 times, her heart must have been beating faster when she was running.

6.1 *Responses vary.* Something Jayden did well was calculate how much they earn each hour correctly. Jayden's mistake was calculating how much they would earn from 100 hours of work instead of how many hours they would need to work to earn $\$100$.

6.2 12.5 hours or 13 hours (if they can only work hour-long shifts)

7.1 50 plots of land

7.2 *Responses vary.*
- How many building plots can you make if you used 12 plots for green space?
- How many building plots can you make from 42 plots of land?
- How many plots for green space do you need if you want 75 plots for buildings?

Unit 6.2, End Assessment Summary and Rubric: Form A

Content Standards Summary

Standard	6.RP.A.1	6.RP.A.3	6.RP.A.3.A	6.RP.A.3.B
Problems	2	1, 3, 7	6	4, 5

Problem 1

(Standard: **6.RP.A.3**)

In this problem, students solve problems using equivalent ratios. This problem corresponds most directly to the work students did in Lesson 5: Balancing Act.

Suggested Next Steps: If students struggle . . .

- Consider inviting students to use a double number line to help visualize the problem.
- Consider revisiting Lesson 5, Activity 2, Screen 10.

Problem 2

(Standards: **6.RP.A.1, MP8**)

In this problem, students use repeated reasoning to determine which ratios are equivalent. This problem corresponds most directly to the work students did in Lesson 3: Rice Ratios and Lesson 4: Fruit Lab.

Suggested Next Steps: If students struggle . . .

- Consider asking students if there are any visual representations that might help. Some suggestions are a double number line, tape diagram, or table.
- Consider revisiting Lesson 4, Activity 2, Screen 6.

Problem 3
(Standard: **6.RP.A.3**)

In this problem, students use ratio and rate reasoning to solve real-world problems, particularly understanding when it is useful to use strategies related to part-part-whole thinking. This problem corresponds most directly to the work students did in Lesson 5: Balancing Act and Lesson 12: Mixing Paint Part 2.

Suggested Next Steps: If students struggle . . .
- Consider asking students how they could represent this part-part-whole ratio visually, such as with a tape diagram or a table.
- Consider revisiting Lesson 12, Activity 1.

Problem 4
(Standard: **6.RP.A.3.B**)

In this problem, students solve problems that involve calculating a unit price. This problem corresponds most directly to the work students did in Lesson 6: Product Prices.

Suggested Next Steps: If students struggle . . .
- Consider asking students how to find the cost of one orange, and then how that might help them answer each question.
- Consider revisiting Lesson 6, Activity 2.

Problem 5
(Standards: **6.RP.A.3.B, MP3**)

In this problem, students construct arguments to justify which of two objects is moving faster using concepts of unit rate. This problem corresponds most directly to the work students did in Lesson 8: World Records.

Suggested Next Steps: If students struggle . . .
- Consider asking students how to find each unit rate, or suggesting a visual representation such as a double number line.
- Consider revisiting Lesson 8, Activity 2, Problem 1.

Unit 6.2, End Assessment Summary and Rubric: Form A

Problem 6

(Standards: **6.RP.A.3.A, MP3**)

In this problem, students use a table of equivalent ratios to solve real-world problems. They analyze the work of another student, critiquing both what the student did well and what their mistake was. This problem corresponds most directly to the work students did in
Lesson 9: Disaster Preparation and Lesson 10: Balloons.

Suggested Next Steps: If students struggle . . .

- Consider suggesting they first find the unit rate of how many dollars per hour are made.
- Consider revisiting Lesson 10, Activity 2, Screen 12.

Problem 7

(Standards: **6.RP.A.3, MP2**)

In this problem, students use their creativity to solve rate and ratio problems involving part-to-part relationships. They have to reason abstractly and quantitatively to formulate a question, in context, that has a given answer. This problem corresponds most directly to the work students did in Lesson 13: City Planning.

Suggested Next Steps: If students struggle . . .

- Consider providing a grid for students to draw their thinking, or suggesting they use other strategies such as a table to visualize these problems.
- Consider revisiting Lesson 13, Activity 1.

Unit 6.2, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
1	6.RP.A.3	• 18 liters of soda water			• Students who select 13 liters may have added 10 to both quantities, or added 1 to the number of cans of orange juice. • Students who select 15 liters may have added 12 and 3. • Students who select 8 liters may have calculated the cans of orange juice needed for 12 liters of soda water.	Did not attempt.
2	6.RP.A.1, MP8	Student selects all of the correct choices and does not select any incorrect choices. • 60 : 36 • 30 : 18	Student selects one of the correct choices and does not select any incorrect choices. Student selects both of the correct choices and one incorrect choice.	Student selects one of the correct choices and one incorrect choice.	Student only selects incorrect choices. Student selects two or more incorrect choices with the correct choices. • Students who select 10 : 2 may have subtracted 10 from each value in the original ratio. • Students who select 24 : 16 may have noticed that you can create this ratio by adding 4 to each value in the original ratio.	Did not attempt.

Unit 6.2, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.1	6.RP.A.3	Work is complete and correct. • 20 cups	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 14 cups may have noticed that there are 9 more cups of yellow paint and added 9 to the cups of blue paint.	Weak evidence of understanding.	Did not attempt.
3.2	6.RP.A.3	Work is complete and correct. • Blue Paint (cups): 25 Yellow Paint (cups): 15	Work shows conceptual understanding and mastery, with minor errors. • Students who write 24 cups of yellow paint may have calculated how much yellow paint is needed for 40 cups of blue paint.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Student writes cups of blue and yellow paint in the correct ratio, but does not sum to 40 cups.	Weak evidence of understanding.	Did not attempt.

Unit 6.2, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
4.1	6.RP.A.3.B	Work is complete and correct. • $\$9$	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $\$27$ may have used $\$2.25$ as the unit rate.	Weak evidence of understanding.	
4.2	6.RP.A.3.B	Work is complete and correct. • $\$5.25$ I figured out that it costs $\$0.75$ for each orange, so 7 oranges would cost $\$0.75 \cdot 7 = \$5.25$.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation. • Students who write $\$5.18$ or $\$5.175$ may have rounded $\frac{7}{3}$ to 2.3.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of unit prices. • Students who write $\$15.75$ may have used $\$2.25$ as the unit rate.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.

Unit 6.2, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5	6.RP.A.3.B, MP3	Work is complete and correct. • Running Ava's heart beat 3 times per second running. If it beat 3 times per second when playing basketball, it would have been 90 times. Since it only beat 80 times, her heartbeat was faster running.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of unit rates. • Students who write that Ava's heart beat faster while playing basketball may have only paid attention to the number of times the heart beat.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.
6.1	6.RP.A.3.A, MP3	Student successfully answers the question with a logical and complete explanation. • Something Jayden did well was calculate how much they earn per hour. Jayden's mistake was calculating how much they would earn in 100 hours instead of how many hours they needed to earn $100.	Correct explanation but with minor flaws. • Something Jayden did well was calculate how much they earn per hour. Jayden's mistake was they did not use the table correctly.	Correct but incomplete explanation. Explanation that communicates partial understanding of using tables with equivalent ratios. • Jayden's mistake was they calculated how much they would earn in 100 hours.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.

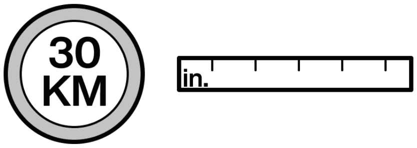
Unit 6.2, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.2	6.RP.A.3.A	Work is complete and correct. • 12.5 hours • 13 hours (if they can only work hour-long shifts)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write that Jayden needs to work 60 hours may have calculated $100 - 40$.	Weak evidence of understanding.	Did not attempt.
7.1	6.RP.A.3	Work is complete and correct. • 50 plots of land	Work shows conceptual understanding and mastery, with minor errors. • Students who write 28 plots may have calculated how many plots of green space you would need for 70 plots of buildings. • Students who write 175 plots may have calculated how many plots of buildings can be built to accompany 70 plots of green space.	Work shows a developing but incomplete conceptual understanding, with significant errors.	Weak evidence of understanding.	Did not attempt.

Unit 6.2, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
7.2	6.RP.A.3, MP2	Student successfully writes a question related to the situation with an answer of 30 plots of land. • How many building plots can you make if you used 12 plots for green space? • How many building plots can you make from 42 plots of land? • How many plots for green space do you need if you want 75 plots for buildings?	Question has an answer of 30 plots of land, but does not reference the given situation.	Question does not have an answer of 30 plots of land, but does reference the given situation.	Question includes the number 30.	Did not attempt.

 Name ____________________



1.1 Kilometers and inches are two units used to measure **length**.

List two other units used to measure length.

1.2 Tablespoons and liters are two units used to measure **volume**.

List two other units used to measure volume.

2. Select **all** of the numbers that have the same value as $7 \times \frac{5}{4}$.

☐ 8.3 ☐ $\frac{35}{4}$ ☐ $8\frac{3}{4}$ ☐ $\frac{35}{28}$ ☐ 8.75

3. Vihaan and Natalia each walk at a constant speed.

- Vihaan walks 40 feet in 10 seconds.
- Natalia walks 23 feet in 4 seconds.

Who walks faster?

A. Vihaan B. Natalia C. They walk at the same speed.

Explain your reasoning.

Unit 6.3, Readiness Check Name ______________________________

A bakery charges $\$3$ for 8 cookies.

4.1 At this rate, how many cookies can you buy with $\$15$?

4.2 At this rate, how much would it cost to buy 10 cookies?

5. List anything you know about percentages.

Complete each sentence with a number that makes it true.

6.1 $\frac{1}{4}$ of 24 is _____.

6.2 $\frac{3}{4}$ of 44 is _____.

6.3 $\frac{1}{10}$ of 300 is _____.

6.4 $\frac{1}{10}$ of 340 is _____.

6.5 $\frac{1}{100} \times 300 =$ _____.

6.6 $\frac{1}{100} \times 340 =$ _____.

6.7 $\frac{3}{100} \times 340 =$ _____.

7. Select **all** of the expressions that have the same value.

☐ $\frac{1}{100} \times 400$ ☐ $\frac{1}{10} \times 400$ ☐ 400 divided by 100 ☐ $\frac{400}{100}$ ☐ $\frac{1}{400} \times 100$

Answer Key

1.1 *Responses vary*. Meters, feet, centimeters, millimeters, miles.

1.2 *Responses vary*. Teaspoons, gallons, cups, quarts, pints, milliliters.

2. $\frac{35}{4}$, $8\frac{3}{4}$, 8.75

3. **B.** Natalia

   Explanations vary. Vihaan walks $\frac{40}{10} = 4$ feet per second, and Natalia walks $\frac{23}{4} = 5.75$ feet per second.

4.1 40 cookies

4.2 $\$3.75$

5. *Responses vary*. Percentages help you find parts of numbers, like when something is on sale, you are only paying a portion of the price. Percentages are like fractions, where 50% is like half of something.

6.1 6

6.2 33

6.3 30

6.4 34

6.5 3

6.6 3.4

6.7 10.2

7. $\frac{1}{100} \times 400$, 400 divided by 100, $\frac{400}{100}$

Unit 6.3, Readiness Check Summary

For teachers who choose to spread out the questions, consider assigning the following:
- Problem 1 before Lesson 1
- Problem 2 before Lesson 3
- Problems 3 and 4 before Lesson 4
- Problem 5 before Lesson 8
- Problems 6 and 7 before Lesson 11

Problem 1

(Standards: **2.MD.A.2, 3.MD.A.2**)

This question is intended to surface what students already know about different units for measuring length and volume. This content first appears in Lesson 1, where students make connections between units of measurement and the measurements of everyday objects. Lesson 1 will review many different units of measurement.

Suggested Next Steps: If students struggle. . .
- Consider adding student responses to the class display during Lesson 1.
- Consider creating an anchor chart as a class with different units of measurement, as well as measurement words such as “length”, “volume”, and “mass”.

Problem 2

(Standard: **4.NF.B.4**)

This question is intended to surface what students already know about multiplying a whole number by a fraction. This content first appears in Lesson 3, where students convert measurements from one unit to another in different measurement systems.

Suggested Next Steps: If students struggle . . .
- Consider reviewing this problem as a class before Lesson 3, or spending extra time reviewing the Practice Problem Warm-Ups for Lessons 1–3.

Unit 6.3, Readiness Check Summary

Problem 3

(Standards: **6.RP.A.3, MP3**)

This question is intended to surface what students already know about comparing rates from Unit 2. Students compare two rates and justify their conclusion. This content first appears in Lesson 4, where students use rate and ratio reasoning to compare rates expressed in different units.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem before Lesson 4. Invite students to share several strategies, including calculating a unit rate and creating equal amounts of feet or seconds.

Problem 4

(Standard: **6.RP.A.3**)

This question is intended to surface different strategies students use to solve problems involving ratios of whole numbers. This content first appears in Lesson 4, where students use rate and ratio reasoning to compare rates expressed in different units.

Suggested Next Steps: If students struggle . . .

- Review this problem before Lesson 4. Invite students to share what the cost per cookie is.

Problem 5

(Standard: **6.RP.A**)

This question is intended to surface what students already know about percentages from their personal experience. This unit is the first time that most students will learn about percentages formally in school. This content first appears in Lesson 8, where students learn the word *percent* and the symbol $\%$ to mean "for every 100."

Suggested Next Steps: If students struggle . . .

- Give students an opportunity to revise their responses after Lesson 8.

Problem 6

(Standards: **4.NF.B.4, MP8**)

This question is intended to surface what students already know about how multiplying a whole number by a fraction is similar to thinking about a fraction of a whole number. Students look for regularity in repeated reasoning as they identify and use patterns when multiplying fractions. This content first appears in Lesson 11 as students write expressions to calculate a percentage of a number.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem before students begin Lesson 11. Invite students to make connections between the word "of" as it relates to multiplication.
- Consider making an anchor chart for students to refer back to for the rest of the unit.

Problem 7

(Standards: **5.NF.B.3, MP8**)

This question is intended to surface what students already know about equivalent expressions involving multiplication of whole numbers and fractions. Students look for and express regularity in repeated reasoning as they see that multiplying a number by a unit fraction is the same as dividing that number by the value in the denominator. This content first appears in Lesson 11, where students use expressions to calculate any percentage of a number.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem as a class before Lesson 11. Invite students to make connections between multiplying by $\frac{1}{100}$ and dividing by 100.

Unit 6.3, Quiz: Lessons 1–7 Name ______________________

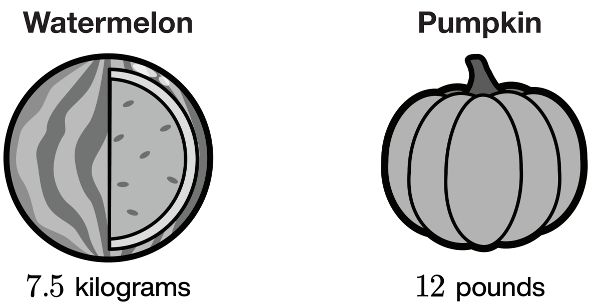
1. Select **all** of the true statements.

- [ ] 2 meters = 200 centimeters
- [ ] 5 millimeters = 50 centimeters
- [ ] 300 meters = 3 centimeters
- [ ] 4 centimeters = 400 meters
- [ ] 30 millimeters = 3 centimeters

1 meter $= 100$ centimeters

1 centimeter $= 10$ millimeters

2. Which object weighs more? ____________________



10 kilograms ≈ 22 pounds

Explain or show how you know.

3.1 A shop charges $\$4.95$ for a large 9-ounce frozen yogurt.
What is the cost per ounce of the frozen yogurt?

3.2 The shop charges $\$6.72$ for an extra-large 12-ounce frozen yogurt.
Which size gets you more frozen yogurt per dollar?

Explain your thinking.

Unit 6.3, Quiz: Lessons 1–7 Name ____________________

A strawberry milk recipe uses 3 teaspoons of strawberry syrup for every 8 ounces of milk.

4.1 How many teaspoons of strawberry syrup per ounce of milk does this recipe use?

4.2 How many ounces of milk are needed per teaspoon of strawberry syrup?

4.3 There are 18 ounces of milk left in a container. How many teaspoons of strawberry syrup would you need if you used all the milk?

Explain or show your thinking.

Duri bought 4 gallons of gas for $\$10$.

5.1 Complete the table for buying gas at this rate.

Gas (gallons)	Price (dollars)
4	10
5	
	37.50

5.2 Write a question you could answer using the table.

5.3 Answer the question you wrote.

Unit 6.3, Quiz: Lessons 1–7

Answer Key

1. ✓ 2 meters = 200 centimeters

   ✓ 30 millimeters = 3 centimeters

2. Watermelon
   Explanations vary. There are $\frac{22}{10}$ pounds per kilogram, so 7.5 kilograms is equal to $7.5 \cdot \frac{22}{10} = \frac{165}{10}$ or 16.5 pounds.

3.1 $\$0.55$ per ounce

3.2 The large 9 ounce. *Explanations vary*. The large 9-ounce yogurt is $\$0.55$ per ounce and the extra-large 12-ounce yogurt is $\$0.56$ per ounce, so the large yogurt gets you more yogurt per dollar.

4.1 $\frac{3}{8}$ teaspoons (or equivalent)

4.2 $\frac{8}{3}$ ounces (or equivalent)

4.3 6.75 teaspoons. *Explanations vary*. The recipe uses $\frac{3}{8}$ teaspoons per ounce of milk, so you need $\frac{3}{8} \cdot 18 = \frac{54}{8}$ or 6.75 teaspoons.

5.1

Gas (gallons)	Price (dollars)
4	10
5	12.50
15	37.50

5.2 *Questions vary*.

5.3 *Responses vary*.

Unit 6.3, Quiz: Summary and Rubric

Content Standards Summary

Standard	6.RP.A.2	6.RP.A.3	6.RP.A.3.B	6.RP.A.3.D
Problems	3.1, 4.1, 4.2	5	3.2, 4.3	1, 2

Problem 1

(Standards: **6.RP.A.3.D, MP6**)

In this problem, students use equivalent ratios to convert units of measurement. Students attend to precision when determining how to compare measurements with meters, centimeters, and millimeters. This problem corresponds most directly to the work students did in
Lesson 2: Counting Classrooms.

Suggested Next Steps: If students struggle . . .

- Consider having students use a table to organize the given information.
- Consider moving on, as students will have more practice with this in upcoming lessons.

Problem 2

(Standards: **6.RP.A.3.D, MP3**)

In this problem, students convert measurements from one unit to another in a different measurement system. They construct a viable argument to justify which object they conclude weighs more. This problem corresponds most directly to the work students did in
Lesson 3:
Pen Pals.

Suggested Next Steps: If students struggle . . .

- Consider having students use a double number line to help them organize the given information.
- Consider revisiting Lesson 3, Activity 1, Screen 5.

Unit 6.3, Quiz: Summary and Rubric

Problem 3

(Standards: **6.RP.A.2, 6.RP.A.3.B, MP3**)

In this problem, students use ratios and unit rates to make comparisons. Students compare unit prices of two scenarios and justify their reasoning with a viable argument. This problem corresponds most directly to the work students did in Lesson 4: Model Trains.

Suggested Next Steps: If students struggle . . .

- Consider asking students how to find a unit rate, or suggest they use a visual representation to organize the given information.
- Consider moving on, as unit rates will continue to be used in upcoming lessons and units.

Problem 4

(Standards: **6.RP.A.2, 6.RP.A.3.B, MP2**)

In this problem, students calculate and interpret the two unit rates for the same relationship and use them to solve problems. Students reason abstractly and quantitatively when they determine two unit rates and a new corresponding quantity in context. This problem corresponds most directly to the work students did in Lesson 5: Soft Serve.

Suggested Next Steps: If students struggle . . .

- Consider asking students how to find a unit rate, or suggest they use a visual representation to organize the given information.
- Consider revisiting Lesson 5, Activity 2.

Problem 5

(Standards: **6.RP.A.3, MP2**)

In this problem, students use unit rates to complete a table of equivalent ratios and make sense of those ratios in context. Students reason abstractly and quantitatively as they recognize what is already represented in the table of values and use that information to complete the table. This problem corresponds most directly to the work students did in Lesson 7: More Soft Serve.

Suggested Next Steps: If students struggle . . .

- Consider suggesting that students use unit rates or fractions to understand the ratio relationship in the table.
- Consider revisiting Lesson 7, Activity 1, Screen 6.

Unit 6.3, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.RP.A.3.D, MP6	**All correct** choices and **no incorrect** choices. • 2 meters $= 200$ centimeters • 30 millimeters $= 3$ centimeters	**One correct** choice and **no incorrect** choices. **Both correct** choices and **one incorrect** choice.	**One correct** choice and **one incorrect** choice.	**Only incorrect** choices. **Two or more incorrect** choices with some correct choices.	Did not attempt.
2	6.RP.A.3.D, MP3	Correct answer with correct explanation. • Watermelon *E.g., There are* $\frac{22}{10}$ *pounds per kilogram, so* 7.5 *kilograms is equal to* $7.5 \cdot \frac{22}{10} = \frac{165}{10}$ *or* 16.5 *pounds.*	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding**, with significant errors.	Work shows **limited understanding** of how to convert measurements from one unit to another in a different measurement system. *E.g., Students who select the pumpkin may have noticed that* 12 *is larger than* 7.5.	Did not attempt.

Unit 6.3, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.1	6.RP.A.2	Correct answer. • $\$0.55$	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Students who wrote* $\$1.82$ *may have calculated* $\frac{9}{4.95}$.	Work shows **limited understanding** of unit rates.	Did not attempt.
3.2	6.RP.A.3.B, MP3	Correct answer with correct explanation. • The large 9 ounce *E.g., The large* 9*-ounce yogurt is* $\$0.55$ *per ounce and the extra-large* 12*-ounce yogurt is* $\$0.56$ *per ounce, so the large yogurt gets you more yogurt per dollar.*	Work shows **conceptual understanding**, with some errors. *E.g., Student calculates the cost per ounce of each yogurt size and selects the extra-large yogurt because its cost per ounce is higher than the large yogurt.*	Work shows **incomplete understanding**, with significant errors.	Work shows **limited understanding** of how to use ratios and unit rates to make comparisons.	Did not attempt.

Unit 6.3, Quiz: Summary and Rubric

4.1	6.RP.A.2	Correct answer. • $\frac{3}{8}$ teaspoons (or equivalent)	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Students who wrote* $\frac{8}{3}$ may have reversed the order of the ratio.	Work shows **limited understanding** of calculating unit rates.	Did not attempt.
4.2	6.RP.A.2	Correct answer. • $\frac{8}{3}$ ounces (or equivalent)	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Students who wrote* $\frac{3}{8}$ *may have reversed the order of the ratio.*	Work shows **limited understanding** of calculating unit rates.	Did not attempt.
4.3	6.RP.A.3.B, MP2	Correct answer with correct explanation. • 6.75 teaspoons *E.g., The recipe uses* $\frac{3}{8}$ *teaspoons per ounce of milk, so you need* $\frac{3}{8} \cdot 18 = \frac{54}{8}$ *or* 6.75 *teaspoons.*	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding**, with significant errors. *E.g., Students who wrote* 48 *teaspoons may have multiplied* 18 *by* $\frac{8}{3}$.	Work shows **limited understanding** of how to use unit rates to solve problems *E.g., Students who wrote* 13 *teaspoons may think* 10 *more ounces of milk will need* 10 *more teaspoons of syrup.*	Did not attempt.

Unit 6.3, Quiz: Summary and Rubric

5.1	6.RP.A.3, MP2	**All correct** answers. • $12.50 • 15 gallons	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors.	Work shows **limited understanding** of representing ratio situations with double number lines. *E.g., Student uses addition instead of multiplication as the relationship between columns (e.g., student writes 11 in row 2).*	Did not attempt.
5.2	6.RP.A.3	Student successfully writes a question that could be solved using the given table. • How much does 1 gallon of gas cost? • How many gallons of gas can you buy with $20 dollars?	Question can be answered using the table, but does not reference the given context.	Question cannot be answered using the table, but does reference the given context.	Work shows **limited understanding** of ratios in context.	Did not attempt.
5.3	6.RP.A.3	Correct answer. • *Student successfully answers question from 5.2.*	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors.	Work shows **limited understanding** of ratios in context.	Did not attempt.

Unit 6.3, End-Unit Assessment: Form A Name ______________________________

1. Sydney's fitness app says she has completed 70% of her goal for the week. Her goal is 50 miles. How far has she biked?

   A. 1.4 miles B. 20 miles C. 35 miles D. 71.4 miles

2. Mateo's pasta sauce recipe uses 8 tomatoes for every 3 teaspoons of oil.
   Select **all** of the true statements.

   - ☐ The recipe uses $\frac{3}{8}$ teaspoons of oil per tomato.
   - ☐ The recipe uses $\frac{3}{8}$ tomatoes per teaspoon of oil.
   - ☐ He needs 3 tomatoes for every 8 teaspoons of oil.
   - ☐ He needs $\frac{3}{4}$ teaspoons of oil for every 2 tomatoes.
   - ☐ He needs 9 tomatoes for every 4 teaspoons of oil.

3. 3 pounds of blueberries cost $\$10.50$ at a grocery store. Complete the table.

Blueberries (lb.)	Price (dollars)
3	10.50
7	
	35.00

4. Zion is reading a 300-page book. He is 41% finished.

   How many pages of the book has he read so far?

5. A store is selling pumpkins. Small pumpkins weigh less than 10 pounds. Big pumpkins weigh 10 pounds or more.

   10 kilograms $\approx$ 22 pounds

   Pablo wants to buy a pumpkin that weighs 4 kilograms. Is this pumpkin small or big?

   Explain your thinking.

It took Amari 2 hours to paint the first 14 feet of a 70-foot-long fence.

6.1 What percent of the fence have they painted so far?

6.2 At this rate, how long would it take Amari to paint the entire fence?

7.1 Afia bought shoes that were on sale for 30% off the regular price. Afia saved $\$12$.

What was the regular price of the shoes?

7.2 Afia entered this expression into her calculator at the shoe store: $\frac{30}{100} \cdot 56$.

Write a question she could answer about prices at the shoe store using this expression.

Unit 6.3, End-Unit Assessment: Form A Name ______________________

Reflection: Select a question to answer.

☐ What is something you are proud of from this unit?

☐ Write what you know about a topic from this unit that you weren't asked about today.

☐ Describe or show one strategy you found helpful in this unit.
Name any students who helped you with this strategy.

☐ What else would you like your teacher to know?

Answer Key

1. 35 miles

2. ✓ The recipe uses $\frac{3}{8}$ teaspoons of oil per tomato.

   ✓ He needs $\frac{3}{4}$ teaspoons of oil for every 2 tomatoes.

3.1 $\$24.50$

3.2 10 pounds

4. 123 pages

5. Small

   Explanations vary. There are about $\frac{22}{10}$ pounds per kilogram, so 4 kilograms is approximately $4 \cdot \frac{22}{10} = 8.8$ pounds.

6.1 20%

6.2 10 hours

7.1 $\$40$

7.2 *Responses vary.*

- How many dollars will you save on a $\$56$ item that is 30% off?
- How many dollars will you save on a $\$30$ item that is 56% off?
- How much does a $\$56$ item cost that is discounted 70%?
- 100 marbles cost $\$56$. How much should I pay for 30 marbles?

Unit 6.3, End Assessment Summary and Rubric: Form A

Content Standards Summary

Standard	6.RP.A.2	6.RP.A.3	6.RP.A.3.B	6.RP.A.3.C	6.RP.A.3.D
Problems	2	6	3	1, 4, 6, 7	5

Problem 1

(Standard: **6.RP.A.3.C**)

In this problem, students find a percent of a quantity when the percent can be made from benchmark percentages. This problem corresponds most directly to the work students did in Lesson 9: Bicycle Goals.

Suggested Next Steps: If students struggle . . .
- Consider asking students to represent the given information visually with a table, double number line, or other strategy.
- Consider moving on, as students will see percentages in this course and Math 7.

Problem 2

(Standards: **6.RP.A.2, MP6**)

In this problem, students calculate and interpret the two unit rates in the same relationship. Students attend to precision when determining equivalent ratios of different measurements. This problem corresponds most directly to the work students did in Lesson 5: Soft Serve.

Suggested Next Steps: If students struggle . . .
- Consider asking students to approach each option one at a time, as a separate problem. Ask students to sort the information as ratios that can be compared, using unit rates and other organizational strategies, such as a table.
- Consider revisiting Lesson 5: Practice Problems, Problem 2. Choose one or two problems to discuss as a class based on student performance.

Problem 3

(Standards: **6.RP.A.3.B, MP2**)

In this problem, students solve unit rate problems including those involving unit pricing. Students reason abstractly and quantitatively to understand that the table represents a proportional relationship, then apply their understanding to complete the table.
This problem corresponds most directly to the work students did in Lesson 7: More Soft Serve.

Suggested Next Steps: If students struggle . . .

- Consider asking how they can use the information given in the first row of the table to help them solve for the other values.
- Consider revisiting Lesson 7, Activity 1, Screen 6.

Problem 4

(Standard: **6.RP.A.3.C**)

In this problem, students calculate the percent of a quantity for any percentage. This problem corresponds most directly to the work students did in Lesson 11: Cost Breakdown.

Suggested Next Steps: If students struggle . . .

- Consider asking students to describe how to write a percent as a fraction, and how that might help them solve the problem.
- Consider revisiting Lesson 11, Activity 1, Screen 5.

Problem 5

(Standards: **6.RP.A.3.D, MP3**)

In this problem, students use ratio reasoning to convert measurement units. They construct a viable argument to justify their response.
This problem corresponds most directly to the work students did in Lesson 3: Pen Pals.

Suggested Next Steps: If students struggle . . .

- Consider reminding students that writing fractions can be a helpful strategy for converting measurement units.
- Consider revisiting Lesson 3, Activity 1, Screen 5.

Unit 6.3, End Assessment Summary and Rubric: Form A

Problem 6

(Standards: **6.RP.A.3, 6.RP.A.3.C**)

In this problem, students calculate an unknown percentage and use rate reasoning to solve problems. This problem corresponds most directly to the work students did in Lesson 4: Model Trains and Lesson 12: More Bicycle Goals.

Suggested Next Steps: If students struggle . . .

- Consider asking students to think about the math strategies that align with the vocabulary in each problem (percent, rate).
- Consider revisiting Lesson 4, Activity 1 and Lesson 12, Activities 1 and 2.

Problem 7

(Standard: **6.RP.A.3.C**)

In this problem, students solve problems involving finding the whole given a part and the percent and write expressions to represent percent situations. This problem corresponds most directly to the work students did in Lesson 10: What's Missing? and Lesson 11: Cost Breakdown.

Suggested Next Steps: If students struggle . . .

- Consider having students use each part of the problem to help with the other part. Ask students if there are any clues in the first problem that can help with the second problem, and vice versa.
- Consider revisiting Lesson 10, Activity 1, or Lesson 11, Activity 2.

Unit 6.3, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
1	6.RP.A.3.C	• 35 miles			• Students who select 1.4 miles may have calculated $\frac{70}{50}$. • Students who select 20 miles may have calculated $70 - 50$. • Students who select 71.4 miles may have calculated $\frac{50}{70} \cdot 100$.	Did not attempt.
2	6.RP.A.2, MP6	Student selects all of the correct choices and does not select any incorrect choices. • The recipe uses $\frac{3}{8}$ teaspoons of oil per tomato. • He needs $\frac{3}{4}$ teaspoons of oil for every 2 tomatoes.	Student selects one of the correct choices and does not select any incorrect choices. Student selects both of the correct choices and one incorrect choice.	Student selects one of the correct choices and one incorrect choice.	Student only selects incorrect choices. Student selects two or more incorrect choices with the correct choices.	Did not attempt.

Unit 6.3, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3	6.RP.A.3.B, MP2	Work is complete and correct. • $\$24.50$ • 10 pounds	Work shows conceptual understanding and mastery, with minor errors. One of the two values in the table is correct.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 122.50 in the third row may have multiplied $35 \cdot 3.5$.	Weak evidence of understanding. • Student uses addition instead of multiplication as the relationship between columns (e.g., student writes 14.50 in row 2).	Did not attempt.
4	6.RP.A.3.C	Work is complete and correct. • 123 pages	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 121 pages may have calculated 40% of 300 and then added 1.	Weak evidence of understanding. • Students who write 13.6 pages may have calculated $\frac{41}{300} \cdot 100$.	Did not attempt.

Unit 6.3, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5	6.RP.A.3.D, MP3	Work is complete and correct. • Small There are about $\frac{22}{10}$ pounds per kilogram, so 4 kilograms is about $4 \cdot \frac{22}{10} = 8.8$ pounds.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of converting units. • Students who write that the pumpkin is small because they calculated that 3.2 pounds is equal to 1.8 kilograms may have multiplied by 10 and divided by 22.	Incorrect answer without an explanation or with an incorrect explanation. • Students who write big because they calculated $4 \cdot 22 = 88$ pounds. • Students who write big because $10 - 4 = 6$ or $22 - 4 = 18$.	Did not attempt.
6.1	6.RP.A.3, 6.RP.A.3.C	Work is complete and correct. • 20%	Work shows conceptual understanding and mastery, with minor errors. • Students who write 0.2% may have calculated $\frac{14}{70}$.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 14.8% may have calculated $\frac{2}{14} \cdot 100$. • Students who write 2.85% may have calculated $\frac{2}{70} \cdot 100$.	Weak evidence of understanding.	Did not attempt.

Unit 6.3, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.2	6.RP.A.3, 6.RP.A.3.C	Work is complete and correct. • 10 hours	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 5 hours may have calculated $\frac{70}{14}$.	Weak evidence of understanding. • Students who write 35 hours may have calculated $\frac{70}{2}$.	Did not attempt.
7.1	6.RP.A.3.C	Work is complete and correct. • $\$40$	Work shows conceptual understanding and mastery, with minor errors. • Students who write $\$3.60$ may have used $\$12$ as the regular price and calculated the savings.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $\$8.40$ may have used $\$12$ as the regular price and calculated 70% of the price.	Weak evidence of understanding. • Students who write $\$2.50$ may have calculated $\frac{30}{12}$.	Did not attempt.

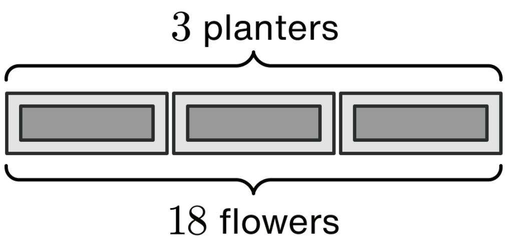
Unit 6.3, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
7.2	6.RP.A.3.C	Student successfully writes a question that could be solved with the given expression. • How many dollars will you save on a $56 item that is 30% off? • How many dollars will you save on a $30 item that is 56% off? • How much does a $56 item cost that is discounted 70%?	Question can be answered using the expression, but does not reference the given context.	Question cannot be answered using the expression, but does reference the given context.	Question includes the numbers 30 and 56 but does not describe how they are related.	Did not attempt.

Unit 6.4, Readiness Check Name ______________________________

1. Nekeisha is planting flowers in her class garden. 18 flowers fill 3 small planters.

   How many flowers fill 1 small planter?



What is the value of:

2.1 $16 \div 2$?

2.2 $7 \div 2$?

2.3 $\frac{1}{2} \div 3$?

3.1 Select **all** choices that have the same value as $20 \div 5$.

☐ $\frac{20}{5}$ ☐ $\frac{5}{20}$ ☐ 4 ☐ $\frac{1}{4}$ ☐ $5 \div 20$

3.2 Select **all** choices that have the same value as $\frac{10}{4}$.

☐ $10\frac{1}{4}$ ☐ $\frac{5}{2}$ ☐ $2\frac{1}{2}$ ☐ $\frac{20}{8}$ ☐ $\frac{8}{2}$

 Name ________________________________

4. Which has a greater value: $\frac{3}{10}$ or $\frac{13}{20}$? Explain your reasoning.

What is the value of:

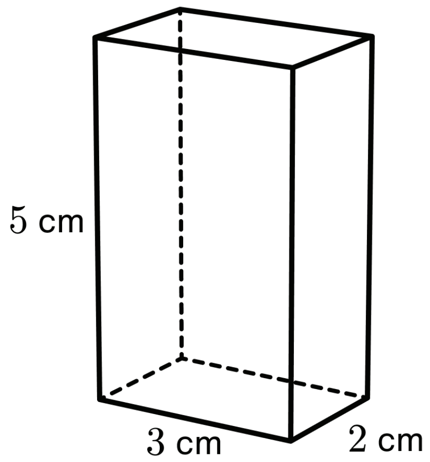
5.1 $9 \cdot \frac{1}{2}$?

5.2 $\frac{1}{2} \cdot \frac{3}{4}$?

6.1 Which of these best describes the volume of a box?

A. The number of faces the box has.
B. The number of cubes that fit in the box.
C. The amount of paint needed to cover the box.
D. The weight of the box.

6.2 What is the volume of this rectangular prism?



Answer Key

1. 6 flowers

2.1 8

2.2 3.5 (or equivalent)

2.3 $\frac{1}{6}$ (or equivalent)

3.1 $\frac{20}{5}$, 4

3.2 $\frac{5}{2}$, $2\frac{1}{2}$, $\frac{20}{8}$

4. $\frac{13}{20}$

Explanations vary.

- $\frac{3}{10}$ is less than one half and $\frac{13}{20}$ is more than one half.
- $\frac{3}{10}$ is equal to $\frac{6}{20}$, which is less than $\frac{13}{20}$.

5.1 $\frac{9}{2}$ (or equivalent)

5.2 $\frac{3}{8}$ (or equivalent)

6.1 The number of cubes that fit in the box.

6.2 30 cubic centimeters

Unit 6.4, Readiness Check Summary

For teachers who choose to spread out the questions, consider assigning the following:

- Problems 1 and 2 before Lesson 1
- Problems 3 and 4 before Lesson 5
- Problem 5 before Lesson 12
- Problem 6 before Lesson 13

Problem 1

(Standard: **3.OA.A.2**)

This question is intended to surface what students already know about division: splitting a number into equal-sized groups. This content first appears in Lesson 1: Cookie Cutter, where students connect division expressions with sharing cookies on plates.

Suggested Next Steps: If students struggle . . .

- Consider moving on, as there will be opportunities to revisit whole number division throughout the unit.

Problem 2

(Standards: **3.OA.B.6, 5.NF.B.7**)

This question is intended to surface what students already know about division, including dividing fractions by whole numbers. This content first appears in Lesson 1: Cookie Cutter, where students estimate quotients that involve both whole numbers and fractions.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time on the card sort in Lesson 1. Students will also review dividing fractions by whole numbers in Lesson 8's Warm-Up.

Problem 3

(Standards: **4.NF.A.1, 5.NF.B.3, MP7**)

This question is intended to surface what students already know about representing division in different ways, as an improper fraction or a mixed number, using the ÷ symbol. Students look for and make use of the structure of fractions to represent division. This content first appears in Lesson 5: Garden Bricks, where students draw tape diagrams for improper fractions and mixed numbers.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem before Lesson 5. Invite students to share how they decided if each choice did or did not have the same value as the original.

Problem 4

(Standards: **4.NF.A.2, MP3**)

This question is intended to surface different strategies for comparing fractions. Students construct a viable argument to justify their reasoning when determining which fraction has a greater value. This content first appears in Lesson 6: Fill the Gap, where students compare the size of fractions to determine whether a quotient is greater than or less than 1.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem before Lesson 6. Consider sharing the correct answer and inviting students to share reasons why it is correct.

Problem 5

(Standard: **5.NF.B.4**)

This question is intended to surface what students already know about multiplying fractions. This content first appears in Lesson 12: Puzzling Areas, where students multiply fractions to calculate areas with fractional side lengths.

Suggested Next Steps: If students struggle . . .

- Consider reviewing these problems before Lesson 12. Consider creating an anchor chart that shows strategies for multiplying fractions for students to refer back to for the rest of the unit.

Problem 6

(Standards: **5.MD.C.3, 5.MD.C.5.B**)

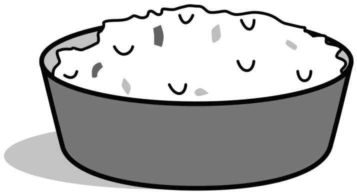
This question is intended to surface what students already know about how to determine the volume of a rectangular prism. This content first appears in Lesson 13: Volume Challenges, when students calculate volumes with fractional dimensions.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem before Lesson 13. Consider using models of rectangular prisms, such as tissue boxes or shoe boxes, to demonstrate how to calculate volume.

Unit 6.4, Quiz: Lessons 1–10 Name ______________________________

1. Sai is making 6 cups of rice for the next 4 days. If Sai divides the rice equally, how much rice would they have each day?



   A. $\frac{2}{3}$ of a cup

   B. 1 cup

   C. $1\frac{1}{2}$ cups

   D. 2 cups

2. Select **all** of the expressions whose quotient is greater than 1.

☐ $2 \div \frac{3}{4}$ ☐ $\frac{3}{4} \div 2$ ☐ $\frac{3}{4} \div \frac{1}{2}$ ☐ $\frac{1}{4} \div \frac{3}{2}$ ☐ $\frac{3}{2} \div 4$

Determine the value of each expression.

3.1 $4 \div \frac{2}{5}$

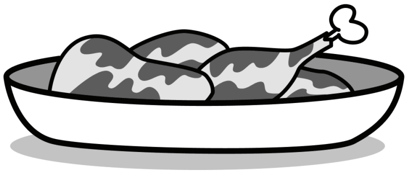
3.2 $1\frac{1}{2} \div \frac{3}{8}$

3.3 $\frac{3}{4} \div \frac{1}{3}$

Unit 6.4, Quiz: Lessons 1–10 Name ______________________________

4.1 Sai wants to make barbecue chicken. Each serving uses $\frac{2}{3}$ of a pound of chicken.

Sai has $4\frac{1}{3}$ pounds of chicken. How many servings can Sai make if they use all the chicken?



4.2 Sai wants to make a large pot of soup. $\frac{3}{5}$ of the pot will fill 15 bowls.

How many bowls will 1 pot of soup fill?

5.1 Describe a situation that could be represented by the expression $5 \div \frac{3}{4}$.

5.2 Determine the value of $5 \div \frac{3}{4}$ and explain what it means in your situation.

Unit 6.4, Quiz: Lessons 1–10

Answer Key

1. C. $1\frac{1}{2}$ cups

2. ✓ $2 \div \frac{3}{4}$

   ✓ $\frac{3}{4} \div \frac{1}{2}$

3.1 10

3.2 4

3.3 $\frac{9}{4}$ (or equivalent)

4.1 $6\frac{1}{2}$ servings (or equivalent)

4.2 25 bowls

5.1 *Responses vary*.

- Cameron uses a $\frac{3}{4}$-cup scoop to feed her dog. How many scoops of dog food can they get out of a 5-cup bag?
- I have walked for 5 minutes and I am $\frac{3}{4}$ of the distance to school. How long will my whole walk take?

5.2 $6\frac{2}{3}$

Responses vary.

- $6\frac{2}{3}$ is the number of scoops of dog food in the bag.
- My whole walk to school will take $6\frac{2}{3}$ minutes.

Unit 6.4, Quiz: Summary and Rubric

Content Standards Summary

Standard	6.NS.A.1
Problem	1, 2, 3, 4, 5

Problem 1
(Standard: **6.NS.A.1**)

In this problem, students solve a division problem by asking, "How many in 1 group?". This problem corresponds most directly to the work students did in Lesson 4: Flower Power.

Suggested Next Steps: If students struggle . . .
- Consider prompting students to use drawings, tape diagrams, or multiplication and division expressions to determine how many are in 1 group.
- Consider revisiting Lesson 4, Activity 1, Screen 2.

Problem 2
(Standards: **6.NS.A.1, MP7**)

In this problem, students estimate the value of quotients of fractions. They look for and make use of the structure of the two numbers being divided to decide if they are greater than 1. This problem corresponds most directly to the work students did in Lesson 6: Fill the Gap.

Suggested Next Steps: If students struggle . . .
- Consider asking students to draw a tape diagram to visualize the division.
- Consider revisiting Lesson 6: Practice Problems, Problem 1.

Unit 6.4, Quiz: Summary and Rubric

Problem 3

(Standard: **6.NS.A.1**)

In this problem, students calculate quotients of fractions. This problem corresponds most directly to the work students did in Lesson 7: Break It Down and Lesson 9: Division Challenges.

Suggested Next Steps: If students struggle . . .

- Consider prompting students to use common denominators to divide fractions.
- Consider revisiting Lesson 7, Activity 1 or Lesson 9, Activity 1.

Problem 4

(Standards: **6.NS.A.1, MP1**)

In this problem, students solve word problems involving division of fractions by fractions, including situations that ask “How many groups?” and “How many in 1 group?”. They make sense of the given information and persevere in solving a bigger problem. This problem corresponds most directly to the work students did in Lesson 5: Garden Bricks and Lesson 8: Potting Soil.

Suggested Next Steps: If students struggle . . .

- Consider reminding students of the two main strategies for algebraic fraction division that they worked with so far: creating common denominators to divide numerators, and dividing the dividend by the numerator of the divisor, then multiplying by the denominator.
- Consider revisiting Lesson 5, Activity 1 or Lesson 8, Activity 1.

Problem 5

(Standards: **6.NS.A.1, MP2**)

In this problem, students create contexts that are representative of fraction division problems. They reason abstractly when fitting the expression to a mathematical situation, and quantitatively to solve and explain the meaning of the value in context. This problem corresponds most directly to the work students did in Lesson 10: Swap Meet.

Suggested Next Steps: If students struggle . . .

- Consider having students draw the expression to visualize what is happening before determining a scenario.
- Consider moving on, as students will have more practice with this in upcoming lessons.

Unit 6.4, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
1	6.NS.A.1	Correct choice. • $1\frac{1}{2}$ cups			Incorrect choice. *Students who select $\frac{2}{3}$ of a cup may have divided 4 by 6.*	Did not attempt.
2	6.NS.A.1, MP7	**All correct** choices and **no incorrect** choices. • $2 \div \frac{3}{4}$ • $\frac{3}{4} \div \frac{1}{2}$	**One correct** choice and **no incorrect** choices. **Both correct** choices and **one incorrect** choice.	**One correct** choice and **one incorrect** choice.	**Only incorrect** choices. **Two or more incorrect** choices with some correct choices.	Did not attempt.
3.1	6.NS.A.1	Correct answer. • 10	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Students who write $\frac{8}{5}$ may have multiplied instead of divided.*	Work shows **limited understanding** of calculating quotients of fractions.	Did not attempt.

Unit 6.4, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.2	6.NS.A.1	Correct answer. • 4	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Students who write* $1\frac{1}{3}$ *may have calculated* $\frac{1}{2} \div \frac{3}{8}$.	Work shows **limited understanding** of calculating quotients of fractions.	Did not attempt.
3.3	6.NS.A.1	Correct answer. • $\frac{9}{4}$ (or equivalent)	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Students who write* $\frac{1}{4}$ *may have multiplied instead of divided.*	Work shows **limited understanding** of calculating quotients of fractions.	Did not attempt.
4.1	6.NS.A.1, MP1	Correct answer. • $6\frac{1}{2}$ servings (or equivalent)	Work shows **conceptual understanding**, with some errors. *E.g., Students who write* $\frac{2}{13}$ *may have calculated* $\frac{2}{3} \div 4\frac{1}{3}$.	Work shows **incomplete understanding** with significant errors. *E.g., Students who write* $2\frac{8}{9}$ *may have calculated* $\frac{2}{3}$ of $4\frac{1}{3}$.	Work shows **limited understanding** of solving word problems involving division of fractions by fractions.	Did not attempt.

Unit 6.4, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
4.2	6.NS.A.1	Correct answer. • 25 bowls	Work shows **conceptual understanding**, with some errors. *E.g., Students who write* $\frac{1}{25}$ *may have calculated* $\frac{3}{5} \div 15$.	Work shows **incomplete understanding**, with significant errors. *E.g., Students who write* 9 *bowls may have multiplied* 15 *by* $\frac{3}{5}$.	Work shows **limited understanding** of solving word problems involving division of fractions by fractions.	Did not attempt.
5.1	6.NS.A.1, MP2	Student successfully describes a situation that could be represented by the expression. • *E.g., Cameron uses a* $\frac{3}{4}$*-cup scoop to feed their dog. How many scoops of dog food can they get out of a* 5*-cup bag?*	Work shows **conceptual understanding**, with some errors. *E.g., Student describes a situation that could be represented by* $\frac{3}{4} \div 5$.	Work shows **incomplete understanding** with significant errors. *E.g., Student describes a situation that could be represented by* $5 \cdot \frac{3}{4}$.	Work shows **limited understanding** of how to create contexts that represent division of fractions.	Did not attempt.

Unit 6.4, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
5.2	6.NS.A.1, MP2	Correct answer with correct explanation. • $6\frac{2}{3}$ *E.g., $6\frac{2}{3}$ is the number of scoops of dog food in the bag.*	Work shows **conceptual understanding**, with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Students who correctly calculate the quotient but do not explain what the value means in their situation.*	Work shows **limited understanding** of calculating quotients of fractions and interpreting contexts that represent division of fractions.	Did not attempt.

Unit 6.4, End-Unit Assessment: Form A Name ______________________________

1. The value of $8 \div \frac{1}{12}$ is:

   A. Less than 1.   B. Greater than 1.   C. Equal to 1.

2. Select **all** of the expressions whose value is **less than** 1.

   ☐ $\frac{3}{5} \div \frac{1}{4}$ ☐ $\frac{4}{3} \div 5$ ☐ $\frac{4}{3} \div \frac{1}{5}$ ☐ $\frac{1}{5} \div \frac{3}{4}$ ☐ $\frac{3}{4} \div \frac{2}{5}$

Calculate:

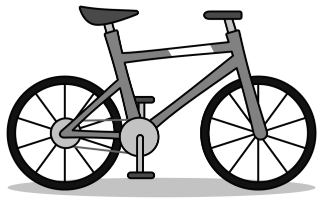
3.1 $\frac{10}{3} \div \frac{5}{6}$

3.2 $\frac{3}{5} \div \frac{1}{4}$

3.3 $\frac{8}{3} \div \frac{3}{2}$

4. Andrea biked $3\frac{1}{2}$ miles on Monday.

   On Tuesday, she biked $5\frac{1}{4}$ miles. How many times as far did Andrea bike on Tuesday?



5. Neo and Oliver are working together to calculate $5 \div \frac{3}{5}$.

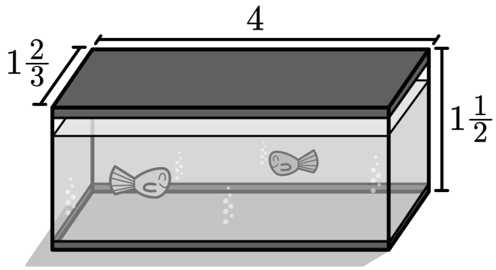
   Neo says that it is equal to $8\frac{1}{3}$. Oliver says that it is equal to $8\frac{1}{5}$.

   Who is correct?

   Show or explain your thinking.

Andrea's class is getting a new fish tank.

6.1 The base of the tank is a rectangle that is 4 feet by $1\frac{2}{3}$ feet. What is the area of the base?



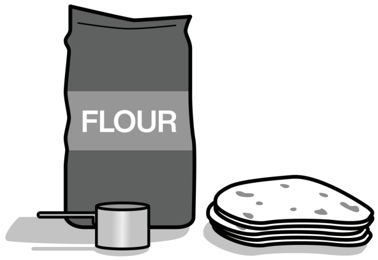
6.2 The new tank is 4 feet by $1\frac{2}{3}$ feet by $1\frac{1}{2}$ feet.

How many cubic feet of water can it hold?

Unit 6.4, End-Unit Assessment: Form A Name ________________________________

Amir and his grandma are making roti, an Indian bread. Amir's grandma uses a $\frac{3}{4}$-cup scoop. They need $5\frac{1}{2}$ cups of flour.

7.1 Draw a diagram or write an expression to represent how many scoops they need.



7.2 How many of Amir's grandma's scoops do they need?

7.3 Write a new question about Amir's grandma's $\frac{3}{4}$-cup scoop whose answer is 4 scoops.

Reflection: Select a question and answer it below.

☐ What is something you are proud of from this unit?

☐ Write what you know about a topic from this unit that you weren't asked about today.

☐ Describe or show one strategy you found helpful in this unit.
Name any students who helped you with this strategy.

☐ What else would you like your teacher to know?

1. B. Greater than 1

2. ✓ $\frac{4}{3} \div 5$

   ✓ $\frac{1}{5} \div \frac{3}{4}$

3.1 4

3.2 $\frac{12}{5}$ (or equivalent)

3.3 $\frac{16}{9}$ (or equivalent)

4. $1\frac{1}{2}$ times as far (or equivalent)

5. Neo

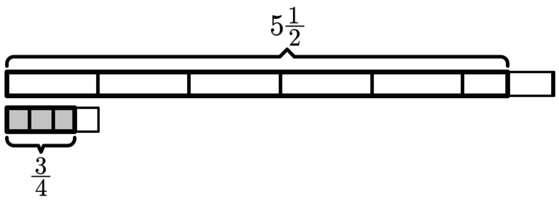
   Explanations vary.

   - $\frac{25}{5} \div \frac{3}{5} = \frac{25}{3} = 8\frac{1}{3}$
   - $5 = \frac{25}{5}$. 8 groups of $\frac{3}{5}$ make $\frac{24}{5}$, with $\frac{1}{3}$ of a group left over.

6.1 $6\frac{2}{3}$ square feet (or equivalent)

6.2 10 cubic feet

7.1 $5\frac{1}{2} \div \frac{3}{4}$ or



(or equivalent)

7.2 $7\frac{1}{3}$ of Amir's grandma's scoops (or equivalent)

7.3 *Responses vary.* The recipe also uses 3 cups of water. How many of Amir's grandma's scoops of water do they need?

Unit 6.4, End Assessment Summary and Rubric: Form A

Content Standards Summary

Standard	6.NS.A.1	6.G.A	6.G.A.2
Problems	1, 2, 3, 4, 5, 7	6	6

Problem 1
(Standard: **6.NS.A.1**)

In this problem, students demonstrate their understanding of quotients that do not contain whole numbers. This problem corresponds most directly to the work students did in Lesson 1: Cookie Cutter. The work in this problem helps students build toward estimating the values of quotients of fractions.

Suggested Next Steps: If students struggle . . .
- Consider having students use a division strategy like a tape diagram or common denominators to estimate.
- Consider revisiting Lesson 1, Activity 2, Screen 7.

Problem 2
(Standards: **6.NS.A.1, MP7**)

In this problem, students estimate the value of quotients of fractions. They look for and make use of the structure of the numerator, denominator, and whole expression to determine the relationship between their estimates and 1. This problem corresponds most directly to the work students did in Lesson 6: Fill the Gap.

Suggested Next Steps: If students struggle . . .
- Consider having students draw tape diagrams to visualize the division.
- Consider revisiting Lesson 6, Activity 1. If you revisited Lesson 1, Activity 2, Screen 7 from Problem 1 above, consider moving on.

Unit 6.4, End Assessment Summary and Rubric: Form A

Problem 3
(Standard: **6.NS.A.1**)

In this problem, students calculate quotients of fractions. This problem corresponds most directly to the work students did in Lesson 7:
Break it Down and Lesson 9: Division Challenges.

Suggested Next Steps: If students struggle . . .
- Consider prompting students to use common denominators to divide fractions.
- Consider revisiting Lesson 7: Practice Problems, Problem 2. Choose one or two problems to discuss as a class, based on overall assessment performance.

Problem 4
(Standard: **6.NS.A.1**)

In this problem, students apply division of fractions to compare lengths. This problem corresponds most directly to the work students did in Lesson 11: Classroom Comparisons.

Suggested Next Steps: If students struggle . . .
- Consider having students draw a visual representation of the distances to begin thinking of an estimate. Students can use any of the fraction division strategies from this unit to solve and check the reasonableness of their solution with their estimate.
- Consider revisiting Lesson 11, Activity 1, Screen 4.

Problem 5
(Standards: **6.NS.A.1, MP3**)

In this problem, students reason about remainders when dividing fractions. They critique the reasoning of others and justify their thinking algebraically and in writing. This problem corresponds most directly to the work students did in Lesson 5: Garden Bricks.

Suggested Next Steps: If students struggle . . .
- Consider suggesting they use a tape diagram or common denominators to divide fractions.
- Consider revisiting Lesson 5, Activity 1.

Unit 6.4, End Assessment Summary and Rubric: Form A

Problem 6

(Standards: **6.G.A, 6.G.A.2**)

In this problem, students calculate the volume of a rectangular prism with fractional edge lengths by calculating the area of the base and multiplying by the height. This problem corresponds most directly to the work students did in Lesson 12: Puzzling Areas and Lesson 13: Volume Challenges.

Suggested Next Steps: If students struggle . . .

- Consider asking students what it means to find the area in the first problem. If they are struggling with the second problem, consider asking students what the problem is asking for and how their first answer can help them solve this problem.
- Consider revisiting Lesson 12, Activity 2 or Lesson 13, Activity 2.

Problem 7

(Standards: **6.NS.A.1, MP2**)

In this problem, students solve word problems involving division of fractions by fractions and their ability to create contexts that represent division of fractions. They have to reason abstractly and quantitatively to formulate a question with a particular answer when given information in context. This problem corresponds most directly to the work students did in Lesson 10: Swap Meet.

Suggested Next Steps: If students struggle . . .

- Consider having students use their drawing from the first problem and mathematical thinking from the second problem to help them create a new context with fraction division in the third problem.
  Consider revisiting Lesson 10, Activity 2. Choose one expression for which to write a new question.

Unit 6.4, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
1	6.NS.A.1	• Greater than 1			• Students who select “Less than 1” may have reversed the order of the division.	Did not attempt.
2	6.NS.A.1, MP7	Student selects all of the correct choices and does not select any incorrect choices. • $\frac{4}{3} \div 5$ • $\frac{1}{5} \div \frac{3}{4}$	Student selects one of the correct choices and does not select any incorrect choices. Student selects both of the correct choices and one incorrect choice.	Student selects one of the correct choices and one incorrect choice.	Student only selects incorrect choices. Student selects two or more incorrect choices with the correct choices.	Did not attempt.
3.1	6.NS.A.1	Work is complete and correct. • 4	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 2 may have calculated $\frac{10}{6} \div \frac{5}{6}$ or $\frac{10}{3} \div \frac{5}{3}$.	Weak evidence of understanding.	Did not attempt.

Unit 6.4, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
3.2	6.NS.A.1	Work is complete and correct. • $\frac{12}{5}$ (or equivalent)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $\frac{3}{20}$ may have multiplied instead of divided. • Students who write 3 may have only divided the numerators.	Weak evidence of understanding.	Did not attempt.
3.3	6.NS.A.1	Work is complete and correct. • $\frac{16}{9}$ (or equivalent)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 4 may have multiplied instead of divided.	Weak evidence of understanding.	Did not attempt.
4	6.NS.A.1	Work is complete and correct. • $1\frac{1}{2}$ times as far (or equivalent)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $1\frac{3}{4}$ (or equivalent) may have answered “How many more miles did Andrea bike on Tuesday?”	Weak evidence of understanding.	Did not attempt.

Unit 6.4, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5	6.NS.A.1, MP3	Work is complete and correct. • Neo $\frac{25}{5} \div \frac{3}{5}$ $\frac{25}{3}$ $8\frac{1}{3}$	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation. • Students who choose Oliver may have made 8 groups of $\frac{3}{5}$ and noticed that there was 1 section remaining.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of dividing fractions. • Students who choose Oliver but explain that 8 groups of $\frac{3}{5}$ make $\frac{24}{5}$ with $\frac{1}{5}$ remaining.	Incorrect answer with incorrect explanation or or without an explanation.	Did not attempt.
6.1	6.G.A, 6.G.A.2	Work is complete and correct. • $6\frac{2}{3}$ square feet (or equivalent)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $4\frac{2}{3}$ may have multiplied the whole numbers and fractions separately.	Weak evidence of understanding.	Did not attempt.

Unit 6.4, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.2	6.G.A, 6.G.A.2	Work is complete and correct. • 10 cubic feet (or equivalent)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $4\frac{1}{3}$ may have multiplied the whole numbers and fractions separately.	Weak evidence of understanding.	Did not attempt.
7.1	6.NS.A.1	Student successfully draws a diagram or writes an expression to represent the situation. • $5\frac{1}{2} \div \frac{3}{4}$ or correct tape diagram	Minor flaws in expression or in tape diagram.	Expression or tape diagram that communicates partial understanding of applying dividing fractions to solve problems. • Division expression with values reversed. • Tape diagram that shows $5\frac{1}{2}$ with each unit divided into $\frac{1}{4}$s.	Incorrect answer with incorrect explanation or or without an explanation.	Did not attempt.

Unit 6.4, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
7.2	6.NS.A.1	Work is complete and correct. • $7\frac{1}{3}$ of Amir's grandma's scoops (or equivalent)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $\frac{3}{22}$ may have reversed the order of division.	Weak evidence of understanding.	Did not attempt.
7.3	6.NS.A.1, MP2	Student successfully writes a question related to the situation with an answer of 4 scoops. • How many of Amir's grandma's scoops are needed to measure 3 cups of water?	Question has an answer of 4 scoops, but does not reference Amir's grandma's $\frac{3}{4}$-cup scoop.	Question does not have an answer of 4 scoops, but does reference the given situation.	Question includes the number 4.	Did not attempt.

 Name ____________________

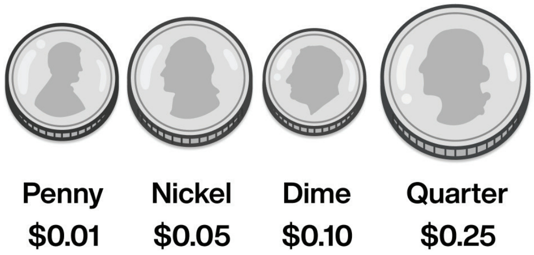
1. Gabriel has 3 quarters, 5 dimes, and 8 pennies. How much money does he have?

   A. $\$0.16$

   B. $\$0.88$

   C. $\$1.23$

   D. $\$1.33$



2. Select **all** of the ways to describe 0.25.

   - ☐ 25 tenths
   - ☐ 25 hundredths
   - ☐ 25 thousandths
   - ☐ 2 tenths and 5 hundredths
   - ☐ 2 hundredths and 5 thousandths

3. The number 0.9 is equivalent to $\frac{9}{10}$. Which of the following is equivalent to 4.9?

   A. $\frac{4.9}{10}$ B. $\frac{4.9}{100}$ C. $\frac{49}{10}$ D. $\frac{49}{100}$

4. Determine the value of each expression.

$115 + 197$	$202 - 12$

5. Determine the value of each expression.

$40 \cdot 200$	$42 \cdot 21$	$4 \cdot 0.2$

6. DeAndre's older sister saved the same amount of money each month for 4 months. If she has saved $\$536$ altogether, how much money did she save each month?

   Show or explain your thinking.

7.1 Circle all the **multiples** of 6 in this list.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

7.2 Circle all the **factors** of 24 in this list.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Answer Key

1. D. $\$1.33$

2. ✓ 25 hundredths

   ✓ 2 tenths and 5 hundredths

3. C. $\frac{49}{10}$

4. 312, 190

5. $8\,000$, 882, 0.8

6. $\$134$ per month. *Explanations vary*. You can determine how much money she saved each month by dividing 536 by 4. She saved $536 \div 4 = 134$ dollars per month.

7.1 $6, 12, 18, 24, 30$

7.2 $1, 2, 3, 4, 6, 8, 12, 24$

Unit 6.5, Readiness Check Summary

For teachers who choose to spread out the questions, consider assigning the following:

- Problem 1 before Lesson 1
- Problem 2 before Lesson 2
- Problems 3 and 4 before Lesson 3
- Problem 5 before Lesson 5
- Problem 6 before Lesson 9
- Problem 7 before Lesson 14

Problem 1

(Standard: **5.NBT.B.7**)

This question is intended to surface what students already know about using place value to add decimals expressed as money. This content first appears in Lesson 1: Dishing Out Decimals, where students make estimates and rough calculations about the amount it will cost to make various dishes.

Suggested Next Steps: If students struggle . . .

- Consider inviting them to share what they know about each of the coins, particularly about the difference between the value of the penny and the dime. If time allows, invite students to practice problems similar to this one before beginning Lesson 1.

Problem 2

(Standard: **5.NBT.A.3.A**)

This question is intended to surface what students already know about representing decimals using tenths and hundredths. This content first appears in Lesson 2: Decimal Diagrams, where students represent decimals using tenths, hundredths, and thousandths.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time during Screen 2 in Activity 1 discussing how tenths, hundredths, and thousandths are similar and different. During the discussion, make connections between tenths, hundredths, and thousandths and their decimal representations.

Problem 3

(Standards: **4.NF.C.6, 5.NBT.A.1, MP7**)

This question is intended to surface what students already know about the relationship between decimals, fractions, and place value. Students make use of structure as they convert a decimal to a fraction. This content first appears in Lesson 3: Fruit by the Pound, where students use place value and diagrams to add and subtract decimals.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time during Lesson 3 discussing the relationship between the fractions on Screen 2 and their decimal representations. If time allows, consider writing several different decimals as fractions as a class.

Problem 4

(Standard: **3.NBT.A.2**)

This question is intended to surface how fluently students can add and subtract whole numbers, including with borrowing. This content first appears in Lesson 3: Fruit by the Pound, where students use diagrams and vertical calculations to add and subtract decimals.

Suggested Next Steps: If students struggle . . .

- Consider reviewing each problem before Lesson 3. Consider monitoring for students who use different strategies and inviting those students to record their work for the class to refer to throughout the lesson and unit.

Problem 5

(Standards: **5.NBT.B.5, 5.NBT.B.7**)

This question is intended to surface what students already know about using place value to multiply, including multiplying by tenths. This content first appears in Lesson 5: Decimal Multiplication, where students use fraction multiplication and place value to multiply decimals.

Suggested Next Steps: If students struggle . . .

- Consider reviewing each problem before Lesson 5. To support students in thinking about place value and structure, consider asking how each problem is similar and different from the others.

Problem 6

(Standards: **4.NBT.B.6, MP3**)

This question is intended to surface what students already know about whole number division. Students construct a viable argument to support their answer. This content first appears in Lesson 9: Long Division Launch, where students use long division or other strategies to calculate quotients with no remainders.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time on the Warm-Up of Lesson 9. Consider monitoring for students who use different strategies and inviting those students to record their work for the class to refer to throughout the lesson and unit.

Problem 7

(Standards: **4.OA.B, 4.OA.B.4, MP7**)

This question is intended to surface what students already know about factors and multiples of a number. Students make use of structure to determine factors and multiples. This content first appears in Lesson 14: Common Multiples, where students determine the least common multiple of two numbers.

Suggested Next Steps: If students struggle . . .

- Consider creating an anchor chart about what it means for a number to be a factor or a multiple before students begin Lesson 14. To surface common early student thinking, consider asking: *Is a number a multiple of itself? Is a number a factor of itself?*

1. Rudra buys a peach that weighs 0.25 pounds and a watermelon that weighs 12.3 pounds.

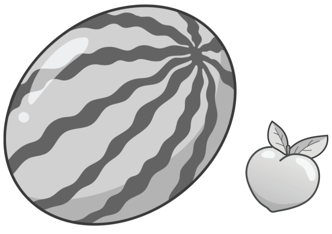
   How much do these fruits weigh in total?

   A. 12.28 pounds

   B. 12.325 pounds

   C. 12.55 pounds

   D. 14.8 pounds

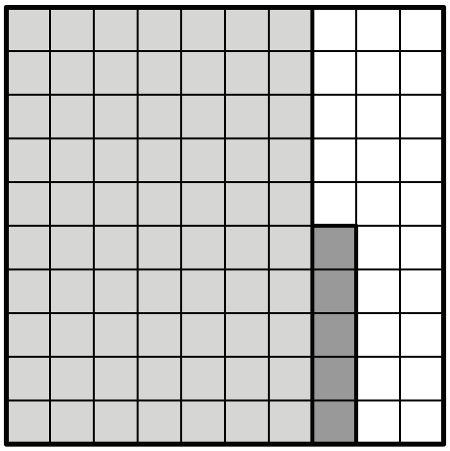


2. Determine the value of each expression.

$0.2 - 0.05$	$1.56 + 0.083$	$10 - 1.193$

Here is the work Yolanda did to calculate $0.75 - 0.5$.

$$0.75 - 0.5 = 0.70$$



3.1 What would you say to help Yolanda understand her mistake?

3.2 Calculate the value of $0.75 - 0.5$.

4. Parv had $\$5$ to buy 2 heads of broccoli and 4 lemons. Will Parv have money left over?

   Explain your thinking.

Head of Broccoli
$\$1.15$

Lemon
$\$0.53$

5.1 Describe a situation that could be represented by the expression $4 - 2.27$.

5.2 Determine the value of $4 - 2.27$.

5.3 Explain what this value means in your situation.

Answer Key

1. 12.55 pounds

2.1 0.15

2.2 1.643

2.3 8.807

3.1 *Responses vary*. I would tell Yolanda that she subtracted 5 hundredths instead of 5 tenths.

3.2 0.25

4. Yes. *Explanations vary*. I know Parv will have money left over because the broccoli will only cost $\$2.30$ and the lemons will cost just over $\$2$. The total cost will be well below $\$5$.

5.1 *Situations vary*. Parv had $\$4$. He bought a slice of pie for $\$2.27$.

5.2 1.73

5.3 *Explanations vary*. The number 1.73 represents how much change Parv will get when he buys his slice of pie.

Unit 6.5, Quiz 1: Summary and Rubric

Content Standards Summary

Standard	6.NS.B.3
Problem	1, 2, 3, 4, 5

Problem 1

(Standard: **6.NS.B.3**)

In this problem, students add decimals in context. This problem corresponds most directly to the work students did in Lesson 3: Fruit by the Pound.

Suggested Next Steps: If students struggle . . .

- Consider asking students what the word “total” is asking them to do.
- Consider revisiting Lesson 3, Activity 1, Screen 4.

Problem 2

(Standard: **6.NS.B.3**)

In this problem, students add and subtract decimals. This problem corresponds most directly to the work students did in Lesson 4: Missing Digits.

Suggested Next Steps: If students struggle . . .

- Consider suggesting they use a visual like a place value diagram or a vertical calculation.
- Consider revisiting Lesson 4, Activity 2, Screen 6. Decide what problem(s) to review based on what most students missed.

Unit 6.5, Quiz 1: Summary and Rubric

Problem 3

(Standards: **6.NS.B.3, MP3**)

In this problem, students subtract decimals and critique the reasoning of another student, helping them understand their mistake. This problem corresponds most directly to the work students did in Lesson 2: Decimal Diagrams.

Suggested Next Steps: If students struggle . . .

- Consider having students draw their own place value diagram to help them see the mistake.
- Consider revisiting Lesson 2, Activity 2 to go over using a place value diagram to subtract.

Problem 4

(Standards: **6.NS.B.3, MP3**)

In this problem, students use decimals to make estimates and calculations about money. They construct a viable argument to explain why they think there will or will not be money left over. This problem corresponds most directly to the work students did in Lesson 1: Dishing Out Decimals.

Suggested Next Steps: If students struggle . . .

- Consider suggesting students use a visual to help organize the given information before they begin any calculations.
- Consider moving on if students did not calculate the sum correctly, as they will learn decimal multiplication in Lesson 5.

Problem 5

(Standards: **6.NS.B.3, MP2**)

In this problem, students create contexts that represent subtraction of decimals. They reason abstractly and quantitatively when they write a situation that fits the given mathematical context and explain the meaning of their solution. This problem corresponds most directly to the work students did in Lesson 3: Fruit by the Pound.

Suggested Next Steps: If students struggle . . .

- Consider asking students to think about things in real life they are familiar with that can be expressed by the given numbers.
- Consider revisiting Lesson 4, Activity 2, Screen 6. Use one of the problem matches from this screen to write a situation that fits the expression and talk about the meaning of the solution in context.

Unit 6.5, Quiz 1: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.NS.B.3	Correct choice. • 12.55 pounds			Incorrect choice.	Did not attempt.
2.1	6.NS.B.3	Correct answer. • 0.15 pounds	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *Students who wrote* -0.03 *or* -0.3 *may have vertically aligned the digits without considering the place value.*	Work shows **limited understanding** of subtracting decimals.	Did not attempt.
2.2	6.NS.B.3	Correct answer. • 0.1643 pounds	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *Students who wrote* 2.39 *or* 0.239 *may have vertically aligned the digits without considering the place value.*	Work shows **limited understanding** of adding decimals.	Did not attempt.
2.3	6.NS.B.3	Correct answer. • 8.807 pounds	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *Students who write* 998.807 *or* 1.183 *may have vertically aligned the digits without considering the place value.*	Work shows **limited understanding** of subtracting decimals.	Did not attempt.

Unit 6.5, Quiz 1: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
3.1	6.NS.B.3	Correct description. *E.g., I would tell Yolanda that she subtracted 5 hundredths instead of 5 tenths.*	Work shows **conceptual understanding** with some errors. *Description includes explanation about how one of the values is not represented correctly but does not mention relevant operations.* *E.g., I would tell Yolanda that 0.5 should be half of the diagram.*	Work shows **incomplete understanding** with significant errors. *Description mentions how 0.5 is not represented accurately.* *E.g., I would tell Yolanda that 0.5 is not shaded correctly in the diagram.*	Work shows **limited understanding** of critiquing the reasoning of another student and helping them understand their mistake.	Did not attempt.
3.2	6.NS.B.3	Correct answer. • 0.25	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *Students who wrote 7.0 or 70 may have vertically aligned the digits without considering place value.*	Work shows **limited understanding** of subtracting decimals.	Did not attempt.

Unit 6.5, Quiz 1: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
4	6.NS.B.3	**Correct answer** with **correct explanation**. • Yes *E.g., I know Parv will have money left over because the broccoli will only cost $\$2.30$ and the lemons will cost just over $\$2$. The total cost will be well below $\$5$.*	**Correct answer** with **minor flaws in explanation**. **Incorrect answer** with **logical and complete explanation**.	**Correct answer** with **incomplete explanation**. **Incorrect answer** with **explanation that shows partial understanding**. *E.g., Student's work includes an attempt to calculate $2 \bullet 1.15$ and $4 \bullet 0.53$.*	**Incorrect answer** with **no explanation** or **incorrect explanation**.	Did not attempt.
5.1	6.NS.B.3	Correct description. *E.g., Parv had $\$4$. He bought a slice of pie for $\$2.27$.*	Work shows **conceptual understanding** with some errors. *E.g., Student represents subtraction accurately but decimal values do not make much sense in the context, such as "Parv had 4 eggs. He used 2.27 eggs."*	Work shows **incomplete understanding** with significant errors. *E.g., Student represents the values accurately but not the operation, such as, "Parv was given $\$4$. He then was given an additional $\$2.27$."*	Work shows **limited understanding** of creating contexts that represent subtraction of decimals.	Did not attempt.

Unit 6.5, Quiz 1: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
5.2–5.3	6.NS.B.3	Correct answer and description based on description from 5.1. • 1.73 *E.g., The number* 1.73 *represents how much change Parv will get when he buys his slice of pie.*	**Incorrect value** but **correct explanation** of value.	**Correct value** but **incorrect explanation** of value.	Work shows **limited understanding** of subtracting decimals and explaining the meaning of their solution.	Did not attempt.

Unit 6.5, Quiz 2: Lessons 1–11 Name ____________________

1. Determine the product of $0.03 \cdot 0.08$.

A. 2.4 B. 0.24 C. 0.024 D. 0.0024

2. Select **all** of the expressions that are equivalent to $5.2 \div 0.04$.

- ☐ $\frac{52}{10} \div \frac{4}{100}$
- ☐ $520 \div 4$
- ☐ $\frac{52}{100} \div \frac{4}{100}$
- ☐ $52 \div 4$
- ☐ $\frac{520}{100} \div \frac{4}{100}$

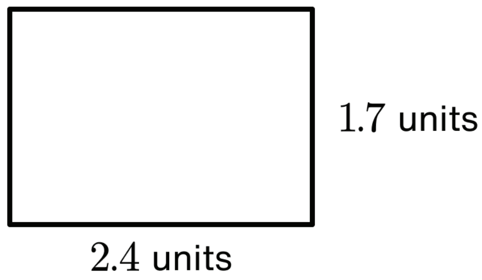
3. Determine the value of each expression.

$4.1 - 1.235$	$127 \div 4$	$15.48 \div 0.2$

 Name ______________________________

4. What is the area of this rectangle?

   Show or explain your thinking.



DeShawn keeps track of his exercise using different apps. Below is his exercise for this month.

Activity	**Miles**	**Hours**
Running	17.1	3
Swimming	2.53	1.1
Biking	45.175	5

5.1 How many miles did DeShawn run, swim, and bike in total this month?

5.2 DeShawn ran 17.1 miles in 3 hours.

How many miles per hour is that?

5.3 DeShawn claims that he bikes faster than he runs.

Do you agree? Explain how you know.

Answer Key

1. 0.0024

2. ✓ $\frac{52}{10} \div \frac{4}{100}$
   ✓ $520 \div 4$
   ✓ $\frac{520}{100} \div \frac{4}{100}$

3.1 2.865

3.2 31.75

3.3 77.4

4. 4.08 square units

   Explanations vary. The area is equal to $1.7 \cdot 2.4$, which is like $\frac{17}{10} \cdot \frac{24}{10}$. This equals $\frac{408}{100}$ or 4.08 square units.

5.1 64.805 miles

5.2 5.7 miles per hour

5.3 Yes.

Explanations vary. DeShawn bikes at a rate of $45.175 \div 5 = 9.035$ miles per hour. This is faster than DeShawn's running speed, which is 5.7 miles per hour.

Unit 6.5, Quiz 2: Summary and Rubric

Content Standards Summary

Standard	6.NS.B	6.NS.B.2	6.NS.B.3
Problems	2, 5	3	1, 4

Problem 1
(Standard: **6.NS.B.3**)

In this problem, students demonstrate their understanding of place value when multiplying decimals. This problem corresponds most directly to the work students did in Lesson 5: Decimal Multiplication.

Suggested Next Steps: If students struggle . . .
- Consider suggesting they use an area model or fractions to help with multiplication.
- Consider revisiting Lesson 5 Notes, Problem 2.1.

Problem 2
(Standards: **6.NS.B, MP7**)

In this problem, students make connections between dividing decimals and dividing fractions with common denominators. They look for and make use of structure with division and fractions to determine equivalent expressions. This problem corresponds most directly to the work students did in Lesson 8: Division Diagrams.

Suggested Next Steps: If students struggle . . .
- Consider suggesting they evaluate each expression to help compare them.
- Consider revisiting Lesson 8, Activity 1, Screen 7.

Unit 6.5, Quiz 2: Summary and Rubric

Problem 3

(Standard: **6.NS.B.2**)

In this problem, students subtract, multiply, and divide with decimals. This problem corresponds most directly to the work students did in Lesson 10: The Return of Long Division.

Suggested Next Steps: If students struggle . . .

- Consider having students use visual representations or vertical calculations.
- Consider moving on, but focusing on the Calculation Station in Practice Day 2.

Problem 4

(Standards: **6.NS.B.3, MP3**)

In this problem, students calculate the product of decimals that represent area. They construct viable arguments to explain their thinking and support their response. This problem corresponds most directly to the work students did in Lesson 6: Multiplying With Areas.

Suggested Next Steps: If students struggle . . .

- Consider asking students what it means to find the area of a rectangle.
- Consider revisiting Lesson 6, Activity 1, Screen 6, where students multiply using an area model.

Problem 5

(Standards: **6.NS.B, MP3**)

In this problem, students use decimal operations to solve problems in context. They analyze the information given to construct an argument to support whether or not they agree with another student’s response. This problem corresponds most directly to the work done in Practice Day 1.

Suggested Next Steps: If students struggle . . .

- Consider having students focus on one problem at a time. Suggest they think about the math vocabulary in the problem (e.g. “total” and “per”) and what those words mean.
- Consider moving on, as students will see decimal operations in context later in Math 6 and also in Math 7 and Math 8.

Unit 6.5, Quiz 2: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.NS.B.3	Correct answer. • 0.0024 pounds			Incorrect choice.	Did not attempt.
2	6.NS.B	**All correct** choices and **no incorrect** choices. • $\frac{52}{10} \div \frac{4}{100}$ • $520 \div 4$ • $\frac{520}{100} \div \frac{4}{100}$	**One or two correct** choices and **no incorrect** choice. **All correct** choices and **one incorrect** choice.	**One or two correct** choices but also includes **two incorrect** choices.	**Only incorrect** choices. **Two incorrect** choices with some correct choices.	Did not attempt.
3.1	6.NS.B.2	Correct answer. • 2.865 pounds	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *Students who wrote* -1.194 *or* 0.2865 *may have vertically aligned the digits without consideration of place value.*	Work shows **limited understanding** of subtracting decimals.	Did not attempt.
3.2	6.NS.B.2	Correct answer. • 31.75 pounds	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Student places the decimal in the incorrect place, such as* 3.175 *or* 317.5.	Work shows **limited understanding** of dividing decimals.	Did not attempt.

Unit 6.5, Quiz 2: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.3	6.NS.B.2	Correct answer. • 77.4 pounds	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Student places the decimal in the incorrect place, such as* 7.74 *or* 774.	Work shows **limited understanding** of dividing decimals.	Did not attempt.
4	6.NS.B.3	**Correct answer** with **correct explanation**. • 4.08 square units *E.g., The area is equal to* $1.7 \bullet 2.4$, *which is like* $\frac{17}{10} \bullet \frac{24}{10}$. *This equals* $\frac{408}{100}$ *or* 4.08 *square units.*	**Correct answer** with **minor flaws in explanation**. **Incorrect answer** with **logical and complete explanation**.	**Correct answer** with **incomplete explanation**. **Incorrect answer** with **explanation that shows partial understanding**. *E.g., Student's work includes an attempt to calculate* $1.74 \bullet 2.4$.	**Incorrect answer** with **no explanation** or **incorrect explanation**.	Did not attempt.
5.1	6.NS.B	Correct answer. • 64.805 *miles*	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. • *Students who wrote* 45.599 *may have vertically aligned the digits without considering place value.* • *Students who wrote* 64.805 *may have added the miles, too.*	Work shows **limited understanding** of using decimal operations to solve problems in context.	Did not attempt.

Unit 6.5, Quiz 2: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5.2	6.NS.B	Correct answer. • 5.7 miles per hour	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Student places the decimal in the incorrect place, such as* 0.57 *or* 57.	Work shows **limited understanding** of dividing decimals.	Did not attempt.
5.3	6.NS.B	**Correct answer** with **correct explanation**. • Yes *E.g., DeShawn bikes at a rate of* $45.17 \div 5 = 9.035$ *miles per hour. This is faster than DeShanw's running speed, which is* 5.7 *miles per hour.*	**Correct answer** with **minor flaws in explanation**. **Incorrect answer** with **logical and complete explanation**. *E.g., Student's work includes an attempt to calculate and compare* $45.175 \div 5$ *and* $17.1 \div 3$.	**Correct answer** with **no explanation**. **Incorrect answer** with **explanation that shows partial understanding**. *E.g., Student's work includes an attempt to calculate* $45.175 \div 5$ *or* $17.1 \div 3$.	**Incorrect answer** with **no explanation** or **incorrect explanation**.	Did not attempt.

Unit 6.5, End-Unit Assessment: Form A Name ________________________________

1.1 Select **all** the numbers that are common multiples of 4 and 6.

☐ 2 ☐ 10 ☐ 12 ☐ 24 ☐ 40

1.2 What is the **least** common multiple of 4 and 6?

A. 2 B. 10 C. 12 D. 24

2. Which expression has the same value as $8.92 \div 0.8$?

A. $892 \div 80$ B. $892 \div 8$ C. $892 \div 800$ D. $\frac{892}{10} \div \frac{8}{100}$

3. Calculate the value of each expression.

$7.5 - 0.43$	$0.61 \cdot 4.3$	$224.7 \div 0.7$

4. The table shows how far Terrance biked this week.

   How many miles did he bike in total?

Day	Distance (miles)
Monday	1.3
Thursday	2
Saturday	0.475

5. Circle the expression that has the greater value.

   $2 \cdot 0.003$ $\qquad$ $0.2 \cdot 0.03$ $\qquad$ They have the same value.

   Explain your reasoning.

Here is the work Abdullah did to determine the greatest common factor of 4 and 12.

6.1 Explain why he is incorrect.

Abdullah's Work

Factors of 4: 1, 2
Factors of 12: 1, 2, 3, 4, 6
The greatest common factor is 2.

6.2 Determine the greatest common factor of 4 and 12.

 Name ______________________________

7.1 A shop charges $\$1.95$ for a small 3-ounce soft serve.

What is the cost per ounce of soft serve?

3 Ounces

7.2 A medium soft serve costs $\$0.64$ per ounce.

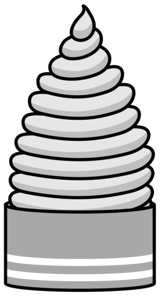
If a medium is 5.5 ounces, how much does it cost?

5.5 Ounces

7.3 The shop charges $\$6.85$ for a large 10-ounce soft serve.

Which size gets you the most soft serve per dollar?

Explain your thinking.



10 Ounces

Reflection: Select a question and answer it below.

- ☐ What is something you are proud of from this unit?
- ☐ Write what you know about a topic from this unit that you weren't asked about today.
- ☐ Describe or show one strategy you found helpful in this unit.
  Name any students who helped you with this strategy.
- ☐ What else would you like your teacher to know?

1.1 ✓ 12
✓ 24

1.2 12

2. $892 \div 80$

3.1 7.07

3.2 2.623

3.3 321

4. 3.775 miles

5. They have the same value.

Explanations vary. $2 \cdot 0.003$ is like $2 \cdot \frac{3}{1000}$ or 6 thousandths. $0.2 \cdot 0.03$ is like $\frac{2}{10} \cdot \frac{3}{100}$, which is also 6 thousandths, so they have the same value.

6.1 *Responses vary*. Abdullah is incorrect because he didn't list all of the factors of each number. Each number is a factor of itself. If Abdullah listed all of the factors, he would see that the greatest common factor is actually 4.

6.2 4

7.1 $\$0.65$

7.2 $\$3.52$

7.3 Medium.

Explanations vary. A small soft serve is $\$0.65$ per ounce. A medium soft serve is $\$0.64$ per ounce. A large soft serve is $\$0.685$ per ounce. Since the medium soft serve is the cheapest per ounce, it will get you the most soft serve per dollar.

Unit 6.5, End Assessment Summary and Rubric: Form A

Content Standards Summary

Standard	6.NS.B	6.NS.B.2	6.NS.B.3	6.NS.B.4
Problems	7	2	3, 4, 5	1, 6

Problem 1
(Standards: **6.NS.B.4, MP7**)

In this problem, students demonstrate their understanding of how to determine common multiples and a least common multiple of two numbers. They look for and make use of structure when using patterns to find common multiples. This problem corresponds most directly to the work students did in Lesson 14: Common Multiples.

Suggested Next Steps: If students struggle . . .
- Consider providing students with a 1–100 number chart, and clarify that the second problem is directly related to the first.
- Consider revisiting Lesson 14, Activity 1, Screens 3 and 4.

Problem 2
(Standard: **6.NS.B.2**)

In this problem, students demonstrate their understanding of using place value to write equivalent division expressions. This problem corresponds most directly to the work students did in Lesson 8: Division Diagrams. The work in this problem helps students build toward fluently dividing decimals.

Suggested Next Steps: If students struggle . . .
- Consider having students use a place value diagram.
- Consider revisiting Lesson 8, Activity 1, Screen 4 if they are struggling with answer choices A–C, or Lesson 8, Activity 1, Screen 6 if they are struggling with answer choice D.

Unit 6.5, End Assessment Summary and Rubric: Form A

Problem 3
(Standard: **6.NS.B.3**)

In this problem, students subtract, multiply, and divide multi-digit decimals. This problem corresponds most directly to the work students did in Lesson 4: Missing Digits, Lesson 7: Multiplication Methods, and Lesson 9: Long Division Launch.

Suggested Next Steps: If students struggle . . .
- Consider suggesting they use visual strategies that help with place value.
- Consider revisiting the Calculation Station in Practice Day 2, selecting 1–2 problems based on student performance.

Problem 4
(Standard: **6.NS.B.3**)

In this problem, students add multi-digit decimals. This problem corresponds most directly to the work students did in Lesson 3: Fruit by the Pound.

Suggested Next Steps: If students struggle . . .
- Consider having them use vertical addition, being sure to pay attention to place value.
- Consider revisiting Lesson 3, Activity 2, Screen 9.

Problem 5
(Standards: **6.NS.B.3, MP3**)

In this problem, students use fraction multiplication and place value to multiply decimals. They evaluate and compare two expressions, constructing a viable argument to justify their reasoning. This problem corresponds most directly to the work students did in Lesson 5: Decimal Multiplication.

Suggested Next Steps: If students struggle . . .
- Consider having students calculate the value of each expression, instead of estimating.
- Consider revisiting Lesson 5, Activity 1, Screen 7. Select only one representation to match the cards with, showing multiple representations.

Problem 6

(Standards: **6.NS.B.4, MP3**)

In this problem, students use the definition of greatest common factor to analyze student work and determine the greatest common factor of two numbers. They critique the work of another student, explaining where they see an error in the work. This problem corresponds most directly to the work students did in Lesson 15: Common Factors.

Suggested Next Steps: If students struggle . . .

- Consider asking students how they know when they have written out all of the factors of a number.
- Consider revisiting Lesson 15, Activity 1, Screen 6 to discuss strategies that can be used.

Problem 7

(Standards: **6.NS.B, MP6**)

In this problem, students multiply and divide decimals in context. They attend to precision when calculating unit price, total price, and comparing sizes, all while using the correct units of measurement. This problem corresponds most directly to the work students did in Lesson 11: Movie Time.

Suggested Next Steps: If students struggle . . .

- Consider asking students what “per dollar” is looking for, guiding them to use unit price to compare sizes.
- Consider having a brief class discussion about unit rates and how what they learned in Unit 3 is applied with decimals here.

Unit 6.5, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1.1	6.NS.B.4, MP7	Student selects both of the correct choices and does not select any incorrect choices. • 12 • 24	Student selects one of the correct choices and does not select any incorrect choices.	Student selects one or both of the correct choices but also includes an incorrect choice.	Student selects only incorrect choices. Student selects two or more incorrect choices with some correct choices.	Did not attempt.
1.2	6.NS.B.4	• 12			• Students who select 2 may have thought about common factors. • Students who select 10 may have added the numbers.	Did not attempt.
2	6.NS.B.2	• $892 \div 80$			• Students who choose $892 \div 8$ may have thought of both numbers as hundredths. • Students who choose $\frac{892}{10} \div \frac{8}{100}$ may have known one number was in tenths but was not sure which.	Did not attempt.

Unit 6.5, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.1	6.NS.B.3	Work is complete and correct. • 7.07	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing conceptual understanding, but with significant errors. • Students who write 0.32 or 3.2 may have vertically aligned the digits without consideration of place value.	Weak evidence of understanding.	Did not attempt.
3.2	6.NS.B.3	Work is complete and correct. • 2.623	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing conceptual understanding, with significant errors. • Students who write 26.23 may think the answer should have two decimal places since 0.61 has two decimal places.	Weak evidence of understanding.	Did not attempt.
3.3	6.NS.B.3	Work is complete and correct. • 321	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 32.1 may have rewritten the problem as $224.7 \div 7$.	Weak evidence of understanding.	Did not attempt.

Unit 6.5, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
4	6.NS.B.3	Work is complete and correct. • 3.775 miles	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 0.49 or 49 may have added the numbers without consideration of place value.	Weak evidence of understanding.	Did not attempt.
5	6.NS.B.3, MP3	Work is complete and correct. • They have the same value. Both expressions are equivalent to 0.006.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation. • Students who choose either expression may have correctly calculated that one of them is equivalent to 0.006.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of decimal multiplication. • Students who say they have the same value but do not explain what the value is or how they know.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.

Unit 6.5, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.1	6.NS.B.4, MP3	Student successfully explains why Abdullah is incorrect. • Abdullah is incorrect because he didn't list all of the factors of each number. Each number is a factor of itself. If Abdullah listed all of the factors, he would see that the greatest common factor is actually 4.	Student states that the greatest common factor is 4, but does not consider Abdullah's work.	Explanation that communicates partial understanding of greatest common factors. • Students who state that Abdullah forgot some of the factors, but do not specify.	Incorrect explanation.	Did not attempt.
6.2	6.NS.B.4	Work is complete and correct. • 4		Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 48 may have multiplied 4 and 12.	Weak evidence of understanding.	Did not attempt.

Unit 6.5, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
7.1	6.NS.B	Work is complete and correct. • $\$0.65$	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing conceptual understanding with significant errors. • Students who write $\$5.85$ may have multiplied $\$1.95$ and 3.	Weak evidence of understanding.	Did not attempt.
7.2	6.NS.B	Work is complete and correct. • $\$3.52$	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing conceptual understanding with significant errors. • Students who write $\$35.20$ may have multiplied 64 and 55 and thought the answer has two decimal places since 0.64 has two decimal places.	Weak evidence of understanding.	Did not attempt.
7.3	6.NS.B, MP6	Work is complete and correct. • Medium. A small soft serve is $\$0.65$ per ounce. A medium soft serve is $\$0.64$ per ounce. A large soft serve is $\$0.685$ per ounce.	Correct size with minor flaws in explanation. Incorrect size with a logical and complete explanation.	Correct size with an incomplete explanation. Incorrect size with explanation that communicates partial understanding.	Weak evidence of understanding.	Did not attempt.

 Name ______________________________

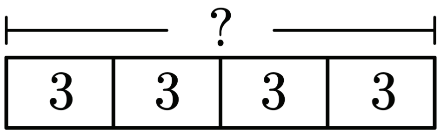
1. Which equation represents this tape diagram?

   A. $4 + 3 = ?$

   B. $? = 4 \cdot 3$

   C. $? = 3 \cdot 3 \cdot 3 \cdot 3$

   D. $4 \div 3 = ?$



Determine the unknown value in each equation.

2.1 $? + 15 = 35$

2.2 $4 \cdot\ ? = 28$

Determine the value of each expression.

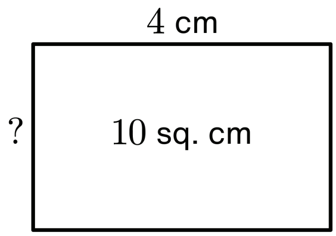
3.1 $21.8 + 9.8$

3.2 $10 - 7.05$

3.3 $4.3 \cdot 0.2$

3.4 $5.25 \div 0.25$

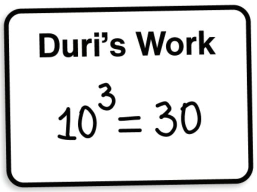
4. What is the missing length of the rectangle?

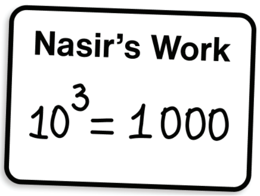


5. Duri says the value of 10^3 is 30 and Nasir says the value of 10^3 is 1000.

   Who is correct?

   Explain your thinking.





6.1 What is the value of $4 + 3 \cdot 5$?

6.2 Circle the expression that has the same value as $4 + 3 \cdot 5$?

$(4 + 3) \cdot 5$ $4 + (3 \cdot 5)$ $4 \cdot 3 + 5$

Explain your thinking.

7. Adriana and Fatima created patterns based on rules.

Adriana's pattern: $0, 2, 4, 6, 8, 10, 12, ...$ **Fatima's pattern:** $3, 6, 12, 24, 48, 96, ...$

Adriana's rule is to start with 0 and keep adding 2. What is Fatima's rule?

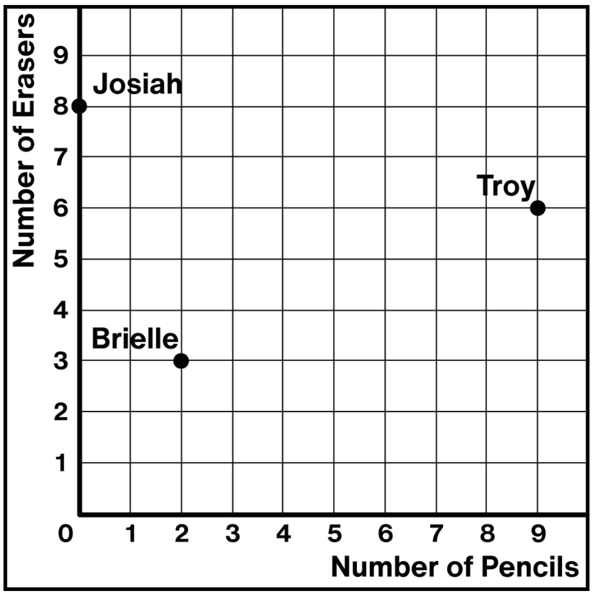
Here is a graph showing how many pencils and erasers a group of friends each have.

8.1 Who has the most **pencils**?

8.2 The point $(5, 7)$ represents the number of pencils and erasers Omari has.

Add Omari's point to the graph.

8.3 How many **erasers** does Omari have?



Answer Key

1. B. $? = 4 \cdot 3$

2.1 20

2.2 7

3.1 31.6

3.2 2.95

3.3 0.86

3.4 21

4. 2.5 cm

5. *Explanations vary.* Nasir is correct because 10^3 means $10 \cdot 10 \cdot 10$, which is equal to 1000.

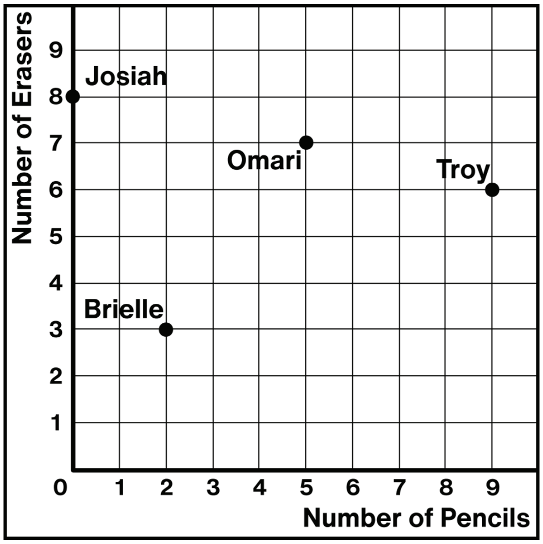
6.1 19

6.2 ✓ $4 + (3 \cdot 5)$
Explanations vary. This expression has the same value as $4 + 3 \cdot 5$ because both expressions multiply 3 and 5, then add 4. Both equal 19.

7. *Responses vary.* Fatima's rule is to start at 3 and multiply by 2 each time.

8.1 Troy

8.2



8.3 7 erasers

Unit 6.6, Readiness Check Summary

For teachers who choose to spread out the questions, consider assigning the following:
- Problems 1 and 2 before Lesson 1
- Problems 3 and 4 before Lesson 4
- Problems 5 and 6 before Lesson 10
- Problem 7 before Lesson 13
- Problem 8 before Lesson 14

Problem 1
(Standard: **3.OA.A**)

This question is intended to surface what students already know about using tape diagrams to represent relationships between whole numbers. This content first appears in Lesson 1: Weight for It, where students connect tape diagrams and equations.

Suggested Next Steps: If students struggle . . .
- Consider revisiting this question before beginning Lesson 1 and drawing a tape diagram to represent each choice. Consider leaving the tape diagrams and equations up for students to reference as they work through Lesson 1.

Problem 2
(Standards: **2.OA.A.1, 3.OA.A.4**)

This question is intended to surface what students already know about determining unknown numbers in addition and multiplication equations. This content first appears in Lesson 1: Weight for It, where students use reasoning to determine unknown weights on a see-saw.

Suggested Next Steps: If students struggle . . .
- Consider revisiting these questions as a class after Lesson 1 and asking: *What would this look like if it were represented with a see-saw? What about a tape diagram?*

Problem 3
(Standard: **6.NS.B.3**)

This question is intended to surface what students already know about decimal operations. This content first appears in Lesson 4: Hanging It Up, where students solve equations that include whole numbers, decimals, and fractions.

Suggested Next Steps: If students struggle . . .
- Consider using the snapshot tool to select students' thinking on the sketch tool and discuss strategies for each problem as a class before Lesson 4. Consider creating or referencing an anchor chart from Unit 5 with common strategies for adding, subtracting, multiplying, and dividing decimals.

Problem 4

(Standards: **3.OA.B.6, 3.MD.C.7**)

This question is intended to surface what students already know about undoing operations to determine unknown values. This content first appears in Lesson 4: Hanging It Up, where students may use division to think about solutions to equations that involve multiplication.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time during Lesson 4, Activity 1, Screen 2, surfacing strategies for determining the solution to the equation $4x = 7$.

Problem 5

(Standards: **5.NBT.A.2, MP3**)

This question is intended to surface what students already know about powers of 10. Students critique student work and justify their responses. This content first appears in Lesson 10: Powers, where students explain the meaning of expressions with exponents that are not powers of 10.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem before students begin Lesson 10. Encourage students to think of why someone might have selected Duri or Nasir and to make arguments as a class. Consider creating an anchor chart or leaving Nasir's work visible ($10^3 = 10 \cdot 10 \cdot 10 = 1000$) for students to reference throughout Lesson 10.

Problem 6

(Standards: **5.OA.A.1, MP3**)

This question is intended to surface what students already know about evaluating expressions with multiple operations, including expressions that contain parentheses. Students construct viable arguments when justifying their responses. This content first appears in Lesson 11: Exponent Expressions, where students evaluate expressions that include an exponent and one other operation.

Suggested Next Steps: If students struggle . . .

- Consider reviewing the order of operations and the purpose of parentheses before Lesson 11. Invite students to share what they remember about order of operations and create a class resource to refer to throughout the rest of the unit, adding to the resource after students have finished Lesson 11.

Problem 7

(Standards: **5.OA.B.3, MP7**)

This question is intended to surface how students identify relationships and describe patterns. Students look for and make use of structure when understanding the rules the students wrote. This content first appears in Lesson 13: Turtles All the Way, where students describe relationships between two variables shown in a table or diagram.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time during Lessons 13 and 14 focusing on describing relationships, particularly focusing on how that description shows up in a table and in an equation.

Problem 8

(Standard: **5.G.A.2**)

This question is intended to surface what students already know about plotting and interpreting coordinates in the first quadrant of the coordinate plane. This content first appears in Lesson 14: Representing Relationships, where students connect graphs and tables that represent the same relationship.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem before Lesson 14. If it does not come up naturally, consider asking students how to write each students' point on the graph as a coordinate pair and what that means about the number of pencils and erasers they each have.

Unit 6.6, Quiz: Lessons 1–9 Name ________________________________

1. Select **all** the equations where $x = 6$ is a solution.

☐ $4 = 2 + x$ ☐ $x - 11 = 5$ ☐ $12 = 2x$ ☐ $2 = 3x$ ☐ $\frac{1}{2}x = 3$

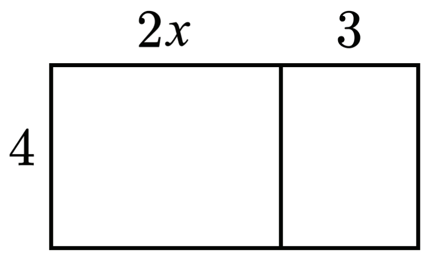
2. Which expression represents the area of this rectangle?

A. $4(2x + 12)$

B. $2(4x + 3)$

C. $8x + 12$

D. $8x + 3$



Determine the solution to each equation.

3.1 $3 + x = 10$	3.2 $1.8 = 2x$	3.3 $\frac{1}{3}x = 9$

Unit 6.6, Quiz: Lessons 1–9 Name ____________________________________

Here is an expression: $3(2a+6)$.

4.1 What is the value of this expression when $a=4$?

4.2 Write an equivalent expression. Draw a rectangle if it helps you with your thinking.

4.3 What is the value of your expression when $a=4$?

5.1 Cho has $\$10$ to buy tacos that cost $\$2.50$ each. Cho can buy x tacos in total.
Which equation represents this situation?

A. $10x = 2.50$ B. $2.50x = 10$ C. $x + 2.50 = 10$ D. $x + 10 = 2.50$

5.2 Here is a new equation: $12 + y = 20$.
Describe a situation that could represent this equation.

5.3 Determine the value of y.
Explain what it means in your situation.

Answer Key

1. ✓ $12 = 2x$

   ✓ $\frac{1}{2}x = 3$

2. **C.** $8x + 12$

3.1 $x = 7$

3.2 $x = 0.9$

3.3 $x = 27$

4.1 42

4.2 *Responses vary*.
$6a + 18$
$6(a + 3)$
$3(6 + 2a)$

4.3 42

5.1 $2.50x = 10$

5.2 *Situations vary*. Prisha already has 12 eggs. She needs 20 eggs to make an egg dish for a party. How many eggs does she need?

5.3 $y = 8$

Explanations vary. The number 8 represents how many more eggs Prisha needs to have a total of 20 eggs.

Unit 6.6, Quiz: Summary and Rubric

Content Standards Summary

Standard	6.EE.A.2.C	6.EE.A.3	6.EE.A.4	6.EE.B.5	6.EE.B.6	6.EE.B.7
Problems	4.1, 4.3	4.2	2	1, 5.2	5.1	3, 5.1, 5.3

Problem 1
(Standard: **6.EE.B.5**)

In this problem, students determine whether a number makes an equation true. This problem corresponds most directly to the work students did in Lesson 3: Hanging Around, where they determined if weights would balance hangers and make equations true.

Suggested Next Steps: If students struggle . . .
- Consider suggesting they use a visual representation like a hanger or tape diagram.
- Consider revisiting Lesson 3, Activity 1, Screen 6.

Problem 2
(Standards: **6.EE.A.4, MP7**)

In this problem, students identify when two expressions are equivalent. Students make use of structure as they choose an appropriate expression representing the area of a given figure.
This problem corresponds most directly to the work students did in Lesson 8: Products and Sums, where they used area models to make sense of the distributive property.

Suggested Next Steps: If students struggle . . .
- Consider asking students what “area” means, and how they can use the visual to solve.
- Consider revisiting Lesson 8, Activity 1, Screen 4, or moving on. Students will work closely with the distributive property in Math 7, Unit 6.

Unit 6.6, Quiz: Summary and Rubric

Problem 3

(Standard: **6.EE.B.7**)

In this problem, students solve equations of the form $x + p = q$ and $px = q$. This problem corresponds most directly to the work students did in Lesson 4: Hanging It Up, where they solved equations that included whole numbers, decimals, and fractions.

Suggested Next Steps: If students struggle . . .

- Consider suggesting they use a visual representation like a hanger or tape diagram to help them get started on the problems.
- Consider moving on, as students will continue to increase their fluency with solving equations in this unit and all future courses.

Problem 4

(Standards: **6.EE.A.2.C, 6.EE.A.3, MP7**)

In this problem, students generate equivalent expressions, particularly by applying the distributive property. Students make use of structure as they create equivalent expressions. This problem corresponds most directly to the work students did in Lesson 9: Products, Sums, and Differences, where they used the distributive property to write equivalent algebraic expressions.

Suggested Next Steps: If students struggle . . .

- Consider asking students how they can simplify the expression to no longer have parentheses if they are struggling with the second part of the problem.
- Consider revisiting Lesson 9: Notes, Problem 1.

Problem 5

(Standards: **6.EE.B.6, 6.EE.B.7, 6.EE.B.5, MP2, MP4**)

In this problem, students model with mathematics, using variables to write and solve equations from a context. They also reason abstractly and quantitatively in the second and third problems through writing a situation that fits the context, solving it, and explaining what the solution means. This problem corresponds most directly to the work students did in Lesson 5: Swap and Solve, where they wrote equations to represent situations, and wrote situations to represent equations.

Suggested Next Steps: If students struggle . . .

- Consider having students approach this as two separate problems: problem 5.1, and then the problems 5.2 and 5.3 together.
- Consider revisiting the Lesson 5 Cool-Down.

Unit 6.6, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.EE.B.5	**All correct** choices and **no incorrect** choices. • $12 = 2x$ • $\frac{1}{2}x = 3$	**One correct** choice or **one correct choice with one incorrect** choice. **Two correct choices and one incorrect** choice.	**One correct** choice but also includes **two incorrect** choices.	**Only incorrect** choices**.** **Two incorrect** choices with some correct choices.	Did not attempt.
2	6.EE.A.4	Correct choice. • $8x + 12$			Incorrect choice.	Did not attempt.
3.1	6.EE.B.7	Correct answer. • $x = 7$	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *Students who wrote* 13 *may have solved* $10 + 3 = x$.	Work shows **limited understanding** of solving equations of the form $x + p = q$.	Did not attempt.

Unit 6.6, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3.2	6.EE.B.7	Correct answer. • $x = 0.9$	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. • *Students who wrote* 3.6 *may have solved* $1.8 \bullet 2 = x$. • *Students who wrote* -0.2 *may have solved* $1.8 = 2 + x$.	Work shows **limited understanding** of solving equations of the form $px = q$.	Did not attempt.
3.3	6.EE.B.7	Correct answer. • $x = 27$	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. • *Students who wrote* 3 *may have solved* $\frac{1}{3} \bullet 9 = x$. • *Students who wrote* $8\frac{2}{3}$ *may have solved* $9 - \frac{1}{3} = x$.	Work shows **limited understanding** of solving equations of the form $px = q$.	Did not attempt.

Unit 6.6, Quiz: Summary and Rubric

Problem	**Standard**	**Meeting/Exceeding**	**Approaching**	**Developing**	**Beginning**	
		4	**3**	**2**	**1**	**0**
4.1	6.EE.A.2.C	Correct answer. • 42	Work shows **conceptual understanding** with some errors. *E.g., Student includes a clear attempt to distribute the* 3 *to both terms but makes a calculation error.*	Work shows **incomplete understanding** with significant errors. • *Students who write* 30 *may have incorrectly distributed the* 3 *to get* $6a + 6$*.* • *Students who write* 24 *may have incorrectly distributed the* 3 *to get* $2a + 18$*.*	Work shows **limited understanding** of generating equivalent expressions, particularly by applying the distributive property.	Did not attempt.
4.2	6.EE.A.3	Correct answer. *E.g.,* • $6a + 18$ • $6(a + 3)$ • $3(6 + 2a)$	Work shows **conceptual understanding** with some errors.	Work shows **incomplete understanding** with significant errors. *E.g., Student includes an equivalent expression of either* $6a$ *or* 18*, such as:* • $6a + 6$ • $6(a + 1)$ • $2a + 18$ • $2(a + 9)$	Work shows **limited understanding** of making use of structure as they create equivalent expressions.	Did not attempt.

Unit 6.6, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
4.3	6.EE.A.2.C	Correct answer based on equation from 4.2. • 42	Work shows **conceptual understanding** with some errors. *E.g., Student includes a clear attempt to substitute* 4 *with the correct operations but makes a calculation error, such as* $6(4) + 18 = 40$.	Work shows **incomplete understanding** with significant errors. *E.g., Student includes a clear attempt to substitute* 4 *but uses incorrect operations, such as* $6 + (4) + 18 = 28$.	Work shows **limited understanding** of generating equivalent expressions, particularly by applying the distributive property.	Did not attempt.
5.1	6.EE.B.6 6.EE.B.7	Correct answer. • $2.50x = 10$			Incorrect choice.	Did not attempt.
5.2	6.EE.B.5	Correct description. *E.g., Prisha already has* 12 *eggs. She needs* 20 *eggs to make an egg dish for a party. How many eggs does she need?*	Work shows **conceptual understanding** with some errors. *Description provides a context that uses subtraction.* *E.g., Prisha has* 20 *eggs and takes away* 12 *eggs to make an egg dish for a party.*	Work shows **incomplete understanding** with significant errors. *Description provides a context that uses another operation besides subtraction or addition.* *E.g., Prisha has* 20 *eggs and makes groups of* 12 *eggs.*	Work shows **limited understanding** of writing a situation that fits the context. *Description of* 12 *and* 20 *do not have matching units.*	

Unit 6.6, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
5.3	6.EE.B.7	Correct value and explanation based on description from 5.3. • 8 *(units from 5.2 situation)* *E.g.,* 8 eggs	**Incorrect value** but **correct explanation** of value**.**	**Correct value** but **incorrect explanation** of value.	Work shows **limited understanding** of writing a situation that fits the context, solving it, and explaining what the solution means.	Did not attempt.

Unit 6.6, End-Unit Assessment: Form A Name ____________________

1. Select **all** the equations where $x = 3$ is a solution.

☐ $x - 3 = 0$ ☐ $1 + x = 2$ ☐ $33 = 3x$ ☐ $12 = 4x$ ☐ $\frac{1}{2}x = 6$

2. Which expression is equivalent to $20 - 8d$?

A. $2(4d - 10)$

B. $4(5 - 8d)$

C. $4(5 - 2d)$

D. $(20 - 8)d$

Determine the solution to each equation.

3.1 $\frac{3}{4} + x = 6$	3.2 $24 = 2x$	3.3 $x + 8 = 12.4$

Here are four expressions.

4^3 3^4 $4 \cdot 4 \cdot 4$ $3 \cdot 4$

4.1 **Circle two** expressions that have the same value. Show or explain your thinking.

4.2 Here is a new expression: 5^4. Write an expression that has the same value.

Tyani is selling pizza to raise money for a field trip. She sells slices of pizza for $\$1.25$ each.

5.1 Complete the table on the right.

5.2 Write an expression that represents the amount of money they will earn if they sell s slices of pizza.

5.3 How many slices of pizza does Tyani need to sell to earn $\$100$?

Explain your reasoning.

Number of Pizza Slices Sold	Amount of Money Earned ($)
1	1.25
2	
20	
50	

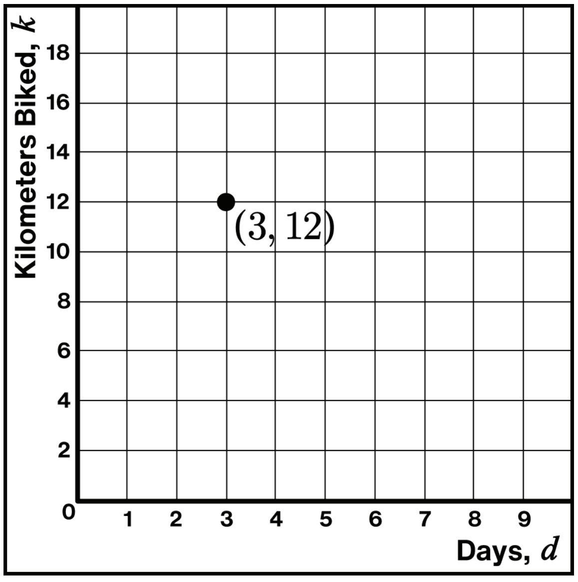
Kai started tracking the number of kilometers, k, they had biked after d days.

6.1 Kai made a graph. What does the point $(3, 12)$ say about Kai's situation?

6.2 Kai also wrote the equation $k = 4d$.

Use the equation to add **three more points** to Kai's graph.

Make a table if it helps you with your thinking.



Unit 6.6, End-Unit Assessment: Form A Name ___________________________

Here are three different diagrams.

Diagram A

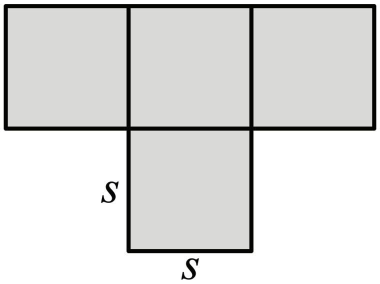


Diagram B

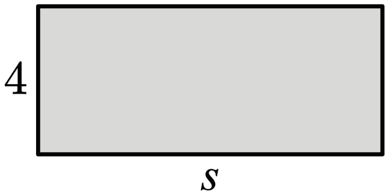
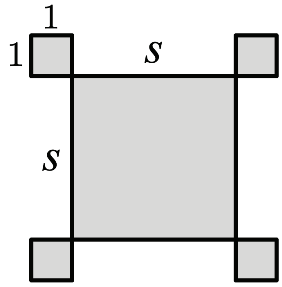


Diagram C



7.1 Match each diagram with an expression that describes its area.

$4 + s^2$	$4s^2$	$4s$
Diagram _____	Diagram _____	Diagram _____

7.2 Calculate the area of each diagram if $s = 3$.

$4 + s^2$	$4s^2$	$4s$

7.3 Habib drew a new diagram that has an area of $6 + 4s^2$.

What is the area of Habib's diagram when $s = \frac{1}{2}$?

Unit 6.6, End-Unit Assessment: Form A Name ______________________________

Reflection: Select a question and answer it below.

- ☐ What is something you are proud of from this unit?

- ☐ Write what you know about a topic from this unit that you weren't asked about today.

- ☐ Describe or show one strategy you found helpful in this unit.
  Name any students who helped you with this strategy.

- ☐ What else would you like your teacher to know?

1.1 ✓ $x - 3 = 0$
✓ $12 = 4x$

2. $4(5 - 2d)$

3.1 $x = 5\frac{1}{4}$ (or equivalent)

3.2 $x = 12$

3.3 $x = 4.4$

4.1 4^3 and $4 \cdot 4 \cdot 4$
Explanations vary. These have the same value because 4^3 means $4 \cdot 4 \cdot 4$, and they are both equal to 64.

4.2 *Responses vary*. $5 \cdot 5 \cdot 5 \cdot 5$

5.1

Number of Pizza Slices Sold	Amount of Money Earned ($)
1	1.25
2	2.50
20	25
50	62.50

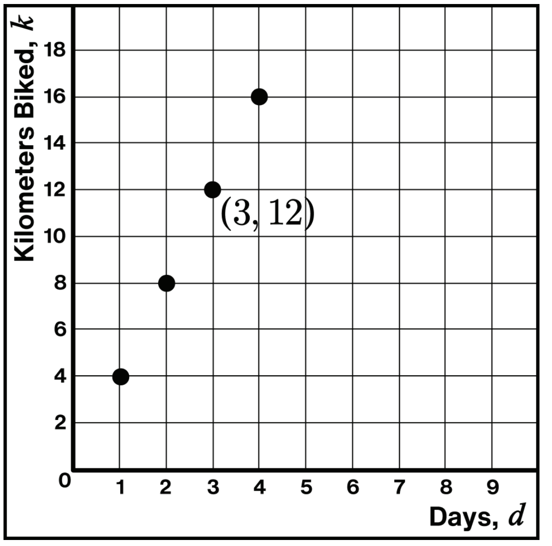
5.2 $1.25s$

5.3 80 slices of pizza

Explanations vary. Write the equation $100 = 1.25s$ and solve it or keep counting groups of 20 slices (each group earns $\$25$) until you get to $\$100$.

6.1 *Responses vary*. It means that after 3 days, Kai had biked 12 kilometers.

6.2 *Points vary*.



7.1 $4 + s^2$ Diagram C
$4s^2$ Diagram A
$4s$ Diagram B

7.2 $4 + (3)^2 = 13$ sq. units
$4(3)^2 = 36$ sq. units
$4(3) = 12$ sq. units

7.3 7 square units (or equivalent)

Unit 6.6, End Assessment Summary and Rubric: Form A

Content Standards Summary

Standard	6.EE.A.1	6.EE.A.2.A	6.EE.A.2.C	6.EE.A.4	6.EE.B.5	6.EE.B.6	6.EE.B.7	6.EE.C.9
Problems	4	5.2, 7.1	7.2, 7.3	2, 4.1	1	5.1, 5.3	3	6

Problem 1
(Standard: **6.EE.B.5**)

In this problem, students determine whether a number makes an equation true. This problem corresponds most directly to the work students did in Lesson 3: Hanging Around, where they determined if weights will balance hangers and make equations true.

Suggested Next Steps: If students struggle . . .
- Consider suggesting they use a hanger or tape diagram to visualize the equations.
- Consider revisiting Lesson 3: Practice Problems, Problems 2 and 3. Choose one hanger to discuss and solve as a class.

Problem 2
(Standard: **6.EE.A.4**)

In this problem, students identify whether two expressions are equivalent. This problem corresponds most directly to the work students did in Lesson 9: Products, Sums, and Differences, where they used the distributive property to write equivalent algebraic expressions, including expressions involving subtraction.

Suggested Next Steps: If students struggle . . .
- Consider having students draw an area model.
- Consider revisiting the Student Worksheet from the Card Sort, choosing any problem A–F to show the product.

Problem 3

(Standard: **6.EE.B.7**)

In this problem, students solve equations of the form $x + p = q$ and $px = q$. This problem corresponds most directly to the work students did in Lesson 4: Hanging It Up, where they solved equations that included whole numbers, decimals, and fractions.

Suggested Next Steps: If students struggle . . .

- Consider asking students to use strategies to represent the equations in other ways, which may help with solving.
- Consider revisiting Lesson 4: Practice Problems, Problem 2. Choose one of the six problems to look at as a class, based on the assessment results.

Problem 4

(Standards: **6.EE.A.1, 6.EE.A.4, MP3**)

In this problem, students demonstrate their understanding of exponent notation. They construct viable arguments to justify their responses to the first problem. This problem corresponds most directly to the work students did in Lesson 10: Powers, where they determined if two expressions containing exponents were equivalent.

Suggested Next Steps: If students struggle . . .

- Consider asking students to write each expression in another equivalent form.
- Consider revisiting Lesson 10, Activity 1, Screen 4. You do not need to do the entire activity.

Unit 6.6, End Assessment Summary and Rubric: Form A

Problem 5

(Standards: **6.EE.A.2.A, 6.EE.B.6, MP3, MP4**)

In this problem, students complete a table, model with mathematics to write an expression to represent a relationship, and then use the table and expression to solve a problem. They construct viable arguments when justifying their reasoning at the end of the problem. This problem corresponds most directly to the work students did in Lesson 6: Vari-apples, where they wrote expressions with variables to represent real world situations.

Suggested Next Steps: If students struggle . . .

- Consider having students approach the problem one part at a time. Highlight that the given variable, s, represents slices of pizza.
- Consider moving on, as students will continue to work with modeling and solving real world situations in Math 7 and Math 8.

Problem 6

(Standard: **6.EE.C.9**)

In this problem, students make sense of the relationship between two variables in an equation and a graph. This problem corresponds most directly to the work students did in Lesson 15: Connecting Representations, where they connected graphs, tables, and equations that represented the same relationship.

Suggested Next Steps: If students struggle . . .

- Consider asking students to describe what the labels on the graph represent if they are struggling on the first problem.
- Consider revisiting Lesson 15, Activity 1. Choose one row from the table to talk about as a class.

Problem 7

(Standards: **6.EE.A.2.A, 6.EE.A.2.C, MP7**)

In this problem, students evaluate numerical expressions that have an exponent and one other operation. They look for and make use of the structures of the figures to determine the area expressions. This problem corresponds most directly to the work students did in Lesson 12: Squares and Cubes, where they calculated areas and volumes of geometric patterns.

Suggested Next Steps: If students struggle . . .

- Consider suggesting that they use the figures as area models to help with the first and second problems.
- Consider revisiting Lesson 12, Activity 1, Screen 2.

Unit 6.6, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
1	6.EE.B.5	Student selects all of the correct choices and does not select any incorrect choices. • $x - 3 = 0$ • $12 = 4x$	Student selects one of the correct choices and does not select any incorrect choices. Student selects both of the correct choices and one incorrect choice.	Student selects one of the correct choices and one incorrect choice.	Student only selects incorrect choices. Student selects two or more incorrect choices with the correct choices.	Did not attempt.
2	6.EE.A.4	• $4(5 - 2d)$			• Students who select $4(5 - 8d)$ or $(20 - 8)d$ may have only multiplied one term. • Students who select $2(4d + 10)$ may have calculated each term without considering the operation.	Did not attempt.

Unit 6.6, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
3.1	6.EE.B.7	Work is complete and correct. • $x = 5\frac{1}{4}$ (or equivalent)	Work shows conceptual understanding and mastery, with minor errors in calculation.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 8 may have solved $\frac{3}{4}x = 6$. • Students who write $6\frac{3}{4}$ may have solved $\frac{3}{4} + 6 = x$.	Weak evidence of understanding.	Did not attempt.
3.2	6.EE.B.7	Work is complete and correct. • $x = 12$ (or equivalent)	Work shows conceptual understanding and mastery, with minor errors in calculation.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 48 may have solved $24 \cdot 2 = x$. • Students who write 22 may have solved $24 = 2 + x$.	Weak evidence of understanding.	Did not attempt.
3.3	6.EE.B.7	Work is complete and correct. • $x = 4.4$ (or equivalent)	Work shows conceptual understanding and mastery, with minor errors in calculation.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 20.4 may have solved $12.4 + 8 = x$.	Weak evidence of understanding.	Did not attempt.

Unit 6.6, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
4.1	6.EE.A.1, 6.EE.A.4, MP3	Student successfully answers the question and includes a logical and complete explanation. • 4^3 and $4 \cdot 4 \cdot 4$ 4^3 means $4 \cdot 4 \cdot 4$. They are both equal to 64.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of the situation.	Incorrect answer with incorrect explanation or without an explanation.	
4.2	6.EE.A.1	Work is complete and correct. *Responses vary*. • $5 \cdot 5 \cdot 5 \cdot 5$ • $5^3 \cdot 5$ • 625	Work shows conceptual understanding and mastery, with minor errors. • Students who attempt to multiply $5 \cdot 5 \cdot 5 \cdot 5$ but make an error in calculation.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $5 \cdot 4$ or 20 may understand that exponents involve multiplication. • Students who write $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$ may have written an equivalent expression to 4^5.	Weak evidence of understanding. • Students who write 9 may have mistaken exponentiation for addition.	Did not attempt.

Unit 6.6, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5.1	6.EE.B.6	Work is complete and correct. **Amount of Money Earned ($)** 1.25 2.50 25 62.50	Work shows conceptual understanding and mastery, with minor errors. Student writes two correct responses and one incorrect response.	Work shows a developing but incomplete conceptual understanding, with significant errors. Student writes one correct response and two incorrect responses.	Weak evidence of understanding.	Did not attempt.
5.2	6.EE.A.2.A, MP4	Work is complete and correct. • $1.25s$ • $m = 1.25s$	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors.	Weak evidence of understanding.	Did not attempt.
5.3	6.EE.B.6, MP3	Student successfully answers the question and includes a logical and complete explanation. • 80 slices of pizza I counted 4 groups of 20 slices, and each group earns $25.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation. Incorrect equation, but correct solution and explanation. Students makes a minor error calculating $100 \div 1.25$.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of the situation.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.

desmos

Unit 6.6, End Assessment Summary and Rubric: Form A

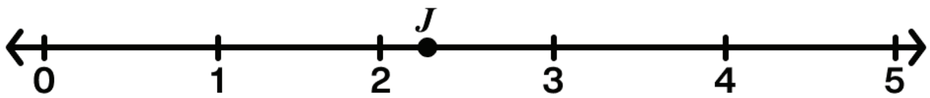
Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.1	6.EE.C.9	Student writes a logical and complete response. • It means that after 3 days, Kai biked 12 km.	Logical and complete response with minor flaws.	Incomplete response. Response that communicates students' partial understanding of the relationship between two variables in context. • Students who write that after 12 days Kai biked 3 km may have reversed the order of the coordinates.	Incorrect response.	Did not attempt.
6.2	6.EE.C.9	Work is complete and correct.	Work shows conceptual understanding and mastery, with minor errors. Student correctly plots two of the three points.	Work shows a developing but incomplete conceptual understanding, with significant errors. Student correctly plots one of the three points. Student reverses the x- and y-values for each point.	Weak evidence of understanding.	Did not attempt.

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
7.1	6.EE.A.2.A, MP7	Work is complete and correct. • $4 + s^2$ Figure C • $4s^2$ Figure A • $4s$ Figure B	Work shows conceptual understanding and mastery, with minor errors. Student correctly matches two expressions.	Work shows a developing but incomplete conceptual understanding, with significant errors. Student correctly matches one expression.	Weak evidence of understanding.	
7.2	6.EE.A.2.C	Work is complete and correct. • $4 + (3)^2 = 13$ • $4(3)^2 = 36$ • $4(3) = 12$	Work shows conceptual understanding and mastery, with minor errors. Student correctly calculates the value of two expressions.	Work shows a developing but incomplete conceptual understanding, with significant errors. Student correctly calculates the value of one expression.	Weak evidence of understanding.	Did not attempt.
7.3	6.EE.A.2.C	Work is complete and correct. • 7 square units (or equivalent)	Work shows conceptual understanding and mastery, with minor errors. • Students who write 10 may have used the expression $6 + 4s \cdot 2$.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write 8 may have used the expression $6 + 4s$. • Students who write $\frac{10}{4}$ (or equivalent) may have added $6 + 4$ as a first step.	Weak evidence of understanding.	

 Name ______________________________

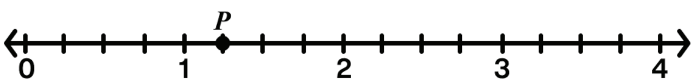
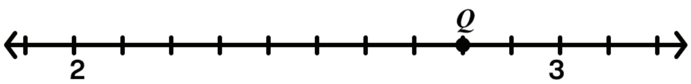
1. Adnan and Liam leave the post office at the same time. Adnan walks 50 feet in one direction and Liam walks 30 feet in the opposite direction. If they turn to wave at each other, how far apart are they? Explain or show your reasoning.

2. Select **all** the numbers that could represent point J on the number line.



- ☐ $\frac{2}{3}$
- ☐ 2.3
- ☐ $\frac{7}{3}$
- ☐ 2.25
- ☐ $\frac{3}{2}$

3. Write each point on the number line as a fraction and as a decimal.

Point	On the Number Line	As a Fraction	As a Decimal
P			
Q			

 Name ____________________

Complete each number sentence with the symbol $<$, $>$, or $=$.

4.1 $\frac{4}{3}$ ____ $\frac{3}{4}$

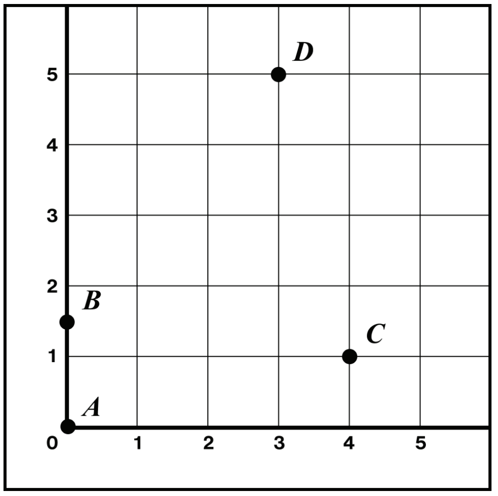
4.2 1.5 ____ $\frac{3}{2}$

4.3 $\frac{4}{5}$ ____ $\frac{4}{7}$

4.4 1.41 ____ 1.5

5. Write the coordinates of each point.

Point	Coordinates
A	$(0, 0)$
B	
C	
D	

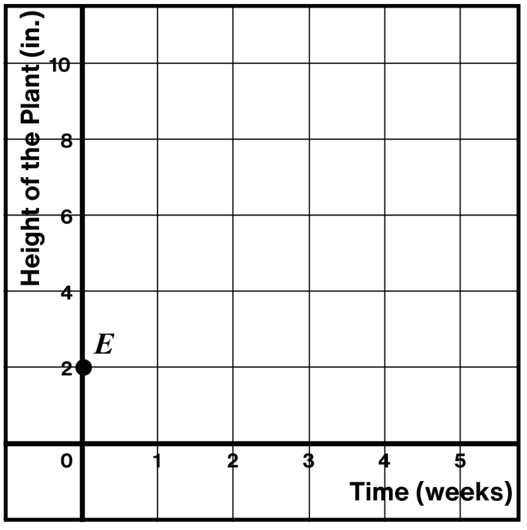


Sneha tracked the height of their plant as it grew from week to week.

6.1 After one week, the plant was 4 inches tall. Plot this point and label it F.

6.2 After two weeks, the plant was 5 inches tall. Plot this point and label it G.

6.3 What does point E mean about the plant?



Answer Key

1. 80 feet

   Explanations vary. Adnan is 30 feet away from the post office and Liam is 50 feet away, so in total, they are 80 feet away from each other.

2. ✓ 2.3
   ✓ $\frac{7}{3}$
   ✓ 2.25

3.

Point	As a Fraction	As a Decimal
P	$\frac{5}{4}$ (or equivalent)	1.25
Q	$\frac{28}{10}$ (or equivalent)	2.8

4.1 $\frac{4}{3} > \frac{3}{4}$

4.2 $1.5 = \frac{3}{2}$

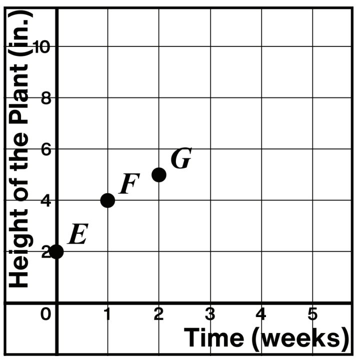
4.3 $\frac{4}{5} > \frac{4}{7}$

4.4 $1.41 < 1.5$

5.

Point	Coordinates
A	$(0,\ 0)$
B	$(0,\ 1.5)$
C	$(4,\ 1)$
D	$(3,\ 5)$

6.1 and 6.2



6.3 *Responses vary.* The plant was 2 inches ta
when Sneha started recording its height.

Unit 6.7, Readiness Check Summary

For teachers who choose to spread out the questions, consider assigning the following:

- Problem 1 before Lesson 1
- Problems 2 and 3 before Lesson 2
- Problem 4 before Lesson 3
- Problem 5 before Lesson 9
- Problem 6 before Lesson 10

Problem 1

(Standards: **4.MD.A.2, MP3**)

This question is intended to surface what students already know about measuring distances in opposite directions. They construct a viable argument to explain their reasoning. This content first appears in Lesson 1: Can You Dig It?, where students determine the locations of sand dollars to the right and left of 0.

Suggested Next Steps: If students struggle . . .

- Consider revisiting this question as a class before beginning Lesson 1, inviting two students to act as Adnan and Liam, and discussing their distance apart as a class. It may be helpful to plot Adnan's and Liam's locations on a number line.

Problem 2

(Standards: **3.NF.A.2.B, 4.NF.C.6**)

This question is intended to surface what students already know about estimating the locations of fractions and decimals on a number line. This content first appears in Lesson 2: Digging Deeper, where students plot and identify the locations of positive and negative rational numbers on the number line.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem as a class before beginning Lesson 2. Invite students to work with a partner to place each of the five choices on the number line. Then facilitate a brief whole-class discussion to surface the strategies students used.

Problem 3

(Standards: **3.NF.A.2.B, 4.NF.C.6, MP7**)

This question is intended to surface what students already know about representing fractions and decimals on the number line. Students use the structure of a number line to write the value of the point as both a fraction and a decimal. This content first appears in Lesson 2: Digging Deeper, where students plot and identify the locations of positive and negative rational numbers on the number line.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem as a class before beginning Lesson 2. Invite students to share what they notice and wonder about points P and Q before discussing strategies for writing their locations as fractions and decimals. For example, a student might surface that they know there are 3 tick marks between 2 and 3 on one number line and 9 tick marks between 2 and 3 on the other number line.

Problem 4

(Standards: **4.NF.A.2, 5.NBT.A.3.B**)

This question is intended to surface what students already know about comparing numbers written as decimals and fractions. This content first appears in Lesson 3: Order in the Class, where students practice comparing positive and negative numbers.

Suggested Next Steps: If students struggle . . .

- Consider sharing examples of incorrect responses and using a routine such as Clarify, Critique, Correct to analyze the errors after Lesson 3's Warm-Up.

Problem 5

(Standard: **5.G.A.1**)

This question is intended to surface what students already know about plotting points from Grade 5. This content first appears in Lesson 9: Sand Dollar Search, where students develop an understanding of negative numbers in the coordinate plane.

Suggested Next Steps: If students struggle . . .

- Consider spending extra time discussing incorrect thinking during Lesson 9's Warm-Up.
  If time allows, invite students to revisit this problem as a class and give them time to revise their responses.

Problem 6

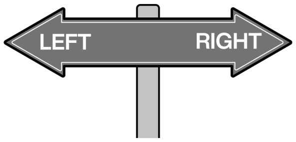
(Standards: **5.G.A.2, MP2**)

This question is intended to surface what students already know about plotting points in a coordinate plane to represent a real-world situation. It also addresses axes that are scaled by a value other than 1. As students explain the meaning of point E in context, they reason abstractly and quantitatively.This content first appears in Lesson 12: Graph Telephone, where students identify and interpret points on a graph to answer questions about situations in context, including the meaning of values that are negative.

Suggested Next Steps: If students struggle . . .

- On Problem 6.1, consider revisiting this question as a class before beginning Lesson 12.
- On Problem 6.2, consider highlighting the error of plotting $(2, 10)$ instead of $(2, 5)$. Ask students what advice they would give to someone who made this error.

Unit 6.7, Quiz: Lessons 1–5 Name ______________________



1. If these numbers were plotted on a number line, which would be farthest to the **left**?

   A. -2

   B. $-1\frac{3}{4}$

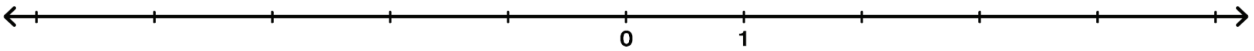
   C. $\frac{11}{4}$

   D. $-\frac{11}{4}$

2. Here are two numbers.

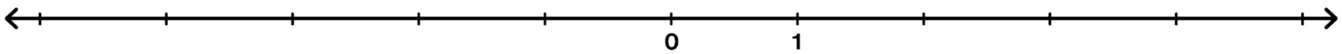
   -4 $\qquad\qquad$ $\frac{8}{3}$

   On the number line, plot and label:
   - Each number.
   - The opposite of each number.



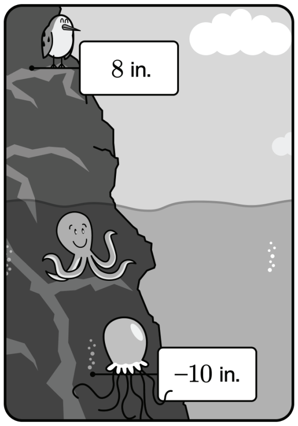
Complete each number sentence with the symbol $<$, $>$, or $=$.
Use the number line if it helps you with your thinking.

3.1 $\lvert 2\rvert$ ____ -2	3.2 $\lvert -3\rvert$ ____ -2.5	3.3 $-\frac{2}{3}$ ____ $\frac{3}{2}$	3.4 $-\frac{5}{2}$ ____ $-\frac{2}{5}$



 Name ______________________

Here is a snapshot of some creatures on the coast. The surface of the water has an elevation of 0 inches.



4.1 The octopus is under the water above the jellyfish. What could be the elevation of the octopus?

4.2 Which creature's elevation has the greatest absolute value?

Explain how you know.

4.3 Here are elevations of three other creatures. Order their elevations from lowest to highest.

- Andean condor: 800 feet
- Anglerfish: -2000 feet
- Giant squid: -1600 feet

Lowest Elevation ________ ________ ________ **Highest Elevation**

Decide if each statement is always, sometimes, or never true and explain your reasoning.

5.1 The absolute value of a number is negative.

(Circle one): Always Sometimes Never

Explain your reasoning.

5.2 A number and its opposite have the same absolute value.

(Circle one): Always Sometimes Never

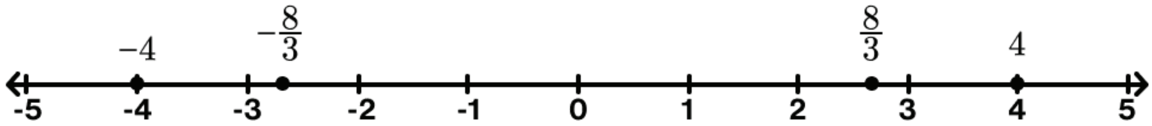
Explain your reasoning.

Unit 6.7, Quiz

Answer Key

1. D. $-\frac{11}{4}$

2.



3.1 $|2| > -2$

3.2 $|-3| > -2.5$

3.3 $-\frac{2}{3} < \frac{3}{2}$

3.4 $-\frac{5}{2} < -\frac{2}{5}$

4.1 *Responses vary.* Any elevation less than 0 inches and greater than -10 inches.

4.2 Jellyfish. *Explanations vary.* The absolute value is a number's distance from 0. In this situation, 0 inches represents the surface of the water and the jellyfish is the farthest away from the surface of the water.

4.3 Students may write either the creatures or the elevations.

Lowest Elevation	-2000 feet	-1600 feet	800 feet	**Highest Elevation**
Lowest Elevation	Anglerfish	Giant squid	Andean condor	**Highest Elevation**

5.1 Never. *Explanations vary.* The absolute value is a number's distance from 0. Distances aren't negative, so absolute value can't be negative.

5.2 Always. *Explanations vary.* The absolute value is a number's distance from 0. Opposites are always the same distance away from 0, so their absolute values are the same.

Unit 6.7, Quiz: Summary and Rubric

Content Standards Summary

Standard	6.NS.C.5	6.NS.C.6	6.NS.C.6.A	6.NS.C.6.C	6.NS.C.7.A	6.NS.C.7.B	6.NS.C.7.D
Problems	4.1	1	2.2	2.1	3	5.1	4.2, 4.3, 5.2

Problem 1
(Standard: **6.NS.C.6**)

In this problem, students use a number line to compare and order positive and negative numbers.
This problem corresponds most directly to the work students did in Lesson 3: Order in the Class.

Suggested Next Steps: If students struggle . . .
- Consider suggesting that students rewrite each number as a fraction with a denominator of 4.
- Consider moving on, as students will continue to use number lines when learning about inequalities.

Problem 2
(Standards: **6.NS.C.6.A, 6.NS.C.6.C**)

In this problem, students identify and plot positive and negative numbers on the number line.
This problem corresponds most directly to the work students did in Lesson 2: Digging Deeper.

Suggested Next Steps: If students struggle . . .
- Consider having students label the number line first. If they are having trouble plotting fractions, have them rewrite as improper fractions or decimals before plotting.
- Consider revisiting Lesson 2, Activity 1, Screen 7 to discuss what *opposite* means.

Problem 3

(Standards: **6.NS.C.7.A, MP6**)

In this problem, students use inequality symbols to compare numbers and their absolute values. They attend to precision when comparing rational numbers and absolute value expressions.
This problem corresponds most directly to the work students did in Lesson 5: Distance on the Number Line.

Suggested Next Steps: If students struggle . . .

- Consider asking students what the absolute value symbol means. Suggest they use the number line to help them compare values.
- Consider revisiting Lesson 5, Activity 1, Screen 6. Choose one or two cards to discuss, based on class quiz results.

Problem 4

(Standards: **6.NS.C.5, 6.NS.C.7.D, MP3**)

In this problem, students compare positive and negative numbers in context. They have to construct a viable argument to justify their response. This problem corresponds most directly to the work students did in Lesson 4: Sub-Zero.

Suggested Next Steps: If students struggle . . .

- Consider having students use a vertical number line to help with the first two problems. Suggest they use a number line in the third problem to generalize the relationship between the values.
- Consider moving on, as students will continue to compare values when they learn about inequalities in the lessons after the quiz.

Problem 5

(Standards: **6.NS.C.7.B, 6.NS.C.7.D, MP3**)

In this problem, students order positive and negative numbers. Students construct viable arguments to explain why statements are always, sometimes, or never true. This problem corresponds most directly to the work students did in Lesson 3: Order in the Class.

Suggested Next Steps: If students struggle . . .

- Consider asking students to try to find a counterexample to answer and/or explain their responses.
- Consider revisiting Practice Day 1, Problem 3.

Unit 6.7, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.NS.C.6	Correct choice. • $-\frac{11}{4}$			Incorrect choice.	Did not attempt.
2	6.NS.C.6.A 6.NS.C.6.C	Work is **complete** and **correct**.	Work shows **conceptual understanding** with some errors. *E.g., Student correctly graphs the numbers* -4 *and* $\frac{8}{3}$*, and one of their opposites.*	Work shows **incomplete understanding** with significant errors. *E.g., Student correctly graphs the numbers* -4 *and* $\frac{8}{3}$*, but not their opposites.*	Work shows **limited understanding** of identifying and plotting positive and negative numbers on the number line.	Did not attempt.
3	6.NS.C.7.A	**All correct** choices and **no incorrect** choices. • $\lvert 2\rvert > -2$ • $\lvert -3\rvert > -2.5$ • $-\frac{2}{3} < \frac{3}{2}$ • $-\frac{5}{2} < -\frac{2}{5}$	**Three correct** choices.	**Two correct** choices.	**Only incorrect** choices. **One correct** choice.	Did not attempt.

Unit 6.7, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
4.1	6.NS.C.5 6.NS.C.7.D	Correct answer. *E.g., Any elevation less than* 0 *inches and greater than* -10 *inches.*	Work shows **conceptual understanding** with some errors. *Students who wrote* -10 *may have thought they should give the elevation of the jellyfish.*	Work shows **incomplete understanding** with significant errors. *E.g., Student gives a value of* 0*.*	Work shows **limited understanding** of comparing the absolute value for different numbers. *E.g., Student gives a value that is above* 0*.*	Did not attempt.
4.2	6.NS.C.5 6.NS.C.7.D	Correct choice and explanation. • Jellyfish *E.g., The absolute value is a number's distance from* 0*. In this situation,* 0 *inches represents the surface of the water and the jellyfish is the farthest away from the surface of the water.*	**Correct answer** with **minor flaws in explanation.** **Incorrect answer** with **logical and complete explanation.** *E.g., Student says the bird has the greatest absolute value and explains that it is because it is a positive number.*	**Correct answer** with **incomplete explanation.** **Incorrect answer** with **explanation that shows partial understanding.**	**Incorrect answer** with **no explanation or incorrect explanation.** *E.g., Student says the octopus has the greatest absolute value because it is closest to* 0*.*	Did not attempt.

Unit 6.7, Quiz: Summary and Rubric

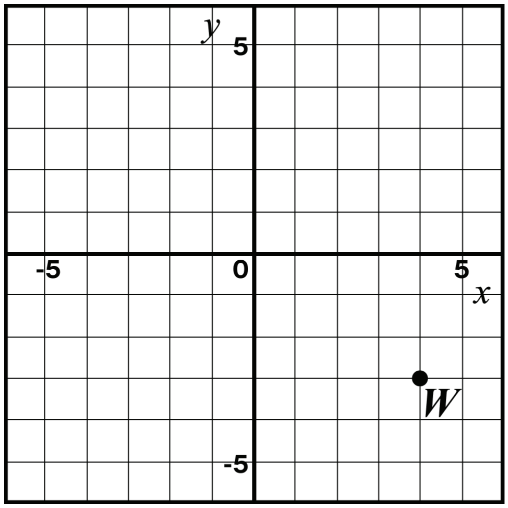
Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
4.3	6.NS.C.5 6.NS.C.7.D	Correct order. *From highest to lowest elevation:* • *Andean condor:* 800 *feet* • *Giant squid:* -1600 *feet* • *Anglerfish:* -2000 *feet*	Student reverses the order. • *Anglerfish:* -2000 *feet* • *Giant squid:* -1600 *feet* • *Andean condor:* 800 *feet*	Student switches the order of -1600 and -2000. • *Andean condor:* 800 *feet* • *Anglerfish:* -2000 *feet* • *Giant squid:* -1600 *feet*	Work shows **limited understanding** of comparing positive and negative numbers.	Did not attempt.
5.1	6.NS.C.7.B 6.NS.C.7.D	Correct choice and explanation. • Never *E.g., The absolute value is a number's distance from* 0*. Distances aren't negative, so absolute value can't be negative.*	**Correct answer** with **incomplete explanation**.	**Correct answer** with **no explanation**. **Incorrect answer** with **complete explanation**. *E.g., Sometimes because the value inside the absolute value bars is negative.* *Always because absolute value is always negative.*	**Incorrect answer** with **no explanation** or **incorrect explanation**.	Did not attempt.

Unit 6.7, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
5.2	6.NS.C.7.B 6.NS.C.7.D	Correct choice and explanation. • Always *E.g., The absolute value is a number's distance from* 0*. Opposites are always the same distance away from* 0*, so their absolute values are the same.*	**Correct answer** with **incomplete explanation.**	**Correct answer** with **no explanation.** **Incorrect answer** with **complete explanation.** *E.g., Sometimes because the value inside the absolute value bars can be both positive and negative.*	**Incorrect answer** with **no explanation** or **incorrect explanation.**	Did not attempt.

Unit 6.7, End-Unit Assessment: Form A Name ______________________________

1. Which are the coordinates of point W?



A. $(-3,\ 4)$

B. $(4,\ -3)$

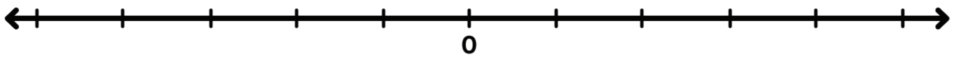
C. $(-4,\ 3)$

D. $(3,\ -4)$

2. Select **all** of the values of x that are solutions to the inequality $x > -1.5$.

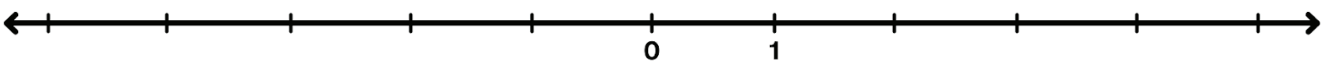
Use the number line if it helps you with your thinking.

- ☐ -5
- ☐ -2
- ☐ -1
- ☐ 0
- ☐ 2



3. Plot and label each number in its approximate location on the number line.

$-\frac{4}{3}$ $\quad 3 \quad$ -2 $\quad -\frac{4}{5} \quad$ $\frac{4}{3}$

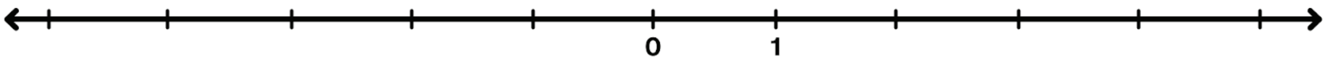


 Name ______________________________

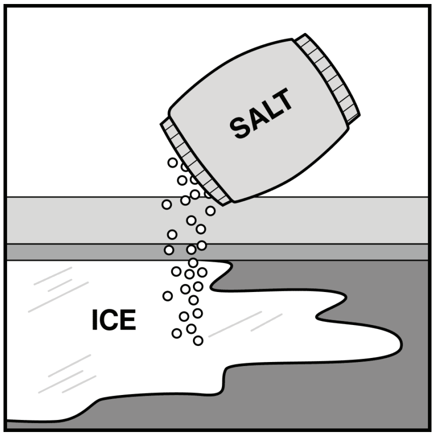
4. Complete each number sentence with the symbol $<$, $>$, or $=$.

   Use the number line if it helps you with your thinking.

$\frac{3}{2}$ ____ $-\frac{3}{2}$	$\lvert -5 \rvert$ ____ $\lvert -4.5 \rvert$	$-\frac{5}{3}$ ____ $-\frac{3}{5}$	$\lvert -5 \rvert$ ____ 5



People use salt to melt snow and ice. Salt only melts ice when the temperature is warmer than $-10°C$.

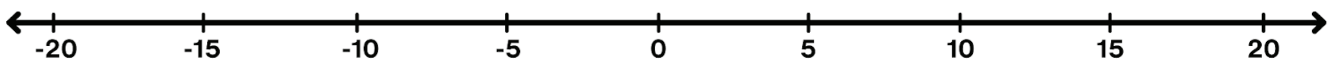


5.1 Which temperature is warmer? Circle one.

$-5°C$ $\qquad$ $-10°C$

Explain how you know.

5.2 Graph all the temperatures at which salt melts ice.



5.3 Write an inequality to describe all the temperatures, t, at which salt melts ice.

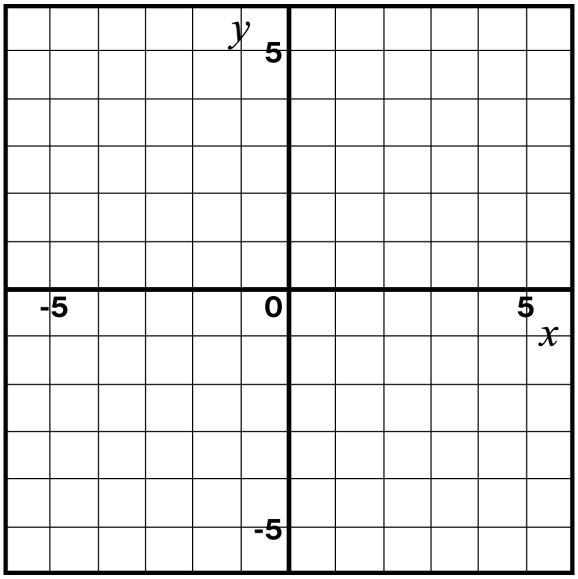
Unit 6.7, End-Unit Assessment: Form A Name ______________________________

6.1 Plot and label each of these points.

- $A\ (2,\ 4)$
- $B\ (2,\ -3)$
- $C\ (-3,\ 0)$
- $D\ (-3,\ 2)$

6.2 Connect the points in order to create a polygon.

6.3 What is the length of the segment between A and B?



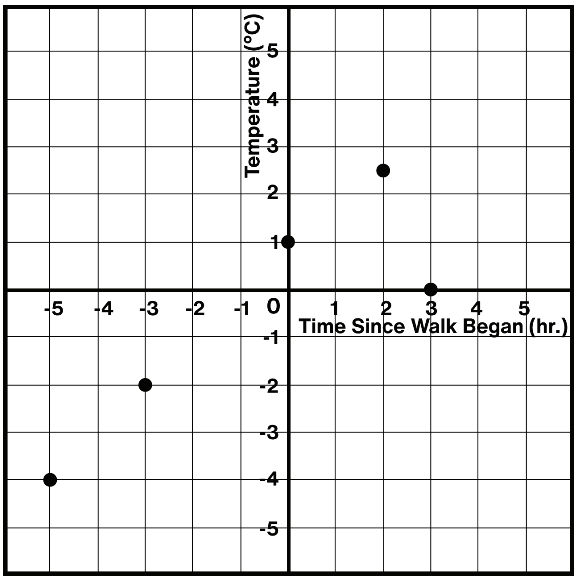
On Saturday, Aba went for a walk and made a graph of the temperature outside at different times. She started her walk at time 0.

7.1 What was the temperature outside when Aba started her walk?

7.2 The point $(-5,\ -4)$ is on Aba's graph. What does this point tell us?

7.3 Aba walked for 4 hours. When Aba ended her walk, it was -2 °C outside.

Add this point to her graph.



7.4 Write coordinates for a new point that would **not** make sense in this situation.

Explain how you know it doesn't make sense.

Unit 6.7, End-Unit Assessment: Form A Name ______________________________

Reflection: Select a question to answer.

- ☐ What is something you are proud of from this unit?

- ☐ Write what you know about a topic from this unit that you weren't asked about today.

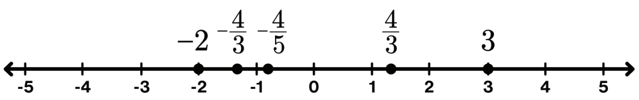
- ☐ Describe or show one strategy you found helpful in this unit.
  Name any students who helped you with this strategy.

- ☐ What else would you like your teacher to know?

1. B. $(4, -3)$

2. ✓ -1
 ✓ 0
 ✓ 2

3.



4. $\frac{3}{2} > -\frac{3}{2}$

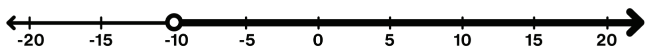
$|-5| > |-4.5|$

$-\frac{5}{3} < -\frac{3}{5}$

$|-5| = 5$

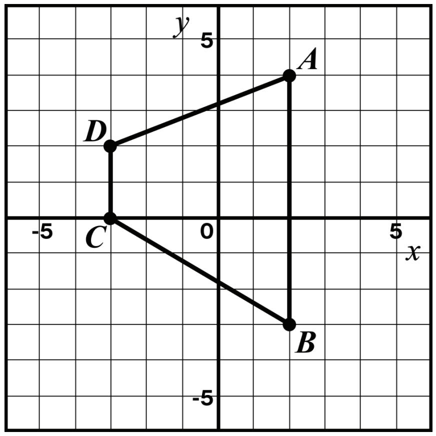
5.1 -5°C. *Explanations vary.* -5°C is higher than -10°C on a vertical number line, so it's warmer.

5.2



5.3 $t > -10$ (or equivalent)

6.1 See graph below.



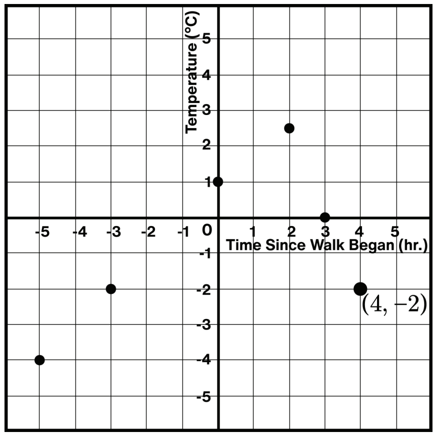
6.2 See graph above.

6.3 7 units

7.1 1°C

7.2 *Responses vary.* 5 hours before Aba's walk began, it was -4°C outside.

7.3



7.4 *Responses vary.*
- $(2, 1)$ because it cannot be two different temperatures at the same time.
- $(1, 100)$ because 100°C doesn't make sense on a winter day.

Unit 6.7, End Assessment Summary and Rubric: Form A

Content Standards Summary

Standard	6.EE.B.5	6.EE.B.6	6.EE.B.8	6.G.A.3	6.NS.C.5	6.NS.C.6.C	6.NS.C.7	6.NS.C.7.B	6.NS.C.8
Problems	2	5.3	5.2	6.2, 6.3	7	1, 3, 6.1, 7	4	5.1	6.2, 6.3

Problem 1
(Standard: **6.NS.C.6.C**)

In this problem, students plot points with positive and negative coordinates in the coordinate plane. This problem corresponds most directly to the work students did in Lesson 9: Sand Dollar Search.

Suggested Next Steps: If students struggle . . .
- Consider asking students to describe in what order of the x– and y–coordinates are written.
- Consider revisiting Lesson 9, Activity 1, Screen 8.

Problem 2
(Standard: **6.EE.B.5**)

In this problem, students determine whether a value is a solution to an inequality. This problem corresponds most directly to the work students did in Lesson 8: Shira's Solutions.

uggested Next Steps: If students struggle . . .
Consider asking students to graph and shade the given inequality on the number line before comparing the choices.
Consider revisiting Lesson 8, Activity 2, Screen 10.

Unit 6.7, End Assessment Summary and Rubric: Form A

Problem 3

(Standard: **6.NS.C.6.C**)

In this problem, students plot positive and negative numbers on a number line. This problem corresponds most directly to the work students did in Lesson 2: Digging Deeper.

Suggested Next Steps: If students struggle . . .

- Consider suggesting to students that they rewrite the given values with common denominators or as decimals.
- Consider revisiting the Lesson 2 Cool-Down.

Problem 4

(Standards: **6.NS.C.7, MP6**)

In this problem, students compare positive and negative rational numbers. They attend to precision when comparing rational numbers and absolute value expressions. This problem corresponds most directly to the work students did in Lesson 3: Order in the Class and Lesson 5: Distance on a Number Line.

Suggested Next Steps: If students struggle . . .

- Consider asking students to describe what the absolute value symbol means. Suggest they use the number line to help them compare values.
- Consider revisiting Lesson 5, Activity 1, Screen 6. Choose one or two cards to discuss, based on class quiz results.

Problem 5
(Standards: **6.NS.C.7.B, 6.EE.B.8, 6.EE.B.6, MP3**)

In this problem, students write and interpret inequalities to represent negative numbers in context. They construct viable arguments to support their understanding of comparing negative values. This problem corresponds most directly to the work students did in Lesson 4: Sub-Zero and Lesson 6: Tunnel Travels.

Suggested Next Steps: If students struggle . . .
- Consider having students use a number line to help them compare values. Suggest they use their second response to help write the inequality in the third problem.
- Consider revisiting Lesson 6, Activity 1, Screen 7.

Problem 6
(Standards: **6.NS.C.6.C, 6.G.A.3, 6.NS.C.8, MP7**)

In this problem, students make use of structure when they draw a polygon in the coordinate plane and determine lengths and distances between points with the same first coordinate or the same second coordinate. This problem corresponds most directly to the work students did in Lesson 11: Polygon Maker.

Suggested Next Steps: If students struggle . . .
- Consider having students use their strategy from Problem 1 to help with graphing. Suggest they use the structure of the grid to find the length of the segment.
  Consider revisiting Lesson 11: Practice Problems, Problem 1, skipping points D and E.

Problem 7

(Standards: **6.NS.C.5, 6.NS.C.6.C, MP3**)

In this problem, students identify and interpret points on a graph to answer questions about situations in context, including the meaning of values that are negative. Students construct a viable argument when writing and explaining coordinates that would not fit the context of the problem. This problem corresponds most directly to the work students did in Lesson 12: Graph Telephone.

Suggested Next Steps: If students struggle . . .

- Consider asking students what is represented by the x– and y–coordinates, and how they can use this information to help them interpret the points on the graph.
- Consider revisiting Lesson 12: Practice Problems, Problems 1.1 and 1.4.

Unit 6.7, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.NS.C.6.C	• $(4, -3)$			• Students who select $(-3, 4)$ may understand that W is represented by positive 4 and -3, but swapped which coordinates represent x and y. • Students who select $(-4, 3)$ may recognize that the x-coordinate is first and the y-coordinate is second in a coordinate pair, but struggle to locate negative and positive numbers on the coordinate plane.	Did not attempt.
2	6.EE.B.5	Student selects all of the correct choices and does not select any incorrect choices. • -1 • 0 • 2	Student selects one or two of the correct choices and does not select any incorrect choices. Student selects all of the correct choices and one incorrect choice.	Student selects one or two of the correct choices but also includes an incorrect choice.	Student selects only incorrect choices. Student selects two or more incorrect choices with some correct choices.	Did not attempt.

Unit 6.7, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
3	6.NS.C.6.C	Work is complete and correct.	Work shows conceptual understanding and mastery, with minor errors. • Student correctly locates four of the five values on the number line.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Student correctly locates two or three of the five values on the number line.	Weak evidence of understanding. • Student correctly locates zero or one of the five values on the number line.	Did not attempt.
4	6.NS.C.7, MP6	Work is complete and correct. • $\frac{3}{2} > -\frac{3}{2}$ • $\lvert -5 \rvert > \lvert -4.5 \rvert$ • $-\frac{5}{3} < -\frac{3}{5}$ • $\lvert -5 \rvert = 5$	Work shows conceptual understanding and mastery, with minor errors. • Student correctly completes three of the four number sentences.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Student correctly completes two of the four number sentences.	Weak evidence of understanding. • Student correctly completes one of the four number sentences.	Did not attempt.

Unit 6.7, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5.1	6.NS.C.7.B, MP3	Student successfully answers the question and includes a logical and complete explanation. • −5°C. −5°C is higher than −10°C on a vertical number line, so it's warmer.	Correct answer with minor flaws in explanation. Incorrect answer with logical and complete explanation.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of the situation. • Students who select −10°C may have thought that 10°C is warmer than 5°C.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.
5.2	6.EE.B.8	Work is complete and correct. • Open circle at −10 and shaded to the right.	Work shows conceptual understanding and mastery, with minor errors. • Students who graph an open circle at 10 and shade to the right may not have noticed the negative sign.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who shade the graph to the left may have considered the absolute value of the solutions.	Weak evidence of understanding.	Did not attempt.
5.3	6.EE.B.6	Work is complete and correct. • $t > -10$ (or equivalent)	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write $t < -10$ may struggle with the meaning of the inequality symbol.	Weak evidence of understanding.	Did not attempt.

Unit 6.7, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.1	6.NS.C.6.C, MP7	Work is complete and correct.	Work shows conceptual understanding and mastery, with minor errors. Student correctly plots three of the four points.	Work shows a developing but incomplete conceptual understanding, with significant errors. Student correctly plots two of the four points. Student reverses the x- and y- values for each point.	Weak evidence of understanding. Student correctly plots one of the four points.	Did not attempt.
6.2 and 6.3	6.G.A.3 and 6.NS.C.8	Student successfully draws a polygon and computes the length between points A and B. • 7 units	Work shows conceptual understanding and mastery, with minor errors. • Students who write 1 may have added 4 and -3. • Students who write 6 may have counted the number of lattice points in between A and B. • Students who write 8 may have counted lattice points and included the endpoints.	Work shows a developing but incomplete conceptual understanding, with significant errors.	Weak evidence of understanding.	Did not attempt.

Unit 6.7, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
7.1	6.NS.C.5, 6.NS.C.6.C	Work is complete and correct. • $1°C$	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who write that the temperature was $3°$ outside may have recognized that one coordinate is 0 but used the point $(3, 0)$ instead of $(0, 1)$.	Weak evidence of understanding.	Did not attempt.
7.2	6.NS.C.5, 6.NS.C.6.C	Student successfully answers the question with a logical and complete explanation. • 5 hours before Aba's walk began, it was $-4°C$ outside.	Correct answer with minor flaws in explanation.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of the situation. • Students who do not interpret -5 as 5 hours before Aba's walk may struggle to interpret the negative value in context.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.
7.3	6.NS.C.5, 6.NS.C.6.C	Work is complete and correct. • Point is correctly plotted at $(4, -2)$.	Work shows conceptual understanding and mastery, with minor errors.	Work shows a developing but incomplete conceptual understanding, with significant errors. • Students who plot the point at $(-2, 4)$ may struggle with interpreting ordered pairs.	Weak evidence of understanding.	Did not attempt.

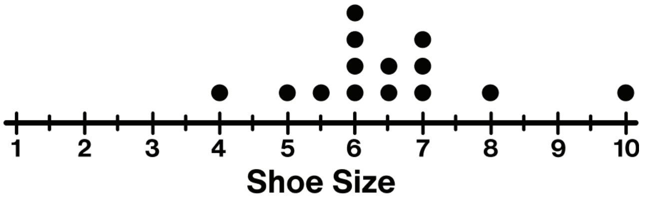
Unit 6.7, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
7.4	6.NS.C.5, 6.NS.C.6.C, MP3	Student successfully answers the question with a logical and complete explanation. • $(2, 1)$ because it cannot be two different temperatures at the same time. • $(1, 100)$ because 100°C doesn't make sense on a winter day.	Correct answer with minor flaws in explanation.	Correct answer with incomplete explanation. Incorrect answer with explanation that communicates partial understanding of the situation.	Incorrect answer with incorrect explanation or without an explanation.	Did not attempt.

Unit 6.8, Readiness Check Name ______________________________

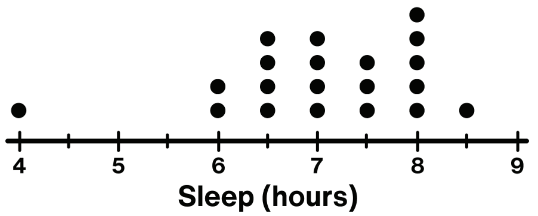
This dot plot represents the shoe sizes of players on a soccer team.

1.1 List **two** things you know about the shoe sizes by looking at the dot plot.



1.2 How many players have a shoe size of 6?

2. This dot plot shows the number of hours 20 sixth graders slept on a Saturday night.

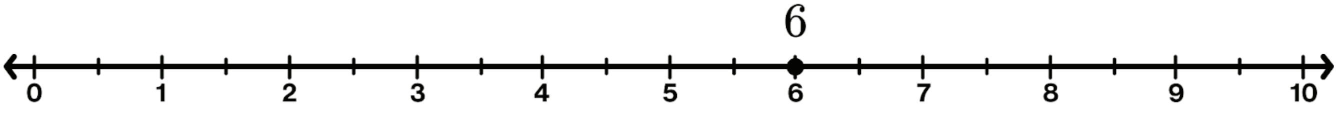


Decide whether each statement is true or false.

The most sleep a sixth grader got was 9 hours.	☐ True	☐ False
Some students got 6 hours of sleep.	☐ True	☐ False
Exactly half of the students slept 7 hours or less.	☐ True	☐ False

3. Plot and label these numbers on the number line. The first number has been plotted for you.

$$6 \qquad 3\frac{1}{2} \qquad \frac{1}{4} \qquad 8.25$$



Unit 6.8, Readiness Check Name ________________________________

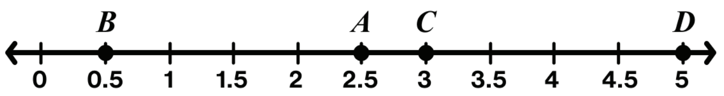
Determine the value of each expression.

4.1 $\frac{5+11+9+15}{4}$

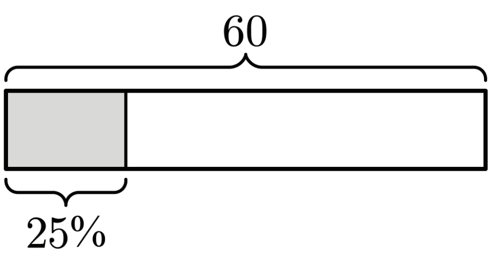
4.2 $(4 + 2 + 9) \div 3$

5. Use the number line to determine the distance between each pair of points.

Points	Distance Between Points (units)
A and B	
A and C	
A and D	



6.1 What is 25% of 60? Use the tape diagram if it helps you with your thinking.



Calculate each percentage.

6.2 75% of 40

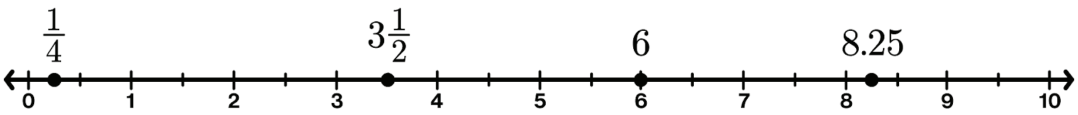
6.3 25% of 30

1.1 *Responses vary.*
- The most common shoe size is size 6.
- The largest shoe size is size 10.

1.2 4 players

2.
- False
- True
- False

3.



4.1 10

4.2 5

5.

Points	Distance Between Points (units)
A and B	2
A and C	0.5
A and D	2.5

6.1 15

6.2 30

6.3 7.5

Unit 6.8, Readiness Check Summary

For teachers who choose to spread out the problems, consider assigning the following:
- Problems 1 and 2 before Lesson 2
- Problem 3 before Lesson 3
- Problem 4 before Lesson 7
- Problem 5 before Lesson 8
- Problem 6 before Lesson 13

Problems 1 and 2

(Standards: **5.MD.B.2, MP7**)

These problems are intended to surface students' ability to make sense of information presented in a dot plot (called a *line plot* in Grades 4–5). They look for and make use of the structure seen in a dot plot to answer questions about what is represented. This content first appears in Lesson 2, where students are introduced to dot plots.

Suggested Next Steps: If students struggle . . .
- On Problem 1, consider spending extra time during Lesson 2 asking students what they know about each dot plot they see. It may be helpful to invite students to revisit their responses to this question after Lessons 2–4, which focus on dot plots.
- On Problem 2, consider revisiting this problem after Lesson 2, giving students time to revisit their responses.

Problem 3

(Standards: **3.NF.A.2, 4.MD.B.4**)

This problem is intended to surface what students already know about positioning fractions and decimals on a number line. This content first appears in Lesson 3, where students create their own dot plots, including non-whole number values.

Suggested Next Steps: If students struggle . . .
- Consider revisiting this problem before Lesson 3 and inviting students to place each value in the appropriate place on the number line and justifying their placement.

Problem 4

(Standard: **5.OA.A.1**)

This problem is intended to surface what students already know about evaluating expressions with different operations, including ones with parentheses or other grouping symbols. This content first appears in Lesson 7, where students first calculate the mean of a data set.

Suggested Next Steps: If students struggle . . .

- Consider sharing some incorrect work for each problem and inviting students in pairs or groups to explain what this student did well and what error they made.

Problem 5

(Standards: **4.MD.A.2, MP6**)

This problem is intended to surface what students already know about calculating distances on a number line. They attend to precision when determining accurate distances. This content first appears in Lesson 8, where students calculate distances of each data point from the mean. This skill also supports students with calculating the mean average deviation (MAD) in Lesson 9.

Suggested Next Steps: If students struggle . . .

- Consider reviewing this problem as a class before Lesson 8. Invite students to explain their reasoning for each distance. It may be helpful to discuss that distance is positive whether or not the second point is to the left or right on the number line.

Problem 6

(Standard: **6.RP.A.3.C**)

This problem is intended to surface the strategies students use to calculate percentages that are multiples of 25%. This content first appears in Lesson 13, where students determine the first and third quartiles for a set of data.

Suggested Next Steps: If students struggle . . .

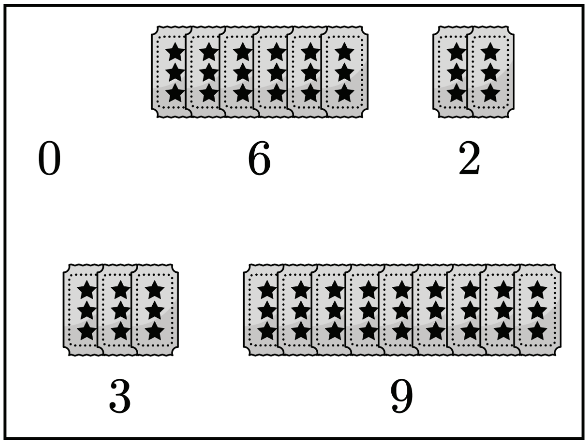
- Review this problem after Lesson 13 to make connections between quartiles and percentages. Select and sequence students who use different strategies, including making drawings and converting to fractions. Invite students to share and compare their strategies.

 Name ______________________________

5 friends played a game at an arcade.

Here is how many tickets they won.

0	6	2	3	9



1. What is the mean number of tickets they won?

   A. 3 tickets   B. 4 tickets

   C. 5 tickets   D. 6 tickets

2. This histogram shows some temperatures in May in Dallas, Texas.

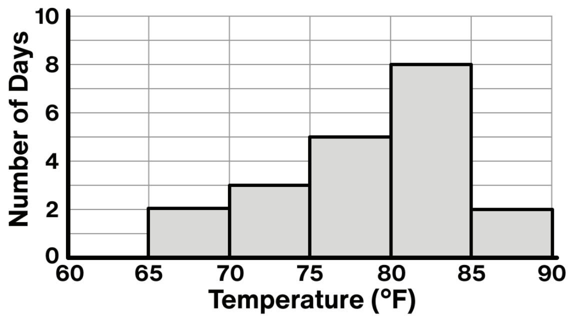
   Which of these statements is definitely true?

   A. This shows the temperatures for 5 days.

   B. There were 3 days when it was 70°F.

   C. It was 80°F or more on 10 different days.

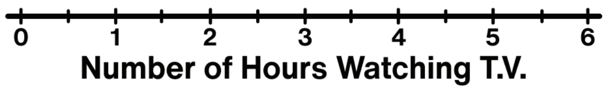
   D. There were 5 days when it was 77°F.



3. A survey asked 10 people how many hours they spent watching T.V. last night.

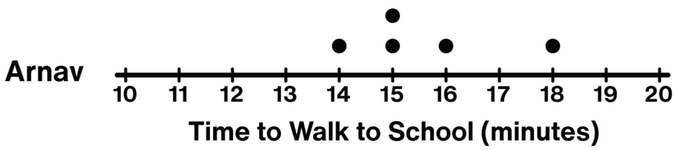
0	4.5	2	3	2	2.5	3	0	2	4

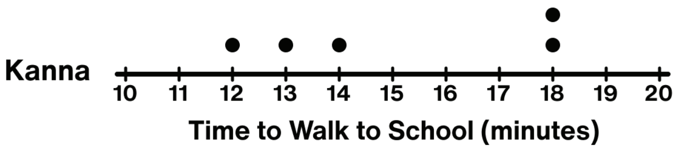
Create a dot plot of their responses.



Unit 6.8, Quiz: Lessons 1–10 Name ______________________________

These dot plots show the number of minutes it took Arnav and Kanna to walk to school last week.





4.1 Whose data has a mean of 15 minutes?
(circle one)

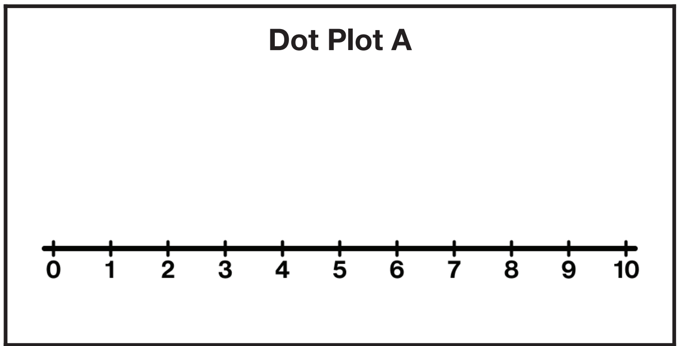
Arnav Kanna Both Neither

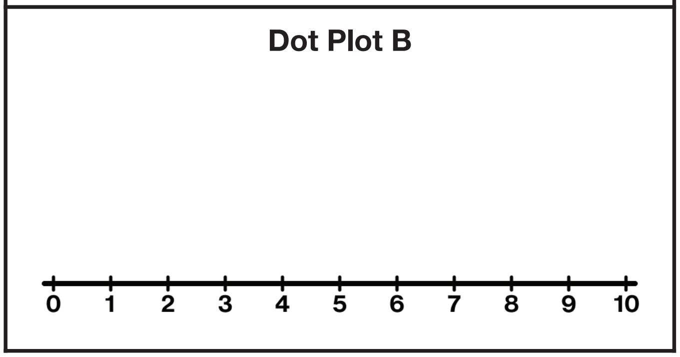
Show or explain your thinking.

4.2 What is the mean absolute deviation (MAD) of Kanna's times?

5. Create two dot plots so that:

- They have at least 5 points each.
- Their centers are around 7.
- Dot Plot A has a larger spread than Dot Plot B.

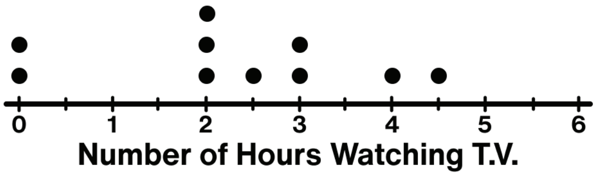




Answer Key

1. B. 4 tickets

2. C. It was 80°F or more on 10 different days.

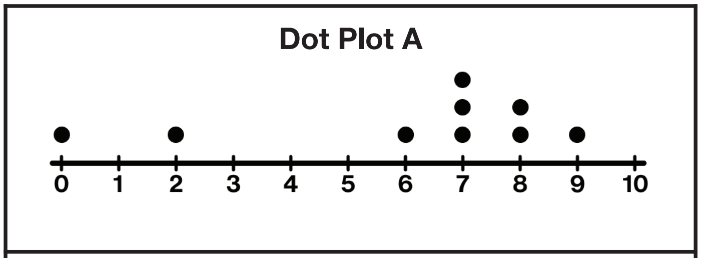
3. 

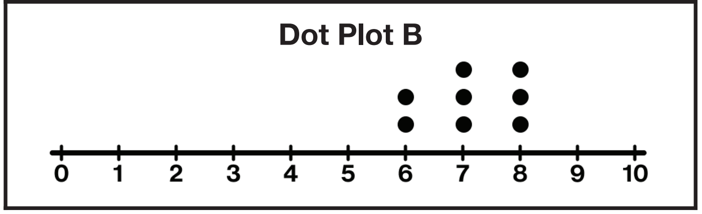
4.1 Kanna. *Explanations vary.*

- The distances to the left of 15 and the distances to the right of 15 on Arnav's dot plot are not equal, so his mean can't be 15.
- The total time it took Kanna to walk to school was $12 + 13 + 14 + 18 + 18 = 75$ minutes and $75 \div 5 = 15$ minutes.

4.2 2.4 minutes

5. *Dot plots vary.*





Unit 6.8, Quiz: Summary and Rubric

Content Standards Summary

Standard	6.SP.A.2	6.SP.A.3	6.SP.B.4	6.SP.B.5.A	6.SP.B.5.C
Problems	5	1, 4.1	2, 3, 5	2	1, 4.2

Problem 1
(Standards: **6.SP.A.3, 6.SP.B.5.C**)

In this problem, students determine the mean of 5 values. This problem corresponds most directly to the work students did in Lesson 7: Snack Time.

Suggested Next Steps: If students struggle . . .
- Consider asking students to describe what the math term *mean* represents mathematically.
- Consider revisiting Lesson 7, Activity 2, Screen 6.

Problem 2
(Standards: **6.SP.B.4, 6.SP.B.5.A**)

In this problem, students interpret a histogram that represents a data set. This problem corresponds most directly to the work students did in Lesson 5: The Plot Thickens.

Suggested Next Steps: If students struggle . . .
- **Math Language Development** Consider using the mathematical language routine Critique, Correct, Clarify to help students understand and communicate why statements for answer choices A, B, and D are false.
- Consider revisiting Lesson 5, Activity 2, Screen 9.

Unit 6.8, Quiz: Summary and Rubric

Problem 3

(Standards: **6.SP.B.4, MP2**)

In this problem, students create a dot plot to visualize a data set. They translate data from a set to a dot plot they create, reasoning abstractly and quantitatively. This problem corresponds most directly to the work students did in Lesson 4: Lots More Dots.

Suggested Next Steps: If students struggle . . .

- Consider suggesting that students list the data from least to greatest and cross off values as they are plotted.
- Consider revisiting Lesson 3, Activity 1, Problem 2.

Problem 4

(Standards: **6.SP.A.3, 6.SP.B.5.C, MP3**)

In this problem, students reason about the mean of a data set and calculate the MAD of a data set from a dot plot. They construct viable arguments to justify their thinking. This problem corresponds most directly to the work students did in Lesson 8: Pop It! and Lesson 9: Hoops.

Suggested Next Steps: If students struggle . . .

- On Problem 4.1, suggest that students find the mean for both sets of data. If they struggle on Problem 4.2, ask them what *mean absolute deviation* means mathematically.
- Consider revisiting Lesson 7, Activity 2, Screen 6 and Lesson 9, Activity 1, Screen 7.

Problem 5

(Standards: **6.SP.A.2, 6.SP.B.4, MP6**)

In this problem, students attend to precision as they apply the concepts of center and spread to data sets. This problem corresponds most directly to the work students did in Lesson 4: Lots More Dots.

Suggested Next Steps: If students struggle . . .

- Consider suggesting to students to first create two data sets, and then use the plots to check that they each meet the given criteria.
- Consider revisiting Lesson 4, Activity 1, Screen 5.

Unit 6.8, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
1	6.SP.A.3, 6.SP.B.5.C	Correct choice. • 4 tickets			Incorrect choice. *Students who selected* 3 *may have calculated the median instead of the mean.* *Students who selected* 5 *may have calculated the mean but did not include* 0.	Did not attempt.
2	6.SP.B.4, 6.SP.B.5.A	Correct choice. • *It was* 80°*F or more on* 10 *different days.*			Incorrect choice.	Did not attempt.
3	6.SP.B.4	Correct dot plot.	Work shows **conceptual understanding** with some errors. *E.g., Student graphs eight or nine of the data points correctly.*	Work shows **incomplete understanding** with significant errors. *E.g., Student graphs one dot for every value instead of the number of values represented.*	Work shows **limited understanding** of creating a dot plot to visualize a data set.	Did not attempt.

Unit 6.8, Quiz: Summary and Rubric

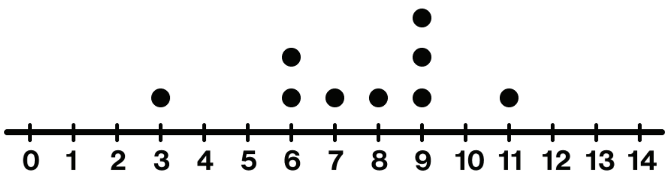
Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
4.1	6.SP.A.3 6.SP.B.5.C	Correct choice and explanation. • Kanna *E.g., The distances to the left of* 15 *and the distances to the right of* 15 *on Arnav's dot plot are not equal, so his mean can't be* 15.	**Correct answer** with **incomplete explanation**.	**Correct answer** with **no explanation**. **Incorrect answer** with **complete explanation**. *E.g., Student incorrectly calculates the mean of Arnav's data set to be* 15 *and answers "Both."* *Student calculates the median instead of the mean.*	**Incorrect answer** with **no explanation** or **incorrect explanation**.	Did not attempt.
4.2	6.SP.A.3 6.SP.B.5.C	Correct answer. • 2.4 minutes	Work shows **conceptual understanding** with some errors. *Students who wrote* 1.875 *may have calculated the MAD with only one* 18. *Students who wrote* 1.12 *may have calculated the MAD of Arnav's data set.*	Work shows **incomplete understanding** with significant errors.	Work shows **limited understanding** of calculating the MAD of a data set from a dot plot. *Students who wrote* 6 *may have calculated the range.*	Did not attempt.

Unit 6.8, Quiz: Summary and Rubric

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	**3**	**2**	**1**	**0**
5	6.SP.A.2 6.SP.B.4	Both dot plots are correct.	Work shows **conceptual understanding** with some errors. *Both dot plots meet two of the three criteria.* *E.g., Student creates two dot plots that have at least five points each and the center is around 7, but the spread of Dot Plot B is larger than the spread of Dot Plot A.* *Student creates a dot plot that centers around 7 and Dot Plot A is larger than Dot Plot B, but they use less than five points.*	Work shows **incomplete understanding** with significant errors. *Both dot plots meet one of the three criteria.* *One dot plot meets two of the three criteria.* *E.g., Student creates a dot plot that centers around 7 and uses at least five points.*	Work shows **limited understanding** of applying the concepts of center and spread to a data set. *E.g., Student creates two dot plots that do not satisfy any of the given requirements.*	Did not attempt.

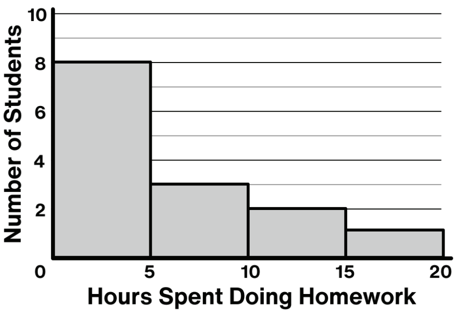
Unit 6.8, End-Unit Assessment: Form A Name ______________________________

1. What is the **median** of this data set?



A. 7 B. 7.5

C. 8 D. 9



A teacher is wondering if he assigns too much homework.

He asked his students how many hours they spent doing homework last week.

Circle whether each statement below is true or false, or if there is not enough information.

2.1 The teacher asked a total of 4 students. True False Not enough information

2.2 One student said they spent exactly 15 hours. True False Not enough information

2.3 No student said they spent more than 20 hours. True False Not enough information

2.4 More than half of his students said they spent less than 5 hours. True False Not enough information

3. Dalia wrote down the number of miles she ran each day.

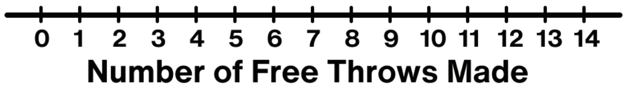
Calculate the **mean** distance Dalia ran.

Day	Distance (miles)
Monday	2.5
Tuesday	3.5
Wednesday	5
Thursday	2
Friday	7

Manuel has data from basketball practice about the number of free throws each teammate made.

8	5	6	5	9	10	2	5	8	10

4.1 Create a dot plot for Manuel's team.



4.2 Determine each statistic for his team.

Quartile 1: ________

Median: ________

Quartile 3: ________

IQR: ________

Here are some temperatures for one week in January.

Minneapolis

Temperatures (°F)				
32	25	35	38	20

Mean = 30 °F, MAD = 6 °F

Ottawa

Temperatures (°F)				
31	29	27	31	32

Mean = 30 °F, MAD = ? °F

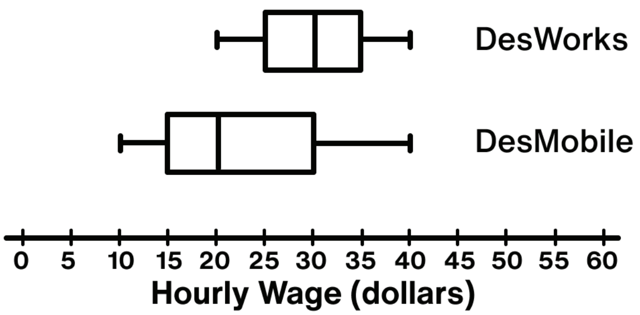
5.1 Calculate the mean absolute deviation (MAD) of the temperatures in Ottawa.

5.2 Which city has a wider spread of temperatures?

Unit 6.8, End-Unit Assessment: Form A Name ________________________________

Two companies analyzed the hourly wages for their employees.

Here are the results.



6.1 What is the median hourly wage for DesMobile? ________

6.2 Which company has higher wages?

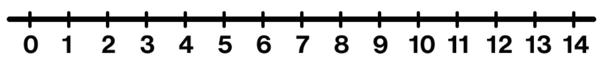
Explain how you know.

6.3 Which company's wages are more spread out?

Explain how you know.

7. Create a dot plot with:

- At least five points.
- A median of 6.
- A mean that is less than the median.



Unit 6.8, End-Unit Assessment: Form A Name ___________________________

Reflection: Select a question and answer it below.

- ☐ What is something you are proud of from this unit?

- ☐ Write what you know about a topic from this unit that you weren't asked about today.

- ☐ Describe or show one strategy you found helpful in this unit.
  Name any students who helped you with this strategy.

- ☐ What else would you like your teacher to know?

Answer Key

1. C. 8

2.1 False

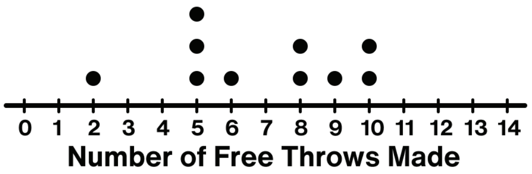
2.2 Not enough information

2.3 True

2.4 True

3. 4 miles

4.1



4.2 Quartile 1: 5
Median: 7
Quartile 3: 9
IQR: 4

5.1 1.6 °F

5.2 Minneapolis

6.1 20 dollars

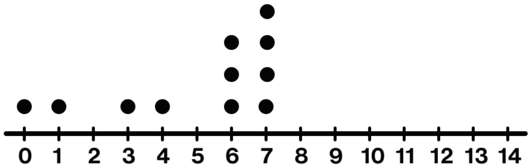
6.2 DesWorks. *Explanations vary.*

- The median wage for DesWorks is $\$10$ an hour more than the median wage for DesMobile employees.
- The median hourly wage for DesWorks employees is the same as Quartile 3 for DesMobile, which means that half of DesWorks employees make more than 75% of DesMobile employees.

6.3 DesMobile. *Explanations vary*.

- The range for DesMobile employees is $\$30$ an hour and the range for DesWorks employees is $\$20$ an hour. This means that the wages are more spread out.
- The IQR for DesMobile employees is larger than the IQR for DesWorks employees. This means that the middle half of wages are more spread out.

7. *Dot plots vary.*



Content Standards Summary

Standard	6.SP.A.2	6.SP.A.3	6.SP.B.4	6.SP.B.5	6.SP.B.5.A	6.SP.B.5.C
Problems	4.2	1, 5.2, 6.2, 6.3	2.2, 2.3, 2.4, 4.1, 7	6.2, 6.3	2.1	1, 3, 4.2, 5.1, 6.1, 7

Problem 1
(Standards: **6.SP.A.3, 6.SP.B.5.C**)

In this problem, students demonstrate their understanding of how to determine the median of a dot plot. This problem corresponds most directly to the work students did in Lesson 11: Toy Cars.

Suggested Next Steps: If students struggle . . .
- Consider asking students to describe what *median* means mathematically.
- Consider revisiting Lesson 11, Activity 1, Screen 8.

Problem 2
(Standards: **6.SP.B.4, 6.SP.B.5.A**)

In this problem, students interpret data visualized using a histogram, including the number of data points in the study and what information is and is not visible in a histogram. This problem corresponds most directly to the work students did in Lesson 5: The Plot Thickens.

Suggested Next Steps: If students struggle . . .
- Consider asking students for which statements is a counterexample possible.
- Consider revisiting Lesson 5: Practice Problems, Problem 2. Select one or two to review based on class performance on the assessment.

Unit 6.8, End Assessment Summary and Rubric: Form A

Problem 3

(Standard: **6.SP.B.5.C**)

In this problem, students calculate the mean of a data set. This problem corresponds most directly to the work students did in Lesson 7:
Snack Time and Lesson 8: Pop It!

Suggested Next Steps: If students struggle . . .

- Consider asking students to describe what the math term *mean* represents mathematically.
- Consider revisiting Lesson 7: Practice Problems, Problem 4.1.

Problem 4

(Standards: **6.SP.A.2, 6.SP.B.4, 6.SP.B.5.C, MP2**)

In this problem, students visualize data in a dot plot and to give quantitative measures of variability. They represent data using a dot plot, thus reasoning abstractly and quantitatively. This problem corresponds most directly to the work students did in Lesson 3: Minimum Wage and Lesson 13: Pumpkin Patch.

Suggested Next Steps: If students struggle . . .

- On Problem 4.1, suggest they cross off values on the list as they plot them. If they struggle with Problem 4.2, ask students to describe what each term means mathematically.
- Consider revisiting Lesson 13, Activity 2, Screen 8.

Problem 5

(Standards: **6.SP.A.3, 6.SP.B.5.C**)

In this problem, students calculate the mean absolute deviation and use it to compare the spread of data sets. This problem corresponds most directly to the work students did in Lesson 9: Hoops.

Suggested Next Steps: If students struggle . . .

- Consider asking students what *mean absolute deviation* means mathematically, and how that can help them calculate the value.
- Consider revisiting Lesson 9, Activity 1, Screen 8.

Problem 6

(Standards: **6.SP.A.3, 6.SP.B.5, 6.SP.B.5.C, MP3**)

In this problem, students interpret and use box plots to compare and contrast data sets, constructing viable arguments to explain their thinking. This problem corresponds most directly to the work students did in Lesson 15: Hollywood Part 2.

Suggested Next Steps: If students struggle . . .

- Consider asking students to label the location of the quartile 1, median, and quartile 2 values of the box plots to help sort the data.
- Consider revisiting Lesson 15, Activity 1, Screen 4.

Problem 7

(Standards: **6.SP.B.4, 6.SP.B.5.C, MP6**)

In this problem, students attend to precision as they create dot plots that meet criteria about measures of center. This problem corresponds most directly to the work students did in Lesson 12: In the News.

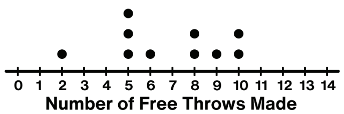
Suggested Next Steps: If students struggle . . .

- Consider asking students to begin by first including median value in their dot plot, and then include other values as needed. Consider asking students to determine what calculations would be helpful on this problem.
- Consider revisiting Lesson 12, Activity 2, Screen 9.

Unit 6.8, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
1	6.SP.A.3, 6.SP.B.5.C	• 8			• Students who select 7.5 may have determined the mean. • Students who select 9 may have chosen the most frequent value.	Did not attempt.
2.1	6.SP.B.5.A	• False			• Students who select "True" may have counted the rectangles.	Did not attempt.
2.2	6.SP.B.4	• Not enough information			• Students who select "True" may have noticed that there is one student who spent between 15 and 20 hours.	Did not attempt.
2.3	6.SP.B.4	• True			• Students who select "False" may understand that we do not know if any student spent exactly 20 hours.	Did not attempt.
2.4	6.SP.B.4	• True			• Students who select "False" may be paying attention to the number of rectangles.	Did not attempt.

Unit 6.8, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
3	6.SP.B.5.C	Work is complete and correct. • 4 miles	Work shows conceptual understanding and mastery, with minor errors in calculation.	Work shows a developing conceptual understanding, with significant errors.	Weak evidence of understanding. • Students who write 3.5 miles may have calculated the median.	Did not attempt.
4.1	6.SP.B.4, MP2	All data points are in the correct location. All data points have appropriate spacing.  	Most data points are in the correct location. Most data points have appropriate spacing.	Work shows a developing conceptual understanding, with significant errors either in placement or spacing of data points.	Weak evidence of understanding.	Did not attempt.
4.2	6.SP.A.2, 6.SP.B.5.C	All statistics are complete and correct. • Quartile 1: 5 • Median: 7 • Quartile 3: 9 • IQR: 4	Three out of four statistics are correct.	Two out of four statistics are correct.	One out of four statistics are correct.	Did not attempt.

Unit 6.8, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
5.1	6.SP.B.5.C	Work is complete and correct. • 1.6°F	Work shows conceptual understanding and mastery, with minor errors in calculation.	Work shows a developing conceptual understanding, with significant errors. • Students who write 31°F may have calculated the median.	Weak evidence of understanding.	Did not attempt.
5.2	6.SP.A.3	• Minneapolis			• Students who select "They have the same spread" may have been paying attention to the means instead of the MADs.	Did not attempt.
6.1	6.SP.B.5.C	Median is correct and for the correct company. • 20 dollars	Median is correct for the incorrect company. • 30 dollars	Work shows a developing conceptual understanding, with significant errors. • Students who write $\$15$ may have determined the IQR.	Weak evidence of understanding. • Students who write $\$40$ may have determined the maximum.	Did not attempt.

Unit 6.8, End Assessment Summary and Rubric: Form A

Problem	Standard	Meeting/Exceeding	Approaching	Developing	Beginning	
		4	3	2	1	0
6.2	6.SP.A.3, 6.SP.B.5, MP3	Correct answer with a logical and complete explanation using evidence from the box plots. • DesWorks The median wage for DesWorks is $10 an hour more than the median wage for DesMobile.	Correct answer with minor flaws in explanation. Incorrect answer with logical and evidence-based explanation.	Correct answer without using evidence from the box plots. Incorrect answer that shows partial understanding of the situation.	Incorrect answer with incorrect explanation or or without an explanation. Correct answer with no explanation.	Did not attempt.
6.3	6.SP.A.3, 6.SP.B.5, MP3	Correct answer with a logical and complete explanation using evidence from the box plots. • DesMobile The range of DesMobile employees is $30 an hour and the range for DesWorks employees is $20 an hour. This means that the wages are more spread out.	Correct answer with minor flaws in explanation. Incorrect answer with logical and evidence-based explanation.	Correct answer without using evidence from the box plots. Incorrect answer that shows partial understanding of the situation.	Incorrect answer with incorrect explanation or or without an explanation. Correct answer with no explanation.	Did not attempt.
7	6.SP.B.4, 6.SP.B.5.C, MP6	Dot plot meets all three criteria.	Dot plot meets two of the three criteria.	Dot plot has a median of 6 or a mean that is less than the median.	Dot plot has at least five points.	Did not attempt.

GRADE 6

Exit Tickets

Exit Tickets provide an opportunity for students to show what they individually understood about the main idea of the lesson.

This section includes all Exit Tickets and Teacher Moves for Units 1–8, as well as printable PDFs for sample lessons. Please note that Exit Tickets are referenced as Cool Downs in this review.

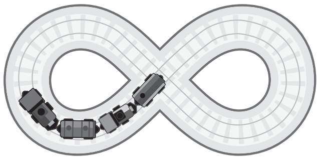
Exit Tickets are available as PDFs for download from the teacher experience in the platform, as well as digitally in the student experience. Amplify Desmos Math does not include them in the core student print materials to ensure students do not have access prior to the end of the lesson. (Teachers can control access to the Exit Ticket in the digital experience, too.)

Name: ______ Date: ______ Period: ______

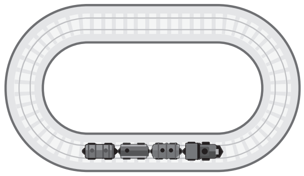
Exit Ticket 3.04

Which train is faster? Show your thinking.

Train A:
300 centimeters in 20 seconds



Train B:
2 meters in 15 seconds



How well did you understand the math in this lesson?

1 2 3 4 5

How did you feel about this lesson?

1 2 3 4 5

Reflect on the math from this lesson.

- I can calculate the speed of an object.
- I can compare rates that are written in different units.
- I can determine which of two traveling objects is faster and explain my thinking.

Lesson 4 Model Trains

Exit Ticket PDFs are available for all lessons. Here are samples from Amplify Desmos Math New York, fully designed.

Name: ________________ Date: ________ Period: ________

Exit Ticket

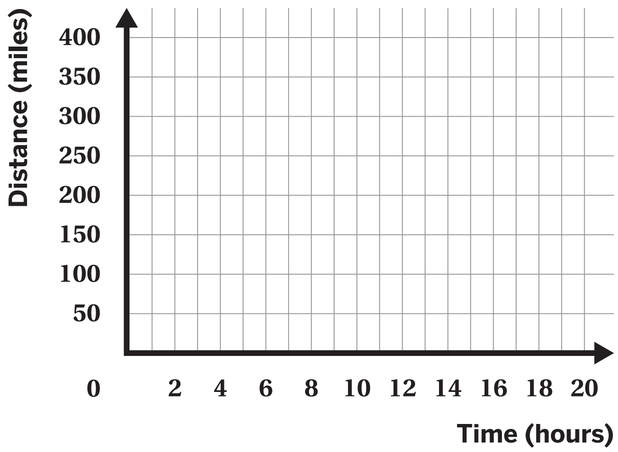
6.16

A train is traveling from one station to another at a constant speed of 50 miles per hour.

1. Complete the table to show the amounts of time it takes the train to travel certain distances.

Time (hours)	Distance (miles)
2	
7	
	150
	200

2. Create a graph that represents this relationship.



How well did you understand the math in this lesson?

1 2 3 4 5

How did you feel about this lesson?

1 2 3 4 5

Reflect on the math from this lesson.

- I can create graphs, tables, and equations to represent situations.
- I can use tables, graphs, and equations to analyze an issue in society

The following pages in this section include digital versions of all Exit Tickets and their Teacher Moves for Units 1–8.

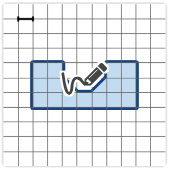
Please note that Exit Tickets are referenced as Cool Downs in the partially designed samples that follow.

6.1 Cool-Downs

Lesson Checklist

- ☐ Complete the lesson using the student preview.
- ☐ Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.
- ☐ Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.
- ☐ Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?
- ☐ Anticipate screens where students will struggle, then plan your response.
- ☐ Consider how to use snapshots to select and present student thinking for class discussion.
- ☐ Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.

1 Lesson 1: Exploring Area



Determine the area of this shape.

f(x)

Determine the area of this shape.

Use the sketch tool to show your thinking.

Teacher Moves

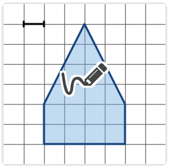
Support for Future Learning
Students will have more chances to develop their understanding of calculating area in Lesson 2.

Sample Responses

16 square units

---

2 Lesson 2: Area Strategies



What is the area of this shape?

f(x)

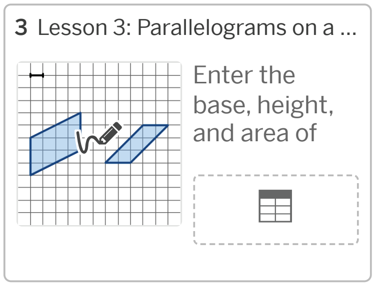
What is the area of this shape?

Teacher Moves

Support for Future Learning
If students struggle, consider checking in with individual students or review the cool-down as a class before Activity 1 in Lesson 3.

Sample Responses

16 square units



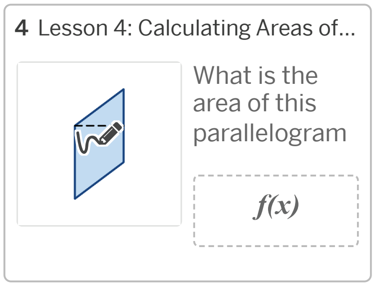
Enter the base, height, and area of each parallelogram in the table.

Teacher Moves

Support for Future Learning
Students will have more chances to determine bases, heights, and areas of parallelograms in Lesson 4.

Sample Responses

S: 3 units, 4 units, 12 square units
T: 2 units, 3 units, 6 square units



What is the area of this parallelogram?

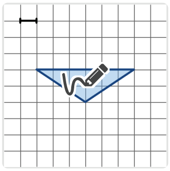
Teacher Moves

Support for Future Learning
If students struggle with this cool-down, consider reviewing this screen as a class before Lesson 6, or offering individual support where needed during Activity 1 of Lesson 6.

Sample Responses

54 square centimeters

5 Lesson 5: Triangles on a Grid



Determine the area of this triangle.

f(x)

Determine the area of this triangle.

Teacher Moves

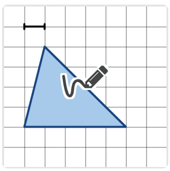
Support for Future Learning
Students will have more chances to determine the area of triangles in Lesson 6. Check in with students individually as they calculate areas during Activity 1 of Lesson 6.

Sample Responses

6 square units

---

6 Lesson 6: Generalizing the Are...



What is the area of this triangle?

f(x)

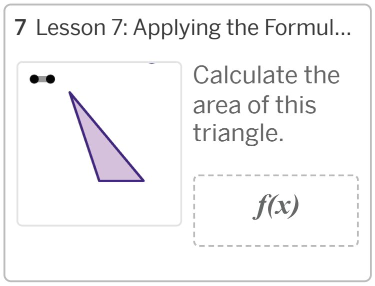
What is the area of this triangle?

Teacher Moves

Support for Future Learning
If students struggle to calculate the area of the triangle on a grid, consider spending extra time at the beginning of Lesson 7, Activity 1 checking in with students individually.

Sample Responses

10 square centimeters



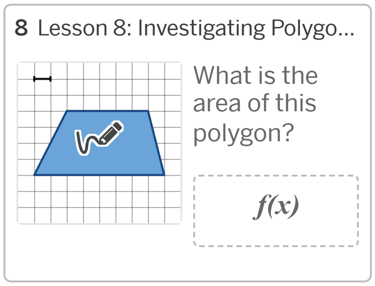
Calculate the area of this triangle.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen before Practice Day 1, or offering individual support where needed. Students will need a solid understanding of how to calculate the area of a triangle for the quiz.

Sample Responses

9 square centimeters



What is the area of this polygon?

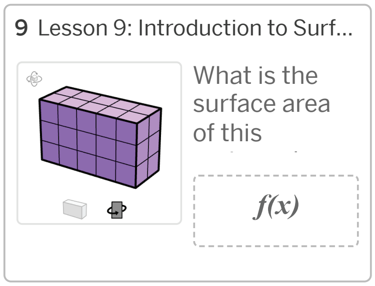
Use the sketch tool if it helps you show your thinking.

Teacher Moves

Support for Future Learning
Consider checking in with individuals who struggled with this cool-down during Practice Day 1, or making time to explicitly review calculating the area of polygons before the quiz.

Sample Responses

26 square inches



What is the surface area of this rectangular prism?

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of calculating surface area in Lesson 11.

Sample Responses

62 square units

10 Lesson 10: Polyhedra and Th...

Teacher Moves

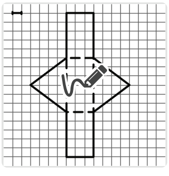
Support for Future Learning
If students struggle, consider spending extra time during Activity 1 of Lesson 11 where students name several different solids. Consider revisiting this cool-down as a class either before or after that activity, and inviting students to share which solid is neither a prism or a pyramid, and why.

Sample Responses

Image solution

---

11 Lesson 11: Nets and Surface A...



1. What is the surface area of this solid?

$f(x)$

1. What is the surface area of this solid?

Use the sketch tool if it helps you show your thinking.

Teacher Moves

Support for Future Learning
If students struggle to complete this cool-down, consider reviewing it as a class before Lesson 12, or offering individual support where needed during Lesson 12. Students need a solid understanding of how to calculate surface area before beginning Lesson 12.

Sample Responses

1. 72 square units
2. Triangular prism

---

12 Lesson 12: Surface Area Off o...

Here is the net for a triangular

Here is the net for a triangular prism.

1. If this net were folded, which polyhedron would it make?

Teacher Moves

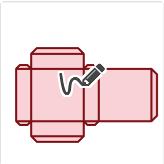
Support for Future Learning
If students struggle with this cool-down, consider making time before the end assessment to explicitly review calculating surface

area.

Sample Responses

1. Image solution
2. 168 square units

13 Lesson 13: Surface Area in Co...



Here are two patterns of take-out

Here are two patterns of take-out containers.

Which one uses more material?

Teacher Moves

Support for Future Learning
During Practice Day 2, check in with students who struggle on this cool-down. Reasoning about surface area with non-rectangular and triangular shapes are not included in any assessment.

Sample Responses

Pattern #1

Responses vary.

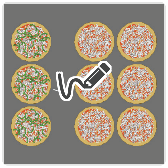
- Pattern #1 uses more material. Pattern #1 uses about 154 square inches of material, while pattern #2 uses about 85 square inches of material.
- The bases in pattern #2 are less than half of the area of the bases in pattern #1. Pattern #2 also only has 3 rectangles, while pattern #1 has 4 rectangles.

6.2 Cool-Downs (NYC)

Lesson Checklist

- [ ] Complete the lesson using the student preview.
- [ ] Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.
- [ ] Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.
- [ ] Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?
- [ ] Anticipate screens where students will struggle, then plan your response.
- [ ] Consider how to use snapshots to select and present student thinking for class discussion.
- [ ] Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.

1 Lesson 1: Exploring …



Jada used 60 pepper slices to

$f(x)$

Jada used 60 pepper slices to make 3 pizzas.

How many does it take to make 6 of Jada's pizzas?

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of ratios throughout Unit 2.

Sample Responses

120 pepper slices

---

2 Lesson 2: Describing …

Select **all** of the true statements.

Select **all** of the true statements.

Teacher Moves

Support for Future Learning
Students will have more chances to describe ratios and think about equivalent ratios in Lesson 3.

Sample Responses

- The ratio of clouds to hearts is 6 to 4.
- For every 3 clouds, there are 2 hearts.

---

3 Lesson 3: Introductio…

A recipe for pizza dough

A recipe for pizza dough begins with these instructions.

Select **all** the ratios that are equivalent to the original recipe.

Teacher Moves

Support for Future Learning
Students will have more chances to explore equivalent ratios in Lesson 4.

Sample Responses

- 3 teaspoons of yeast to 2 cups of flour

- 18 teaspoons of yeast to 12 cups of flour

4 Lesson 4: Creating E…

This balanced scale has 6

This balanced scale has 6 mangos and 2 pineapples.

Select **all** of the combinations that will balance the scale.

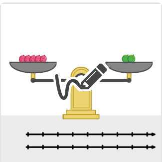
Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 5. Understanding how to create equivalent ratios will help students as they begin determining missing quantities in Lessons 5 and 6.

Sample Responses

- 3 mangos and 1 pineapple
- 24 mangos and 8 pineapples
- 60 mangos and 20 pineapples

5 Lesson 5: Introductio…



The scale balances with a ratio

$f(x)$

The scale balances with a ratio of 5 lychees to 2 limes.

How many lychees will balance with 10 limes?

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 6 and beyond. It may be helpful to review this screen as a class before Lesson 6.

Sample Responses

25 lychees

6 Lesson 6: Unit Prices…

Answer the question on the card.

$f(x)$

Answer the question on the card.

Teacher Moves

Support for Future Learning
Students will have more chances to think about unit rates in Lessons 7 and 8. Plan to emphasize strategies that involve calculating a unit rate during Activity 1 of Lesson 7.

Sample Responses

$\$0.75$

Explanations vary. $3 \div 4 = 0.75$

---

7 Lesson 6: Unit Prices…

Answer the question on the card.

$f(x)$

Answer the question on the card.

Teacher Moves

Support for Future Learning
Students will have more chances to think about unit rates in Lessons 7 and 8. Plan to emphasize strategies that involve calculating a unit rate during Activity 1 of Lesson 7.

Sample Responses

$\$5.00$

Explanations vary. $7.5 \div 6 = 1.25$ each, so 4 would be $1.25 \cdot 4 = 5$.

---

8 Lesson 7: Comparing…

Here are two new ratios:

Here are two new ratios:

Ratio A
4 ounces red : 3 gallons white

Ratio B
6 ounces red : 4 gallons white

Which will make a darker red?

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of comparing ratios in Lesson 8.

Sample Responses

Ratio B

Explanations vary.

- Ratio B has 1.5 ounces of red per gallon of white and Ratio A has about 1.33 ounces of red per gallon of white. More red tint means a darker red.
- If you make both ratios use 12 ounces of red, Ratio A uses $3 \cdot 3 = 9$ gallons of white paint, but Ratio B only uses $4 \cdot 2 = 8$ gallons of white. Less white paint means a darker red.

---

9 Lesson 8: Comparing…

Two cyclists are traveling at constant

Two cyclists are traveling at constant speeds on different tracks.

Some of the times and distances for each cyclist are recorded on these double number lines.

Which cyclist is traveling faster?

Teacher Moves

Support for Future Learning
Students will continue to use double number lines and other strategies to solve problems with ratios. If students struggle to compare ratios, consider reviewing this question before Practice Day 2 or offering individual support where needed during the practice day.

Sample Responses

Cyclist B

Explanations vary. Cyclist B travels 20 meters per second, whereas Cyclist A travels 15 meters per second.

10 Lesson 9: Using Rat…

FEMA recommends 20 rolls of duct tape and 4

FEMA recommends 20 rolls of duct tape and 4 pairs of scissors for every 100 people.

Complete the table according to FEMA's recommendations.

Teacher Moves

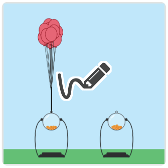
Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 10.

Sample Responses

Population 300 **:** 60 rolls of duct tape and 12 scissors
Population 4000 **:** 800 rolls of duct tape and 160 scissors

---

11 Lesson 10: Solving …



Red balloons float orange

$f(x)$

Red balloons float orange marbles at a ratio of $12 : 8$.

How many red balloons will float 10 orange marbles?

Use paper if it helps you with your thinking.

Teacher Moves

Support for Future Learning
Students will have more chances to solve multistep ratio problems in Lesson 11. If many students struggle, consider reviewing this screen as a class before beginning Lesson 11.

Sample Responses

15 red balloons

---

12 Lesson 11: Solving …

Consider these two problems.

Consider these two problems.

Which problem could you use equivalent ratios to answer?

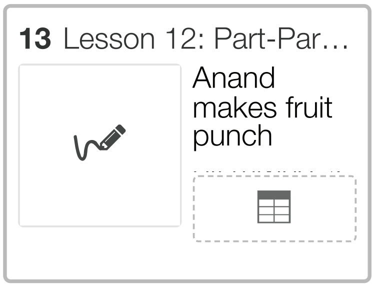
Teacher Moves

Support for Future Learning

Consider reviewing this screen as a class before Practice Day 2 or offering individual support where needed during the practice day.

Sample Responses

- Problem A
- $\$600$



Anand makes fruit punch by mixing 4 liters of cranberry juice and 3 liters of ginger ale.

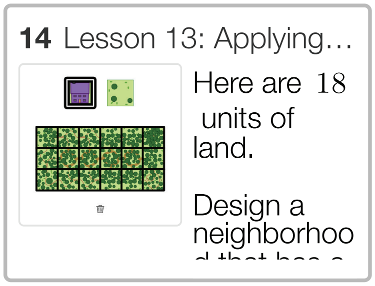
How much of each ingredient would Anand need to make 35 liters of fruit punch for a party?

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of part-part-whole relationships in Lesson 13. Consider reviewing this screen as a class before Lesson 13 or offering individual support where needed.

Sample Responses

20 liters of cranberry juice and 15 liters ginger ale



Here are 18 units of land.

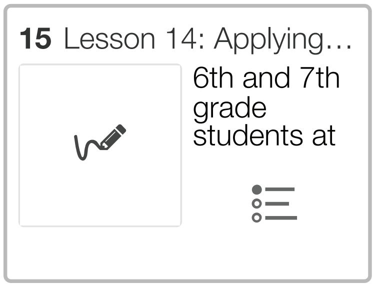
Design a neighborhood that has a $5:4$ ratio of building space to green space.

Teacher Moves

Support for Future Learning
Consider reviewing this screen as a class before Practice Day 2 or offering individual support where needed during the practice day. A strong understanding of how to determine the parts given the whole will support students in the End-Unit Assessment.

Sample Responses

10 building units and 8 green spaces



6th and 7th grade students at a school are trying to reduce their amount of trash.

Which grade do you think was more successful at reducing trash?

Teacher Moves

Support for Future Learning
Consider reviewing this question as a class before Practice Day 2 or offering individual support where needed during the practice day. Several questions on the practice day invite students to compare ratios.

Sample Responses

Responses vary.

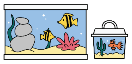
- I think the 6th grade was more successful because they reduced the most amount of trash overall.
- I think the 7th grade was more successful because they reduced a greater amount of trash per person.

6.3 Cool-Downs

Lesson Checklist

- [ ] Complete the lesson using the student preview.
- [ ] Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.
- [ ] Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.
- [ ] Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?
- [ ] Anticipate screens where students will struggle, then plan your response.
- [ ] Consider how to use snapshots to select and present student thinking for class discussion.
- [ ] Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.

1 Lesson 1: Everyday …



Malik and Lukas each have a fish

Malik and Lukas each have a fish tank. Malik's tank holds 20 gallons. Lukas's tank holds 20 cups.

1. Label each fish tank with the name of the person it belongs to.

2. Angel's fish tank holds 20 liters of water. How does it compare to Malik's and Lukas's tanks?

Teacher Moves

Support for Future Learning
If some students struggle, consider reviewing this question as a class at the beginning of Lesson 2. Students will need to understand which units represent larger and smaller quantities in Lessons 2–4.

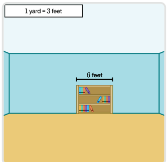
Sample Responses

1. The larger fish tank is Malik's (20 gallons). The smaller fish tank is Lukas's (20 cups).

2. *Responses vary.* 1 liter is larger than 1 cup and smaller than 1 gallon. This means Angel's fish tank is larger than Lukas's fish tank and smaller than Malik's.

---

2 Lesson 2: Measuring …



A bookshelf is 6 feet wide

A bookshelf is 6 feet wide.

How many yards is that?

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 3. It may be helpful to review this screen as a class before Lesson 3 and invite students to share whether the number of yards should be larger or smaller than the number of feet.

Sample Responses

2 yards

3 Lesson 3: Converting…

4 gallons ≈ 15 liters

A restaurant needs 5

f(x)

A restaurant needs 5 gallons of ice cream for dessert one night.

About how many liters is this?

Teacher Moves

Support for Future Learning
If students struggle, consider making time to explicitly revisit these ideas. A strong understanding of the strategies that can be used to convert between units in different systems of measurement will support students as they learn about unit rates in Section 2.

Sample Responses

18.75 liters

---

4 Lesson 4: Comparing…

Which train is faster?

Which train is faster?

Teacher Moves

Support for Future Learning
Students will have more opportunities to understand unit rates. There is no need to slow down or add additional work to the next lessons.

Sample Responses

Train A

Explanations vary.

- Train A travels $\frac{300}{20} = 15$ centimeters per second, while Train B only travels $\frac{200}{15} = 13\frac{1}{3}$ centimeters per second.
- Train A travels $300 \cdot 3 = 900$ in one minute, and Train B travels $200 \cdot 4 = 800$ centimeters in one minute. Since Train A travels farther in one minute, it is faster.

5 Lesson 5: Two Unit R…

Two pounds of grapes cost

Two pounds of grapes cost $\$5$.

Jordan says that's 2.5 pounds per dollar.
Emika says it's 0.4 pounds per dollar.

Which rate is correct?

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in the following lesson.

Sample Responses

0.4 pounds per dollar

Explanations vary. Pounds per dollar means how many pounds for 1 dollar. Since $\$5$ gets 2 pounds, dividing both numbers by 5 will get the pounds for 1 dollar: $\frac{2}{5} = 0.4$.

---

6 Lesson 6: Using Unit …

A factory can make 4 robots in 120 seconds.

A factory can make 4 robots in 120 seconds.

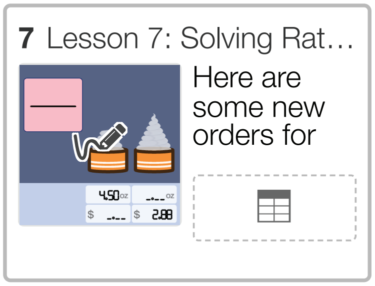
Complete the table.

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 7, particularly on Screens 6–8.

Sample Responses

- 750 seconds
- 9 robots
- 30 seconds



Here are some new orders for Shop A.

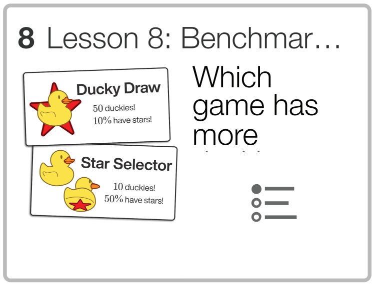
Enter the missing values.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Practice Day 1 or offering individual support where needed during the Practice Day. Students will need a strong understanding of how to use unit rates to determine unknown values.

Sample Responses

- $\$1.80$
- 7.2 ounces



Which game has more duckies with stars?

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of reasoning about and calculating percentages in Lessons 9 and 10.

Sample Responses

They have the same number of duckies with stars.

Explanations vary. 10% of 50 is 5, and 50% of 10 is also 5.

Callen bought new sneakers for $\$60$.

Miko bought sneakers that cost 80% of that price.

How much did Miko pay for his sneakers?

Teacher Moves

Support for Future Learning

Students will continue to develop their understanding of calculating unknowns involving percentages in Lessons 10 and 11.

Sample Responses

$\$48$

---

10 Lesson 10: Solving …

It takes Emiliano 20 minutes to

$f(x)$

It takes Emiliano 20 minutes to walk 80% of the way to school.

How long does it take in total for Emiliano to walk to school?

Teacher Moves

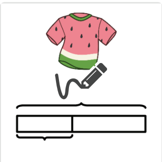
Support for Future Learning
If students struggle, consider reviewing the cool-down as a class before Practice Day 2 or offering individual support where needed during the practice day. This is the last lesson that focuses on calculating a whole given a part and a percentage.

Sample Responses

25 minutes

---

11 Lesson 11: Any Per…



Select **all** of the expressions

Select **all** of the expressions that can be used to calculate 43% of $\$26$.

Teacher Moves

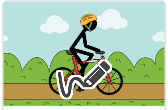
Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 13 or offering individual support where needed during Lesson 13 and Practice Day 2.

Sample Responses

- $\frac{26}{100} \cdot 43$
- $\frac{43}{100} \cdot 26$

---

12 Lesson 12: Unknow…



Darryl rode 15 km out

$f(x)$

Darryl rode 15 km out of his 12 km goal.

What percent of his goal did he ride?

Teacher Moves

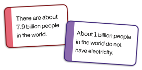
Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 13 or offering individual support where needed as students are making their posters. This is the last lesson that focuses explicitly on calculating any unknown percent.

Sample Responses

125%

---

13 Lesson 13: Applying…



What percent of people in

$f(x)$

What percent of people in the world do not have electricity?

Teacher Moves

Support for Future Learning
If some students struggle, consider offering individual support where needed during Practice Day 2. Students will not be directly assessed on situations involving a village of 100 people but should know how to calculate an unknown percent.

Sample Responses

- About 12.7%
- 12 or 13 people

6.4 Cool-Downs

Lesson Checklist

- ☐ Complete the lesson using the student preview.
- ☐ Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.
- ☐ Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.
- ☐ Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?
- ☐ Anticipate screens where students will struggle, then plan your response.
- ☐ Consider how to use snapshots to select and present student thinking for class discussion.
- ☐ Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.

1 Lesson 1: Estimating Quotients

Teacher Moves

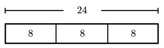
Support for Future Learning
Students will have more chances to develop their ability to estimate quotients throughout the unit, particularly in Lesson 6.

Sample Responses

Image solution

---

2 Lesson 2: Representing Divisio...



Write three equations that this

Write three equations that this diagram could represent.

Teacher Moves

Support for Future Learning
Students will have more opportunities to make connections between tape diagrams and division expressions throughout the unit.

Sample Responses

Responses vary.

- $8 \cdot 3 = 24$
- $3 \cdot 8 = 24$
- $24 \div 3 = 8$

---

3 Lesson 3: How Many Groups? ...

Emmanuel needs 2 tablespoons

$f(x)$

Emmanuel needs 2 tablespoons of sugar to make lemonade.

His measuring scoop is $\frac{1}{4}$ of a tablespoon.

How many scoops will he need?

Teacher Moves

Support for Future Learning
Students will have more chances in Lessons 5 and 6 to develop their understanding of calculating an unknown number of groups.

Sample Responses

8 scoops

---

4 Lesson 4: How Many in Each G...

2 cups of flour make $\frac{1}{3}$

$f(x)$

2 cups of flour make $\frac{1}{3}$ of a loaf of bread.

How much flour is needed for 1 whole loaf?

Teacher Moves

Support for Future Learning
Students will have many more chances to develop their understanding of dividing by a unit fraction throughout the unit, particularly in Lesson 8.

Sample Responses

6 cups

---

5 Lesson 5: How Many Groups? ...

Use a tape diagram to determine the

$f(x)$

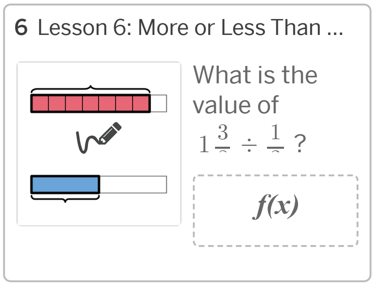
Use a tape diagram to determine the value of $3 \div \frac{4}{5}$.

Teacher Moves

Support for Future Learning
Students will have more chances to calculate unknown numbers of groups in Lessons 6, 7, and 9.

Sample Responses

$3\frac{3}{4}$ (or equivalent)



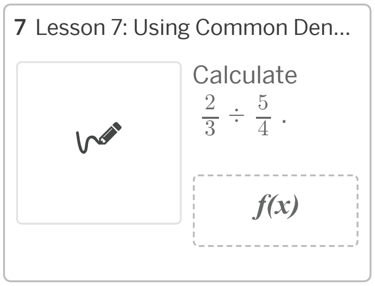
What is the value of $1\frac{3}{8} \div \frac{1}{2}$?

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of fraction division in later lessons, particularly in Lessons 7 and 9.

Sample Responses

$\frac{11}{4}$ (or equivalent)



Calculate $\frac{2}{3} \div \frac{5}{4}$.

Use the sketch tool if it helps you with your thinking.

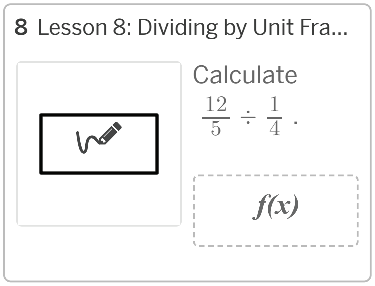
Teacher Moves

Support for Future Learning
Students will have more chances to develop their fluency with fraction division in later lessons, particularly Lessons 9 and 10.

Sample Responses

$\frac{8}{15}$ (or equivalent)

Note: Student answers between 0.53 and 0.54 are marked correct.



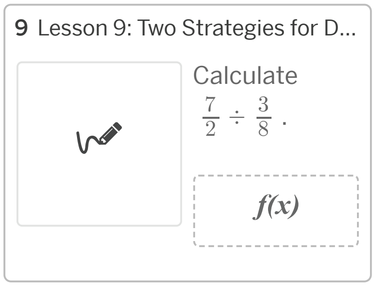
Calculate $\frac{12}{5} \div \frac{1}{4}$.

Teacher Moves

Support for Future Learning
If students struggle, plan to further develop these strategies when opportunities arise in Lesson 9. Consider spending extra time during the discussion on Screen 5 to surface strategies for dividing by a unit fraction.

Sample Responses

$\frac{48}{5}$



Calculate $\frac{7}{2} \div \frac{3}{8}$.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 10 or offering individual support where needed during that lesson. If students are struggling to divide fractions after Lesson 10, consider pausing and spending more time on each of the strategies from this lesson.

Sample Responses

$\frac{28}{3}$ (or equivalent)

Note: Student answers between 9.33 and 9.34 are marked correct.

10 Lesson 10: Division of Fractio...

Calculate the value of each expression.

$f(x)$

Calculate the value of each expression.

1. $6 \div \frac{2}{3}$

Teacher Moves

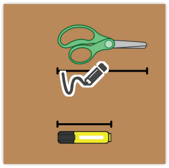
Support for Future Learning
If students struggle, consider reviewing these questions as a class before the quiz or checking in with students individually during the Practice Day.

Sample Responses

1. 9
2. $\frac{3}{10}$ (or equivalent)

---

11 Lesson 11: Comparing Fractio...



The pair of scissors is how many

$f(x)$

The pair of scissors is how many times as long as the highlighter?

Teacher Moves

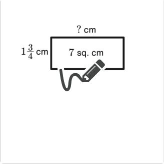
Support for Future Learning
If students struggle, consider pausing and reviewing this screen as a class before the End Assessment. This is the last time students explicitly practice fraction division before the End Assessment.

Sample Responses

$\frac{25}{15}$ (or equivalent)

Note: Student answers between 1.66 and 1.67 are marked correct.

12 Lesson 12: Areas With Fractio...



Use any strategy to determine the

$f(x)$

Use any strategy to determine the value of the " ? ".

Teacher Moves

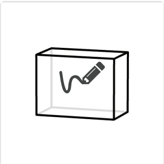
Support for Future Learning
If students struggle, consider pausing and reviewing this screen as a class before Lesson 13 or offering individual support where needed during Lesson 13, Activity 1.

Sample Responses

4

---

13 Lesson 13: Volumes With Frac...



Calculate the volume of this prism.

$f(x)$

Calculate the volume of this prism.

Teacher Moves

Support for Future Learning
If students struggle, consider pausing and reviewing this screen as a class before Lesson 14 or offering individual support where needed in Lesson 14's warm-up and Activity 1.

Sample Responses

$\frac{45}{4}$ cubic units

---

14 Lesson 14: Applying Fraction ...

What is the volume of soil needed to fill

$f(x)$

What is the volume of soil needed to fill this planter?

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this question as a class before the End Assessment. This is the final opportunity for students to practice calculating volume with fractional dimensions in this unit.

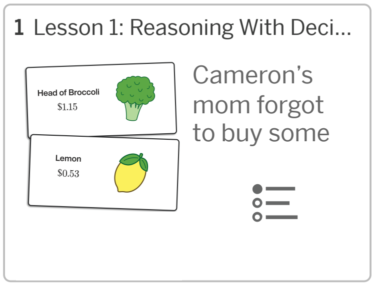
Sample Responses

20 cubic feet

6.5 Cool-Downs

Lesson Checklist

- ☐ Complete the lesson using the student preview.
- ☐ Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.
- ☐ Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.
- ☐ Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?
- ☐ Anticipate screens where students will struggle, then plan your response.
- ☐ Consider how to use snapshots to select and present student thinking for class discussion.
- ☐ Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.



Cameron's mom forgot to buy some ingredients for dinner.

She gave Cameron $\$5$ and asked him to to buy 1 head of broccoli and 2 lemons.

Will Cameron have money left over?

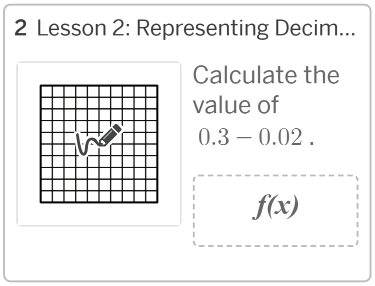
Teacher Moves

Support for Future Learning
If students struggle to decide if there will be money left over, consider checking in individually during Lesson 2 to better understand how students were estimating.

Students will have more chances in Lessons 2–4 with questions that ask for precision like "How much money will be left over?"

Sample Responses

Yes. About $\$2.85$.



Calculate the value of $0.3-0.02$.

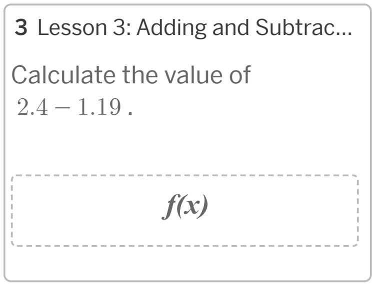
Use the sketch tool if it helps you show your thinking.

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of adding and subtracting decimals in Lessons 3 and 4.

Sample Responses

0.28



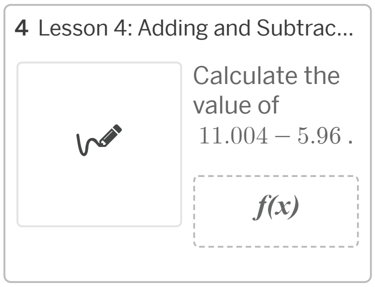
Calculate the value of $2.4 - 1.19$.

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize how to use vertical calculations to add and subtract decimals when opportunities arise in Lesson 4. Spend extra time during the discussion on Screen 3 ensuring that students understand how to set up vertical calculations when adding and subtracting decimals.

Sample Responses

1.21



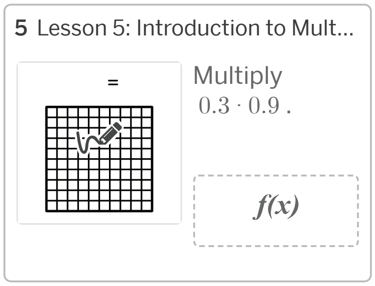
Calculate the value of $11.004 - 5.96$.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before the quiz.

Sample Responses

5.044



Multiply $0.3 \cdot 0.9$.

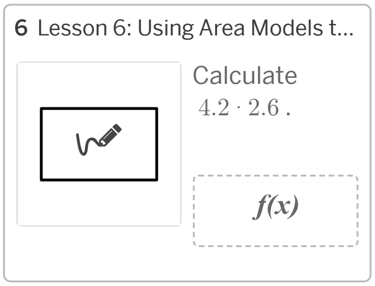
Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 6 or offering individual support where needed during Lesson 6. It will be very helpful for students to understand how to multiply decimals with only one non-zero digit before they extend their thinking to more complex decimal multiplication problems.

Materials (optional): Invite students to use the Hundredths Charts Supplement as they find helpful on this screen.

Sample Responses

0.27



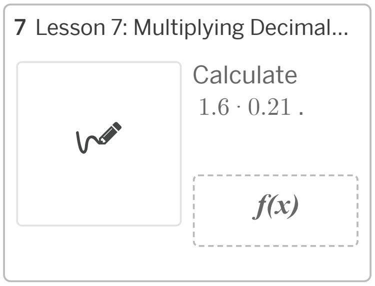
Calculate $4.2 \cdot 2.6$.

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of multiplying decimals in Lesson 7.

Sample Responses

10.92



Calculate $1.6 \cdot 0.21$.

Teacher Moves

Support for Future Learning
Consider reviewing this problem as a class before Practice Day 1 or offering individual support where needed during the practice day. Students will need to be able to multiply decimals on the Quiz and End Assessment.

Sample Responses

0.336

8 Lesson 8: Making Sense of De...

Calculate the value of $1.5 \div 0.05$.

$f(x)$

Calculate the value of $1.5 \div 0.05$.

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of dividing decimals in Lessons 9 and 10.

Sample Responses

30

---

9 Lesson 9: Long Division and D...

Calculate each value.

$f(x)$

Calculate each value.

$1\,875 \div 15$

Teacher Moves

Support for Future Learning
Students will have more chances to divide decimals in Lessons 10 and 11.

Sample Responses

- 125
- 43

---

10 Lesson 10: Long Division Wit...

Calculate the value of $7.1 \div 0.2$.

$f(x)$

Calculate the value of $7.1 \div 0.2$.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this problem as a class before Lesson 11 or offering individual support where needed during Lesson 11 or Practice Day 1.

Sample Responses

35.5

11 Lesson 11: Dividing Decimals i...

A movie is 9.75 seconds long.

Describe a situation related to

A movie is 9.75 seconds long.

Describe a situation related to this movie that could be represented by the expression $9.75 \div 2.5$.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 12 or offering individual support where needed during Practice Day 2.

Sample Responses

3.9

12 Lesson 12: Operations With D...

The DesWagon Classic can

$f(x)$

The DesWagon Classic can hold 12.4 gallons of gas.

How much more would it cost to fill up a tank of gas in Hawaii than in Mississippi?

Teacher Moves

Support for Future Learning
Students will have more chances to practice using decimal operations in Practice Day 2.

Sample Responses

$\$16.12$

13 Lesson 13: Percentages as De...

On average, families that make about $\$15\,000$ per year spend 36% of their income on

On average, families that make about $\$15\,000$ per year spend 36% of their income on food.

On average, families that make about $\$175\,000$ per year spend 8% of their income on food.

1. Which group spends more money on food?

Teacher Moves

Support for Future Learning
Calculating percentages of numbers will not be assessed on the End Assessment.

Sample Responses

1. The families that make $\$175\ 000$ per year spend more on food.
2. $\$8\ 600$

---

14 Lesson 14: Investigating Leas...

What is the least common multiple of 10

$f(x)$

What is the least common multiple of 10 and 6?

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 15, particularly in Activity 2.

Sample Responses

30

---

15 Lesson 15: Investigating Grea...

What is the greatest common

$f(x)$

What is the greatest common factor of 24 and 40?

Use the sketch tool if it helps you with your thinking.

Teacher Moves

Support for Future Learning

If students struggle, consider reviewing this screen as a class before Practice Day 2. Students will need to know how to determine the greatest common factor of two numbers on the End Assessment.

Sample Responses

8

6.6 Cool-Downs

Lesson Checklist

- [ ] Complete the lesson using the student preview.
- [ ] Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.
- [ ] Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.
- [ ] Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?
- [ ] Anticipate screens where students will struggle, then plan your response.
- [ ] Consider how to use snapshots to select and present student thinking for class discussion.
- [ ] Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.

1 Lesson 1: Reasoning …

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of representing equations with tape diagrams in Lesson 2.

Sample Responses

Image solution

---

2 Lesson 2: Tape Diagr…
Yasmine is biking 5 miles to her friend's house.

Yasmine is biking 5 miles to her friend's house. After she biked 2 miles, she had x miles left to go.

1. Which equation matches this situation?

Teacher Moves

Support for Future Learning
Students will have more chances to connect situations and equations in Lesson 5.

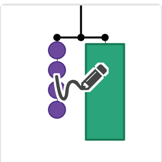
Sample Responses

1. $2+x=5$

2. *Responses vary.* The solution to this equation is the number of miles Yasmine still has before she gets to her friend's house.

---

3 Lesson 3: Introductio…



Here is a balanced hanger.

Here is a balanced hanger.

1. Which equation does this hanger represent?

Teacher Moves

Support for Future Learning
If students struggle to connect equations and hangers, consider reviewing this screen before beginning Lesson 4. Students will have more chances to develop their understanding of solving equations in Lesson 4.

Sample Responses

1. $4x = 24$

2. $x = 6$

4 Lesson 4: Solving Eq…

What is the value of x that makes

$f(x)$

What is the value of x that makes this equation true?

$$2.18 + x = 6$$

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Lesson 5 or offering individual support where needed during Lesson 5 or Practice Day 1.

Sample Responses

3.82

5 Lesson 5: Solving Eq…

Here is an equation: $x + 2.5 = 10$

Here is an equation: $x + 2.5 = 10$.

1. Write a situation to match this equation.
   Explain what x represents in your situation.

Teacher Moves

Support for Future Learning
Consider reviewing this prompt as a class before Practice Day 1 or offering individual support where needed during the practice day. Students will have opportunities to write expressions from situations in Part 2 of this unit, but this is the last lesson explicitly focused on solving equations.

Sample Responses

1. *Responses vary.* I brought 2.5 pounds of blueberries to a party. There were 10 pounds of blueberries at the party in total. There were x pounds of blueberries at the party before I arrived.

2. $x = 7.5$

3. There were 7.5 pounds of blueberries at the party before I arrived.

6 Lesson 6: Introductio…

Oranges cost $\$2$ per pound

Oranges cost $\$2$ per pound.

What is the cost of x pounds of oranges?

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 13, particularly on screens where students select an equation to represent a relationship.

Sample Responses

$2x$
12

7 Lesson 7: Equivalent …

Select **two** expressions that are

Select **two** expressions that are equivalent to $2n + 4$.

Use the sketch tool if it helps you with your thinking.

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 8, particularly in Activity 1 where students select which rectangles are equivalent.

Sample Responses

- $n + n + 1 + 1 + 1 + 1$
- $(n + 2) + (n + 2)$

8 Lesson 8: Distributive…

Select **all** the expressions

Select **all** the expressions that represent the area of the rectangle.

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 9, particularly during the warm-up and Activity 1.

Sample Responses

- $5(x + 3)$
- $5x + 15$

---

9 Lesson 9: Distributive…

Write an expression that is

$f(x)$

Write an expression that is equivalent to $4\left(x - 3y\right)$.

Teacher Moves

Support for Future Learning
Consider reviewing this question as a class before Practice Day 1 or offering individual support where needed during the practice day. Students will need to know how to write equivalent expressions on the End Assessment.

Sample Responses

$4x - 12y$ (or equivalent)

---

10 Lesson 10: What Ar…

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lessons 11 or 12, with a focus on connecting exponents to area and volume.

Sample Responses

Image solution

---

11 Lesson 11: Expone…

Determine the value of these

$f(x)$

Determine the value of these expressions.

$$2 \cdot 4^2$$

Teacher Moves

Support for Future Learning
If students struggle, consider spending extra time during Lesson 12 discussing order of operations when students are evaluating expressions with exponents and variables.

Sample Responses

- 32
- 36

---

12 Lesson 12: Expone…

What is the value of $4x^2$

$f(x)$

What is the value of $4x^2$ when $x = 3$?

Draw a diagram if it helps you with your thinking.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Practice Day 2 or offering individual support where needed during the practice day. Students will need to be able to evaluate expressions at specific values of their variables on the End Assessment.

Sample Responses

36

---

13 Lesson 13: Stories …

Which equation describes

Which equation describes the same relationship as this table?

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 15. Consider spending extra time on the card sort making

connections between tables, equations, and graphs of the same relationship.

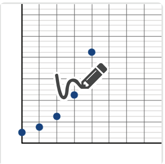
Sample Responses

$c = 2.5h$

Explanations vary. I plugged in the row $h = 1$ and $c = 2.5$ into every equation. $2.5 = 2.5(1)$, but 2.5 does not equal $5(1)$ or $(1) + 5$, and 1 does not equal $2.5 \cdot (2.5)$

---

14 Lesson 14: Interpreti…



The graph represents the

The graph represents the relationship between time, t, and number of mosquitoes, m.

Select the table that represents the same relationship as the graph.

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 15, particularly in Activity 1 when students are making connections between tables and graphs.

Sample Responses

$t = 0, 1, 2, 3$
$m = 2, 3, 5, 9$

---

15 Lesson 15: Tables, …

It takes $\frac{1}{2}$ of a cup of sugar to make each

It takes $\frac{1}{2}$ of a cup of sugar to make each batch of brownies.

Which graph represents the relationship between batches of brownies and cups of sugar?

Teacher Moves

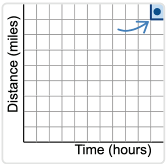
Support for Future Learning
Students will have more chances to make sense of representations for relationships in Lesson 16.

Sample Responses

Image solution

Explanations vary. In this graph, batches of brownies is on the x-axis and cups of sugar is on the y-axis. So the point $(1, \frac{1}{2})$ in this graph means that one batch of brownies will take $\frac{1}{2}$ of a cup of sugar.

16 Lesson 16: Applying…



A train is traveling from one

A train is traveling from one station to another at a constant speed of 50 miles per hour.

1. Complete the table with the amounts of time it takes the train to travel certain distances.

2. Create a graph that represents this relationship.

Teacher Moves

Support for Future Learning
Consider reviewing this question as a class before Practice Day 2 or offering individual support where needed during the practice day. Students will need to know how to make sense of representations for relationships on the End Assessment.

Sample Responses

1. $(2, 100)$, $(7, 350)$, $(3, 150)$, $(4, 200)$

2. Image solution

6.7 Cool-Downs

Lesson Checklist

☐ Complete the lesson using the student preview.

☐ Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.

☐ Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.

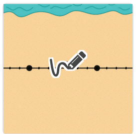
☐ Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?

☐ Anticipate screens where students will struggle, then plan your response.

☐ Consider how to use snapshots to select and present student thinking for class discussion.

☐ Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.

1 Lesson 1: Positive and Negativ...



Here is a number line with three

Here is a number line with three points: A , B , and C .

Enter the location of each point.

Teacher Moves

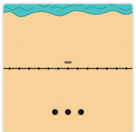
Support for Future Learning
Students will have more chances to develop their understanding of positive and negative locations on the number line in the upcoming lessons, particularly in Lessons 2 and 3.

Sample Responses

$A = -4$
$B = -1$
$C = 3$

---

2 Lesson 2: Positions on the Nu...



Drag point A to -4 .

Drag point B to $-\frac{5}{2}$.

Drag point A to -4 .

Drag point B to $-\frac{5}{2}$.

Drag point C to the opposite of B .

Teacher Moves

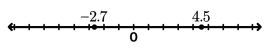
Support for Future Learning
If students struggle with plotting negative numbers and opposites on the number line, plan to emphasize this when opportunities arise in Lesson 3, particularly when students create number lines with the numbers in Activity 2.

Sample Responses

Image solution

3 Lesson 3: Comparing Numbers

1. Write a sentence comparing



2. Order these numbers from greatest to

1. Write a sentence comparing the two numbers shown on the number line.

Teacher Moves

Support for Future Learning
If students struggle to order the numbers from greatest to least, plan to emphasize this when opportunities arise in Lesson 4. For example, spend extra time during the warm-up discussing writing the numbers from greatest to least.

Sample Responses

1. *Responses vary.* 4.5 is greater than -2.7 because it is farther to the right on the number line.

2. **From greatest to least:** 3.1, 2.5, $\frac{1}{4}$, -2.5, -3

---

4 Lesson 4: Positive and Negativ...

Order these elevations from highest to lowest.

Order these elevations from highest to lowest.

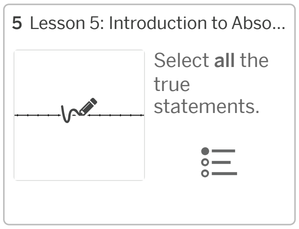
Teacher Moves

Support for Future Learning
If students struggle to order the elevations, consider reviewing this screen as a class before Practice Day 1 or offering individual support where needed during the practice day. Pay particular attention to Problems 11 and 12, which involve ordering elevations and temperatures.

Sample Responses

From highest elevation to lowest elevation:

- 8 meters
- 0 meters
- -5 meters
- -12 meters



Select **all** the true statements.

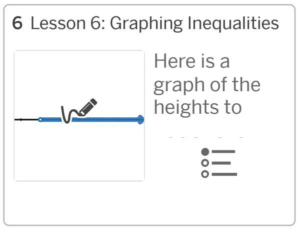
Use the sketch tool if it helps you with your thinking.

Teacher Moves

Support for Future Learning
If students struggle to select the true statements, consider reviewing this screen as a class before Practice Day 1 or offering individual support where needed during the practice day. Problems 2, 5, and 10 involve absolute value.

Sample Responses

$-4 < -3$
$-4 < |-3|$



Here is a graph of the heights to ride a roller coaster.

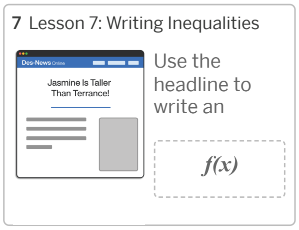
1. Select the sign that matches this graph.

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of inequalities in the upcoming lessons, particularly Lessons 7 and 8.

Sample Responses

- You must be more than 48 inches to ride.
- $h > 48$



Use the headline to write an inequality describing Jasmine's height, j, and Terrance's height, t.

Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of writing inequalities in the next lesson.

Sample Responses

$j > t$

Responses vary. 61 inches

---

8 Lesson 8: Solutions of Inequal...

Here is an inequality and its graph.

Here is an inequality and its graph.

Select **all** of the numbers that are solutions.

Teacher Moves

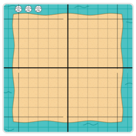
Support for Future Learning
If students struggle to determine solutions to the inequality, consider reviewing this screen as a class before Practice Day 2 or offering individual support where needed during the practice day.

Sample Responses

- 0
- 5
- 20

---

9 Lesson 9: Points in the Coordi...



Drag the sand dollars to these locations:

$(-3, 4)$

Drag the sand dollars to these locations:

$(-3, 4)$
$(1, -2)$
$(-5, 0)$

Teacher Moves

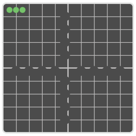
Support for Future Learning
Students will have more chances in the upcoming lessons to develop their understanding of plotting points in the coordinate plane, particularly in Lessons 10 and 11.

Sample Responses

Image solution

---

10 Lesson 10: Practice Plotting



Drag the points to these locations:

$(-10, 4)$

Drag the points to these locations:

$$(-10, 4)$$
$$(-10, -4)$$
$$(2, -6)$$

Teacher Moves

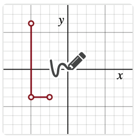
Support for Future Learning
If students struggle with plotting points, plan to emphasize this when opportunities arise in Lesson 11. Consider spending extra time during the warm-up inviting students to choose a random point, then entering the coordinates of that point in the table to practice the connection between coordinates and points on the graph.

Sample Responses

Image solution

---

11 Lesson 11: Polygons in the Pla...



Enter coordinates for point D to

Enter coordinates for point D to complete the rectangle.

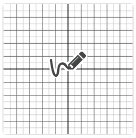
Teacher Moves

Support for Future Learning
If students struggle to determine the missing coordinate pair or the length, consider reviewing this screen as a class before Practice Day 2 or offering individual support where needed during the practice day.

Sample Responses

Coordinates: $(-2, 5)$
Length: 8 units

12 Lesson 12: The Coordinate Pl...



The table below shows some times

The table below shows some times and temperatures for one day in Decatur, Illinois.

1. Plot the first four points.

2. Enter a temperature in the table for 4:00 a.m. and plot a point to represent it.

Teacher Moves

Support for Future Learning
If students struggle with interpreting points in context, consider making time to explicitly revisit these ideas. Some opportunities include spending extra time on the “Interpret It” task of Practice Day 2.

Sample Responses

1. Image solution

2. *Points vary.* (The x-coordinate must be 4.)

6.8 Cool-Downs

Lesson Checklist

- ☐ Complete the lesson using the student preview.
- ☐ Identify how this lesson extends the learning from previous lessons, and how it prepares students for future lessons.
- ☐ Think about how you will introduce each new section within the lesson to engage students in the task and maintain focus on the learning goals.
- ☐ Determine the screens where you'll use Pacing and Pause to bring the class together. What questions will you ask on those screens?
- ☐ Anticipate screens where students will struggle, then plan your response.
- ☐ Consider how to use snapshots to select and present student thinking for class discussion.
- ☐ Think about how you will use the results of previous Cool-Downs and student surveys to inform your approach to this lesson.

1 Lesson 1: Asking Questions, Co...

Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize numerical and categorical data when opportunities arise in Lesson 2. Consider asking students on Screen 2 if hours of phone usage is numerical or categorical data and why.

Sample Responses

Image solution

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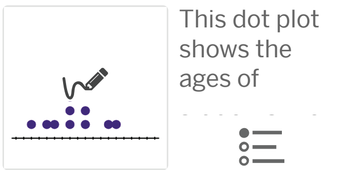
2 Lesson 2: Visualizing Data Wit...



This dot plot shows the ages of students in a dance class.

Based on the dot plot, do you agree with each of the following statements?

1. There are 7 students in the class.

Teacher Moves

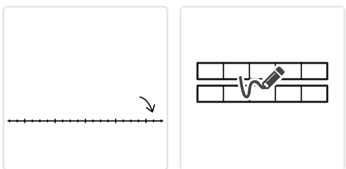
Support for Future Learning
Students will have more chances to develop their understanding of interpreting dot plots in Lessons 3 and 4.

Sample Responses

1. Disagree
2. Agree

---

3 Lesson 3: Creating Dot Plots



Teacher Moves

Support for Future Learning
Consider reviewing this cool-down as a class before Practice Day 1 or offering individual support where needed during the practice day.

Students will have many more opportunities to analyze dot plots, but this is the last time students will be formally asked to create a dot plot by hand in this section of lessons.

Sample Responses

Image solution

---

4 Lesson 4: Comparing Dot Plots

Which dot plot has a center at 3 and the smallest spread?

Which dot plot has a center at 3 and the smallest spread?

Teacher Moves

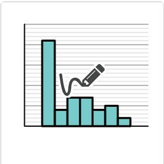
Support for Future Learning
Students will have more chances to develop their understanding of center and spread throughout the unit.

Sample Responses

Image solution

---

5 Lesson 5: Introduction to Hist...



This histogram shows the

f(x)

This histogram shows the minimum wages of all 50 states in 2020.

How many states have a minimum hourly wage of at least $\$12$?

Teacher Moves

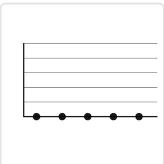
Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 6, particularly as students are making sense of the two histograms in Activity 1.

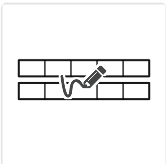
Sample Responses

7 states

---

6 Lesson 6: Creating Histograms





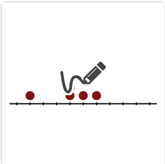
Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this cool-down as a class before Practice Day 1 or offering individual support where needed during the practice day. This is the last lesson that focuses explicitly on either interpreting or creating histograms.

Sample Responses

Image solution

7 Lesson 7: Introduction to the ...



Here is how many cookies Aditi ate for

Here is how many cookies Aditi ate for snack one week.

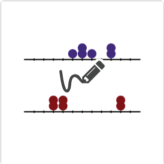
Teacher Moves

Support for Future Learning
Students will have more chances to develop their understanding of the mean in Lesson 8.

Sample Responses

4 cookies

8 Lesson 8: Sum of the Deviations



These dot plots show the number of

These dot plots show the number of text messages sent by different students over 6 days.

Whose data set has a mean of 6 ?

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before the quiz or offering individual support where needed during Practice Day 1.

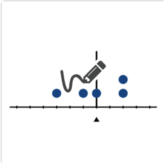
Sample Responses

Polina

Explanations vary.

- The sum of the absolute deviations on the left of 6 is 4 for Polina’s data. The sum of the absolute deviations on the right of 6 is also 4 for Polina’s data, so the mean of her data is 6 .
- If I find the sums of the distances from 6 for Rishi's data, I get 14 for the left sum and 6 for the right sum. Since these aren't equal, the mean of Rishi's data isn't 6 .

9 Lesson 9: Mean Absolute Devi...



The dot plot shows the number of

The dot plot shows the number of text messages Deven sent every day for 5 days.

Calculate the MAD of this data.

Teacher Moves

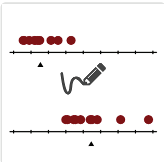
Support for Future Learning
If students struggle, consider spending extra time during Activity 1 in Lesson 10, where students calculate the MAD of a data set. Students will need to understand how to calculate mean average deviation on the End Assessment.

Sample Responses

1.6 text messages

---

10 Lesson 10: Using Mean and ...



Here is data for the top 10 salaries for

Here is data for the top 10 salaries for actresses and actors in 2020.

1. What does the mean of the first data set tell you about the actresses?

Teacher Moves

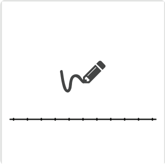
Support for Future Learning
If students struggle, consider reviewing this cool-down as a class before Practice Day 2 and offering individual support where needed during the practice day.

Sample Responses

1. *Responses vary*. The mean tells us that the average salary of the top-earning actresses in Hollywood in 2020 was $\$25.4$ million.

2. The MAD for the actors is larger. The MAD tells us that the salaries for those actors are more spread out.

11 Lesson 11: Introducing the Me...



10 students shared the age of their

f(x)

10 students shared the age of their family's pet.

What is the median age of these students' pets?

Make a dot plot if it helps you with your thinking.

Teacher Moves

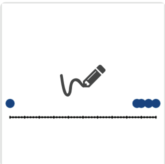
Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lessons 13 and 14.

Sample Responses

6 years

---

12 Lesson 12: Comparing Measu...



Ricardo got the following scores on his

Ricardo got the following scores on his five class assignments: $87, 90, 0, 95, 100$.

1. Which statement is true about this data set?

Teacher Moves

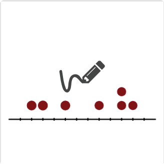
Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 16, where students consider which measure of center to use to compare two data sets.

Sample Responses

1. The median is greater than the mean.

2. *Responses and explanations vary.*
- Median because Ricardo did really well on 4 of his 5 assignments, so reporting the median makes more sense.
- Mean because otherwise the assignment that Ricardo did badly on won't really be included.

13 Lesson 13: Introduction to Qu...



Here is a data set with 7 points.

Here is a data set with 7 points.

Determine the values of Q1 and Q3.

Use the sketch tool if it helps with your thinking.

Teacher Moves

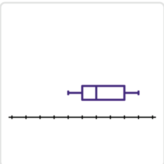
Support for Future Learning
If students struggle, plan to emphasize this when opportunities arise in Lesson 14, particularly in Activity 2 where students create a box plot from data.

Sample Responses

Q1: 20
Q3: 27

---

14 Lesson 14: Box Plots, IQR, an...



Inola took the bus to school most days in

Inola took the bus to school most days in January.

She wrote down how many minutes it took to get to school each day and made a box plot.

For this data, what is the:

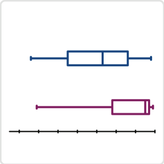
Teacher Moves

Support for Future Learning
If students struggle, plan to emphasize how to determine the median, IQR, and range from a box plot when opportunities arise in Lesson 15. Consider spending extra time during the warm-up reviewing how to determine each of these statistics.

Sample Responses

Median: 30 minutes
IQR: 15 minutes
Range: 25 minutes

15 Lesson 15: Comparing Box Pl...



These box plots represent

These box plots represent scores for Dreamworks movies and Pixar movies.

Select **all** the true statements.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this screen as a class before Practice Day 2 or offering individual support where needed during the practice day. Students will need to be able to compare two data sets shown as box plots on the End Assessment.

Sample Responses

- The median Dreamworks movie has a score of 73.
- About half of Pixar movies have a score of 95 or higher.

---

16 Lesson 16: Using Statistics to...

Select **one** question below and record your response.

Select **one** question below and record your response.

Teacher Moves

Support for Future Learning
If students struggle, consider reviewing this cool-down as a class before Practice Day 2 and offering individual support where needed during the practice day.

Sample Responses

Responses vary.