Lesson 5

Represent Situations with Equations

Goals

- Interpret and coordinate sentences and equations that represent a situation.
- State explicitly (orally and in writing) what the chosen variable represents in an equation.
- Use equations in the form $x + p = q$ or $px = q$ to solve real-world problems and explain (orally) the solution method.

Learning Targets

- I can explain how an equation with a variable represents a real-world problem.
- I can use equations with variables to solve real-world problems.

Lesson Narrative

In this lesson, students apply what they have learned about variables and equations to represent and solve real-world problems. Students must decontextualize the situation and represent it symbolically, and then interpret the results of any calculation in context. In doing so, they practice reasoning abstractly and quantitatively.

Some students may use drawings or diagrams to help them reason about the situation and the relationships between the quantities. Others may dive straight into solving the problem with arithmetic only. Either case is an opportunity to help students see the parallel with representing and solving the problem algebraically using an equation.

As students represent real-world situations with equations, it is important for them to precisely state the meaning of the variable, including any units involved.

Student Learning Goal

Let's use equations to represent and solve real-world problems.

Access for Students with Diverse Abilities

- Representation (Activity 1)

Access for Multilingual Learners

- MLR5: Co-Craft Questions (Warm-up)

Instructional Routines

- MLR5: Co-Craft Questions

Lesson Timeline

Warm-up	Activity 1	Activity 2	Lesson Synthesis	Assessment: Cool-down
5 min	15 min	15 min	10 min	5 min

Warm-up

Jada's Reading Routine

15 min

Activity Narrative

The purpose of this *Warm-up* is to elicit observations about possible unknown quantities in a situation and to make explicit that a variable can be used to represent such a quantity. The reasoning here builds on students' previous work in using a "?" to represent an unknown value or quantity.

Launch

Tell students to close their books or devices (or to keep them closed). Arrange students in groups of 2. Introduce the context of daily reading routine or reading a certain number of pages regularly to finish a book. Use *Co-Craft Questions* to orient students to the context and elicit possible mathematical questions.

Give students 1–2 minutes to write a list of mathematical questions that could be asked about the situation before comparing questions with a partner.

Student Task Statement

Jada reads 25 pages of a book every day. After several days, she has read the entire book.

Sample responses:

- How many pages long is the book?
- How many days does it take her to read the entire book?
- Does she read exactly 25 pages on the last day?
- How many minutes does it take her to read 25 pages?
- How many minutes does it take her to read the entire book?

Activity Synthesis

Invite several partners to share one question with the class and record responses. Ask the class to make comparisons among the shared questions and their own. Ask,

- *"What do these questions have in common? How are they different?"*

Listen for and amplify language related to the learning goal, such as "how many days," "how many pages," and "how long."

To connect the idea of an unknown quantity in a situation to a variable, display the equation $25n = 200$ for all to see and ask students:

- *"Suppose Jada finishes a 200-page book by reading 25 pages a day. If this equation represents the situation, what might the variable n represent?"*

  The number of days Jada reads the book.

- *"What value of n makes the equation true?"*

  8

- *"What does that number mean in this situation?"*

  Jada reads the book in 8 days.

Access for Multilingual Learners (Warm-up)

MLR5: Co-Craft Questions
This activity uses the *Co-Craft Questions* math language routine to advance reading and writing as students make sense of a context and practice generating mathematical questions.

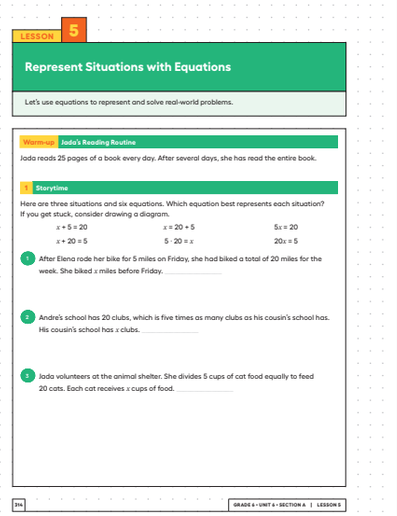
Instructional Routines

MLR5: Co-Craft Questions

ilclass.com/r/10695544

Please log in to the site before using the QR code or URL.

Student Workbook


LESSON 5

Represent Situations with Equations

Let's use equations to represent and solve real-world problems.

Warm-up Jada's Reading Routine

Jada reads 25 pages of a book every day. After several days, she has read the entire book.

1 Storytime

Here are three situations and six equations. Which equation best represents each situation? If you get stuck, consider drawing a diagram.

$x + 5 = 20$ $x = 20 + 5$ $5x = 20$

$x + 20 = 5$ $5 \cdot 20 = x$ $20x = 5$

1. After Elena rode her bike for 5 miles on Friday, she had biked a total of 20 miles for the week. She biked x miles before Friday.
2. Andre's school has 20 clubs, which is five times as many clubs as his cousin's school has. His cousin's school has x clubs.
3. Jada volunteers at the animal shelter. She divides 5 cups of cat food equally to feed 20 cats. Each cat receives x cups of food.

314 GRADE 6 • UNIT 6 • SECTION A | LESSON 5

Access for Students with Diverse Abilities (Activity 1, Student Task)

Representation: Develop Language and Symbols.
Invite students to orally explain their thinking about each situation, using tape diagrams before selecting the equations that match.

Supports accessibility for: Language, Conceptual processing

If time permits, display another equation, $25t = 50$, and ask students:

- *"Suppose Jada spends 50 minutes reading 25 pages each day. If this equation represents the situation, what might the variable t represent?"*

  The number of minutes Jada spends reading one page

- *"What value of t makes the equation true?"*

  2

- *"What does it mean in this situation?"*

  Jada reads at a rate of 2 minutes a page.

Highlight that a variable can also be used to represent an unknown quantity in a situation, such as the number of days or the number of minutes in Jada's reading example.

Activity 1
Storytime
15 min

Activity Narrative

In this activity, students select an equation with a variable that can represent a situation with an unknown quantity. Students are presented with three stories. Each story involves the same three quantities: 5, 20, and an unknown quantity x. Students think about the actions (cycling a number of miles, splitting up cups of cat food) and relationships (five times as many clubs) in the situations and consider the operations needed to describe them. For each situation, monitor for one student who chooses a correct equation and has a way to explain their reasoning, either verbally or by using a diagram.

As students make sense of what the unknown quantity represents in each story and think about how to show its relationship to the other two quantities, they practice reasoning abstractly and quantitatively.

Launch

Tell students that they will see three situations and six equations. For each situation, the task is to find one equation that represents it. Some of the equations will go unused.

Give students 5 minutes of quiet work time, followed by a whole-class discussion.

Student Task Statement

Here are three situations and six equations. Which equation best represents each situation? If you get stuck, consider drawing a diagram.

$x + 5 = 20$ $x = 20 + 5$ $5x = 20$

$x + 20 = 5$ $5 \cdot 20 = x$ $20x = 5$

1. After Elena rode her bike for 5 miles on Friday, she had biked a total of 20 miles for the week. She biked x miles before Friday.

   $x + 5 = 20$

2. Andre's school has 20 clubs, which is five times as many clubs as his cousin's school has. His cousin's school has x clubs.

   $5x = 20$

3. Jada volunteers at the animal shelter. She divides 5 cups of cat food equally to feed 20 cats. Each cat receives x cups of food.

   $20x = 5$

Activity Synthesis

For each situation, ask a student to share which equation they selected and the reason they chose it. If any students drew a diagram to help them reason about the situation, ask them to present their diagram and draw connections between the situation, equation, and diagram. Consider these questions for discussion:

- *"All of the equations and situations had the same numbers. How did you decide which equations represented which situations?"*
- *"Did any of the words in the stories confuse or mislead you? How did you move past the confusion?"*
- *"What does the variable in each equation represent?"*

Activity 2

Choosing Equations to Match Situations

15 min

Activity Narrative

The purpose of this activity is for students to practice matching equations to situations and then solving those equations using their choice of strategy. Monitor for students who reason about the solution to each equation by:

- Drawing diagrams (tape, hanger, or their own creations) that describe the relationships.
- Thinking about values of the variable that would make the equation true and would make sense in the situation.
- Doing the same operation to each side of an equation.

In the *Activity Synthesis*, students analyze similarities in the structure of the situations and the equations that represent them.

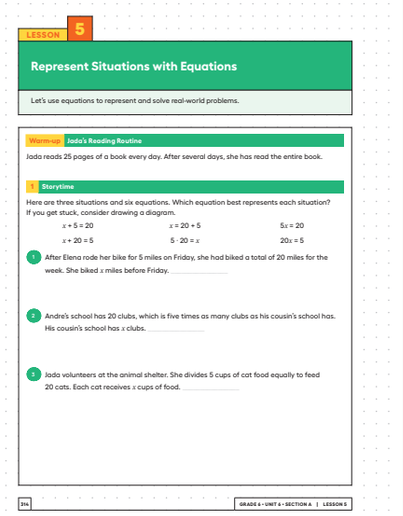
Building on Student Thinking

Students who focus on key words might be misled in each situation. For the first situation, students might see the word "total" and decide they need to add 5 and 20. In the second situation, the words "five times as many" might prompt students to multiply 5 by 20. The third story poses some additional challenges: students see the word "divided" but there is no equation with division. Additionally, students might think that division always means divide the larger number by the smaller. To help students make sense of the situations, encourages students to:

- Represent each situation by acting it out, drawing a picture, or creating a tape diagram.
- Focus on what quantity in the story each number or variable represents, and on the relationships among them.

Think about where a situation describes a total and where it describes parts of the total.

Student Workbook



LESSON 5

Represent Situations with Equations

Let's use equations to represent and solve real-world problems.

Warm-up Jada's Reading Routine

Jada reads 25 pages of a book every day. After several days, she has read the entire book.

1 Storytime

Here are three situations and six equations. Which equation best represents each situation? If you get stuck, consider drawing a diagram.

$x + 5 = 20$ $x = 20 + 5$ $5x = 20$

$x + 20 = 5$ $5 \cdot 20 = x$ $20x = 5$

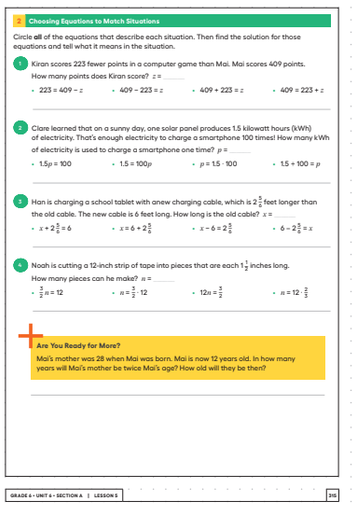
1. After Elena rode her bike for 5 miles on Friday, she had biked a total of 20 miles for the week. She biked x miles before Friday.
2. Andre's school has 20 clubs, which is five times as many clubs as his cousin's school has. His cousin's school has x clubs.
3. Jada volunteers at the animal shelter. She divides 5 cups of cat food equally to feed 20 cats. Each cat receives x cups of food.

Building on Student Thinking

If students continue to focus on key words instead of the relationships described in each situation, consider asking:

"How did you choose an equation for this problem?"
"How can you describe the relationships between the quantities in your own words?"
"How can you draw a diagram to represent those relationships?"

Student Workbook



2 Choosing Equations to Match Situations

Circle **all** of the equations that describe each situation. Then find the solution for those equations and tell what it means in the situation.

1. Kiran scores 223 fewer points in a computer game than Mai. Mai scores 409 points. How many points does Kiran score? $z =$ ____
   - $223 = 409 - z$
   - $409 - 223 = z$
   - $409 + 223 = z$
   - $409 = 223 + z$

2. Clare learned that on a sunny day, one solar panel produces 1.5 kilowatt hours (kWh) of electricity. That's enough electricity to charge a smartphone 100 times! How many kWh of electricity is used to charge a smartphone one time? $p =$ ____
   - $1.5p = 100$
   - $1.5 = 100p$
   - $p = 1.5 \cdot 100$
   - $1.5 \div 100 = p$

3. Han is charging a school tablet with anew charging cable, which is $2\frac{5}{6}$ feet longer than the old cable. The new cable is 6 feet long. How long is the old cable? $x =$ ____
   - $x + 2\frac{5}{6} = 6$
   - $x = 6 + 2\frac{5}{6}$
   - $x - 6 = 2\frac{5}{6}$
   - $6 - 2\frac{5}{6} = x$

4. Noah is cutting a 12-inch strip of tape into pieces that are each $1\frac{1}{2}$ inches long. How many pieces can he make? $n =$ ____
   - $\frac{3}{2}n = 12$
   - $n = \frac{3}{2} \cdot 12$
   - $12n = \frac{3}{2}$
   - $n = 12 \cdot \frac{2}{3}$

Are You Ready for More?

Mai's mother was 28 when Mai was born. Mai is now 12 years old. In how many years will Mai's mother be twice Mai's age? How old will they be then?

GRADE 6 • UNIT 6 • SECTION A | LESSON 5 215

Launch

Explain to students that they will look at descriptions of four situations. For each situation, they are to identify equations that match the relationship described.

One of the situations is about using electricity from solar panels. Invite students to share any knowledge they have about solar panels. Explain that solar panels are considered a "clean" source of energy because they create energy from sunlight rather than from burning fossil fuels like coal or oil, and that kilowatt-hour (kWh) is a unit of energy. (With 1 kilowatt-hour we can, for instance, toast 160 slices of bread or keep cool for 30 hours with a ceiling fan.)

Allow students 8–10 minutes of quiet work time, followed by a whole-class discussion. Remind students that they can draw a diagram to help them visualize the relationships between the quantities in the situation.

Student Task Statement

Circle **all** of the equations that describe each situation. Then find the solution for those equations and tell what it means in the situation.

1. Kiran scores 223 fewer points in a computer game than Mai. Mai scores 409 points. How many points does Kiran score? $z =$ 409

- $223 = 409 - z$
- $409 - 223 = z$
- $409 + 223 = z$
- $409 = 223 + z$

Kiran scored 186 points.

2. Clare learned that on a sunny day, one solar panel produces 1.5 kilowatt hours (kWh) of electricity. That's enough electricity to charge a smartphone 100 times! How many kWh of electricity is used to charge a smartphone one time? $p =$ 0.015

- $1.5p = 100$
- $1.5 = 100p$
- $p = 1.5 \cdot 100$
- $1.5 \div 100 = p$

A phone uses 0.015 kWh of electricity to charge.

3. Han is charging a school tablet with anew charging cable, which is $2\frac{5}{6}$ feet longer than the old cable. The new cable is 6 feet long. How long is the old cable? $x =$ $3\frac{1}{6}$

- $x + 2\frac{5}{6} = 6$
- $x = 6 + 2\frac{5}{6}$
- $x - 6 = 2\frac{5}{6}$
- $6 - 2\frac{5}{6} = x$

The old cable is $3\frac{1}{6}$ feet long.

4. Noah is cutting a 12-inch strip of tape into pieces that are each $1\frac{1}{2}$ inches long. How many pieces can he make? $n =$ 8

- $\frac{3}{2}n = 12$
- $n = \frac{3}{2} \cdot 12$
- $12n = \frac{3}{2}$
- $n = 12 \cdot \frac{2}{3}$

Noah can make 8 pieces.

Are You Ready for More?

Mai's mother was 28 when Mai was born. Mai is now 12 years old. In how many years will Mai's mother be twice Mai's age? How old will they be then?

16 years; Mai will be 28 and her mother will be 56.

Activity Synthesis

Invite students to share their strategies for matching equations to the stories and for solving the problems. Include students who used different ways to reason, as noted in the *Activity Narrative*.

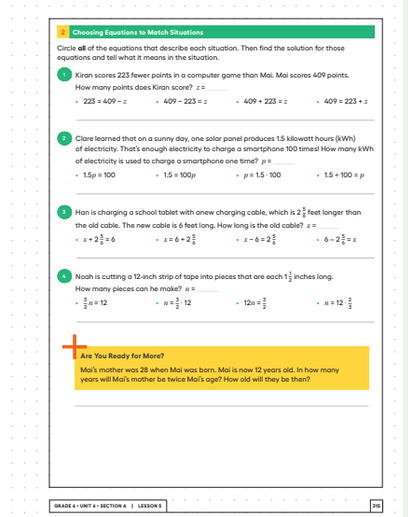
For students who used equations to solve the problems, ask which of the chosen equations they decided to solve and why. For each representation or strategy, ask where students see information from the situation. Regardless of the solving strategy used, students should express each solution in the context of the problem, including the appropriate units.

If no students bring it up, ask if any of the situations have a similar structure. If needed, point out:

- The cable and game situations share a similar structure, where both the larger quantity and the difference between the smaller and larger quantities are known, while the smaller quantity is unknown. This relationship is expressed with "longer" in the cable situation and with "fewer" in the game situation.
- The electricity and tape situations are both about equal-size groups making a total, but differ in the quantities that are known and unknown. In the electricity situation, the total and size of each group is known, and the number of groups is unknown. In the tape situation, the size of each group and the total are known, and the number of groups is unknown.

Focusing on structure in this way helps students reason about the relationships between quantities in a situation. This will help students represent and solve the problems.

Student Workbook


2 Choosing Equations to Match Situations

Circle **all** of the equations that describe each situation. Then find the solution for those equations and tell what it means in the situation.

1. Kiran scores 223 fewer points in a computer game than Mai. Mai scores 409 points. How many points does Kiran score? $z =$ _____
   - $223 = 409 - z$
   - $409 - 223 = z$
   - $409 + 223 = z$
   - $409 = 223 + z$

2. Clare learned that on a sunny day, one solar panel produces 1.5 kilowatt hours (kWh) of electricity. That's enough electricity to charge a smartphone 100 times! How many kWh of electricity is used to charge a smartphone one time? $p =$ _____
   - $1.5p = 100$
   - $1.5 = 100p$
   - $p = 1.5 \cdot 100$
   - $1.5 \div 100 = p$

3. Han is charging a school tablet with anew charging cable, which is $2\frac{2}{3}$ feet longer than the old cable. The new cable is 6 feet long. How long is the old cable? $x =$ _____
   - $x + 2\frac{2}{3} = 6$
   - $x = 6 + 2\frac{2}{3}$
   - $x - 6 = 2\frac{2}{3}$
   - $6 - 2\frac{2}{3} = x$

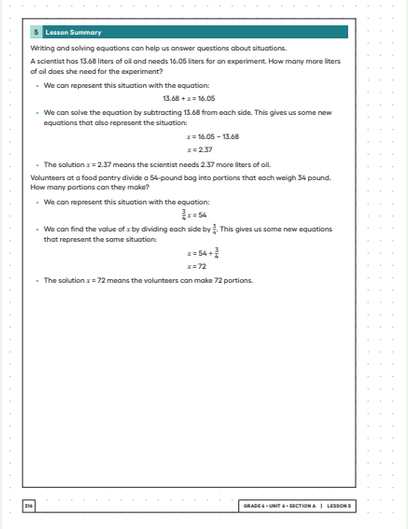
4. Noah is cutting a 12-inch strip of tape into pieces that are each $1\frac{1}{2}$ inches long. How many pieces can he make? $n =$ _____
   - $\frac{3}{2}n = 12$
   - $n = \frac{3}{2} \cdot 12$
   - $12n = \frac{3}{2}$
   - $n = 12 \cdot \frac{2}{3}$

Are You Ready for More?

Mai's mother was 28 when Mai was born. Mai is now 12 years old. In how many years will Mai's mother be twice Mai's age? How old will they be then?

GRADE 6 • UNIT 6 • SECTION A | LESSON 5 310

Student Workbook



5 Lesson Summary

Writing and solving equations can help us answer questions about situations.

A scientist has 13.68 liters of oil and needs 16.05 liters for an experiment. How many more liters of oil does she need for the experiment?

- We can represent this situation with the equation:

$$13.68 + x = 16.05$$

- We can solve the equation by subtracting 13.68 from each side. This gives us some new equations that also represent the situation:

$$x = 16.05 - 13.68$$
$$x = 2.37$$

- The solution $x = 2.37$ means the scientist needs 2.37 more liters of oil.

Volunteers at a food pantry divide a 54-pound bag into portions that each weigh 34 pound. How many portions can they make?

- We can represent this situation with the equation:

$$\frac{3}{4}x = 54$$

- We can find the value of x by dividing each side by $\frac{3}{4}$. This gives us some new equations that represent the same situation:

$$x = 54 \div \frac{3}{4}$$
$$x = 72$$

- The solution $x = 72$ means the volunteers can make 72 portions.

216 GRADE 6 • UNIT 6 • SECTION A | LESSON 5

Lesson Synthesis

Students used equations with variables to represent and solve real-world problems. To encourage students to reflect on the reasoning involved in this process, consider asking some of the following questions:

- *"Why do you think people write equations to represent real-world problems?"*
- *"Why is it important to clearly state what a variable represents when you use an equation to represent a situation?"*
- *"How do you know when a situation can be represented by an addition (or a multiplication) equation?"*
- *"When you solve an equation to solve a real-world problem, how can you check your answer?"*

Lesson Summary

Writing and solving equations can help us answer questions about situations.

A scientist has 13.68 liters of oil and needs 16.05 liters for an experiment. How many more liters of oil does she need for the experiment?

- We can represent this situation with the equation:

$$13.68 + x = 16.05$$

- We can solve the equation by subtracting 13.68 from each side. This gives us some new equations that also represent the situation:

$$x = 16.05 - 13.68$$
$$x = 2.37$$

- The solution $x = 2.37$ means the scientist needs 2.37 more liters of oil.

Volunteers at a food pantry divide a 54-pound bag into portions that each weigh 34 pound. How many portions can they make?

- We can represent this situation with the equation:

$$\frac{3}{4}x = 54$$

- We can find the value of x by dividing each side by $\frac{3}{4}$. This gives us some new equations that represent the same situation:

$$x = 54 \div \frac{3}{4}$$
$$x = 72$$

- The solution $x = 72$ means the volunteers can make 72 portions.

Cool-down

More Storytime

5 min

Student Task Statement

For each situation:

- Choose an equation that represents it.
- Solve the equation.
- Explain what the solution means in the situation.

1. Lin needs 10 cups of flour for a bread recipe. She only has $2\frac{1}{2}$ cups. How much more flour does she need?

- $x + 2\frac{1}{2} = 10$
- $x = 10 + 2\frac{1}{2}$
- $2\frac{1}{2}x = 10$

$x = 7\frac{1}{2}$

Lin needs $7\frac{1}{2}$ cups of flour.

2. Each notebook costs 5.70. How many notebooks does Diego buy if he spends a total of 17.10?

- $x + 5.7 = 17.1$
- $5.7x = 17.1$
- $17.1x = 5.7$

$x = 3$

Diego buys 3 notebooks.

Responding To Student Thinking

Points to Emphasize
If most students struggle with identifying equations that represent situations or explaining the meaning of the variable in those equations, reinforce the concepts throughout the next section. For example, ask students to explain what each variable represents and how each equation represents the situation in the first two problems of:

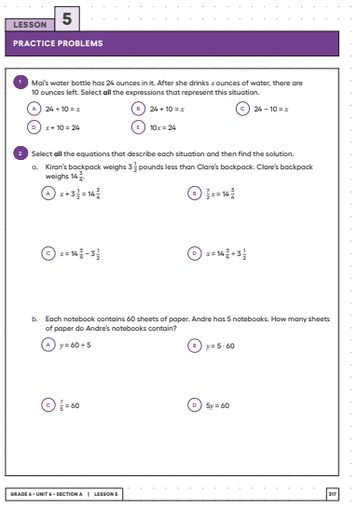
Grade 6, Unit 6, Lesson 7, Activity 2
Building Expressions

Lesson 5

Practice Problems

6 Problems

Student Workbook



LESSON 5

PRACTICE PROBLEMS

1. Mai's water bottle has 24 ounces in it. After she drinks x ounces of water, there are 10 ounces left. Select **all** the expressions that represent this situation.

   A. $24 \div 10 = x$ B. $24 + 10 = x$ C. $24 - 10 = x$
   D. $x + 10 = 24$ E. $10x = 24$

2. Select **all** the equations that describe each situation and then find the solution.

   a. Kiran's backpack weighs $3\frac{1}{2}$ pounds less than Clare's backpack. Clare's backpack weighs $14\frac{3}{4}$.

   A. $x + 3\frac{1}{2} = 14\frac{3}{4}$ B. $\frac{7}{2}x = 14\frac{3}{4}$
   C. $x = 14\frac{3}{4} - 3\frac{1}{2}$ D. $x = 14\frac{3}{4} \div 3\frac{1}{2}$

   b. Each notebook contains 60 sheets of paper. Andre has 5 notebooks. How many sheets of paper do Andre's notebooks contain?

   A. $y = 60 \div 5$ B. $y = 5 \cdot 60$
   C. $\frac{y}{5} = 60$ D. $5y = 60$

GRADE 6 • UNIT 6 • SECTION A | LESSON 5 317

Problem 1

Mai's water bottle has 24 ounces in it. After she drinks x ounces of water, there are 10 ounces left. Select **all** the expressions that represent this situation.

A. $24 \div 10 = x$

B. $24 + 10 = x$

C. $24 - 10 = x$

D. $x + 10 = 24$

E. $10x = 24$

Problem 2

Select **all** the equations that describe each situation and then find the solution.

a. Kiran's backpack weighs $3\frac{1}{2}$ pounds less than Clare's backpack. Clare's backpack weighs $14\frac{3}{4}$.

A. $x + 3\frac{1}{2} = 14\frac{3}{4}$

B. $\frac{7}{2}x = 14\frac{3}{4}$

C. $x = 14\frac{3}{4} - 3\frac{1}{2}$

D. $x = 14\frac{3}{4} \div 3\frac{1}{2}$

$x = \frac{11}{4}, \frac{11}{4}$ pounds

b. Each notebook contains 60 sheets of paper. Andre has 5 notebooks. How many sheets of paper do Andre's notebooks contain?

A. $y = 60 \div 5$

B. $y = 5 \cdot 60$

C. $\frac{y}{5} = 60$

D. $5y = 60$

$y = 300$, 300 sheets

Problem 3

Priya has 5 pencils, each x inches in length. When she lines up the pencils end to end, they measure 34.5 inches. Select **all** the equations that represent this situation.

A. $5 + x = 34.5$

B. $5x = 34.5$

C. $34.5 \div 5 = x$

D. $34.5 - 5 = x$

E. $x = (34.5) \cdot 5$

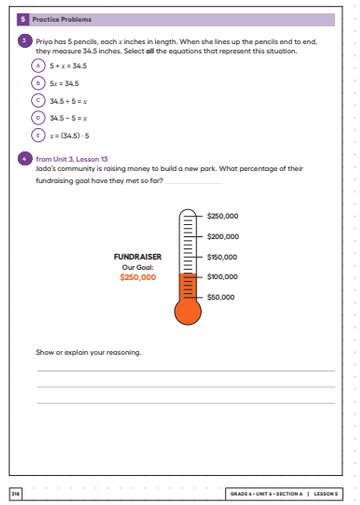
Problem 4

from Unit 3, Lesson 13

Jada's community is raising money to build a new park. What percentage of their fundraising goal have they met so far? Show or explain your reasoning.

44%. Sample reasoning: They have raised $110,000 and their goal is $250,000. $\frac{110000}{250000} = \frac{11}{25} = \frac{44}{100} = 44$

Student Workbook

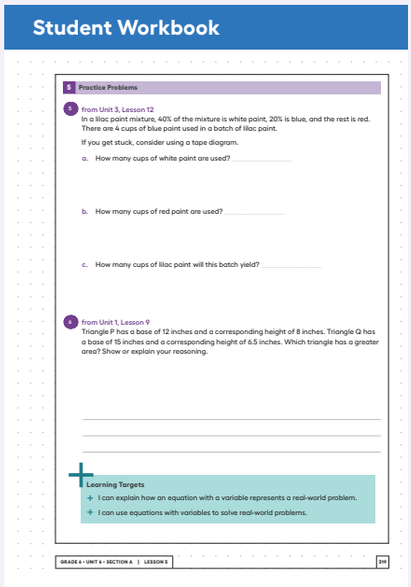

5 Practice Problems

3 Priya has 5 pencils, each x inches in length. When she lines up the pencils end to end, they measure 34.5 inches. Select **all** the equations that represent this situation.

A. $5 + x = 34.5$
B. $5x = 34.5$
C. $34.5 \div 5 = x$
D. $34.5 - 5 = x$
E. $x = (34.5) \cdot 5$

4 from Unit 3, Lesson 13
Jada's community is raising money to build a new park. What percentage of their fundraising goal have they met so far? _____

Show or explain your reasoning.


Student Workbook

5 Practice Problems

5 from Unit 3, Lesson 12
In a lilac paint mixture, 40% of the mixture is white paint, 20% is blue, and the rest is red. There are 4 cups of blue paint used in a batch of lilac paint.
If you get stuck, consider using a tape diagram.
a. How many cups of white paint are used? _____
b. How many cups of red paint are used? _____
c. How many cups of lilac paint will this batch yield? _____

6 from Unit 1, Lesson 9
Triangle P has a base of 12 inches and a corresponding height of 8 inches. Triangle Q has a base of 15 inches and a corresponding height of 6.5 inches. Which triangle has a greater area? Show or explain your reasoning.

Learning Targets
+ I can explain how an equation with a variable represents a real-world problem.
+ I can use equations with variables to solve real-world problems.

GRADE 6 • UNIT 4 • SECTION A | LESSON 5 219

Problem 5

from Unit 3, Lesson 12

In a lilac paint mixture, 40% of the mixture is white paint, 20% is blue, and the rest is red. There are 4 cups of blue paint used in a batch of lilac paint.

If you get stuck, consider using a tape diagram.

a. How many cups of white paint are used?

8 cups

b. How many cups of red paint are used?

8 cups

c. How many cups of lilac paint will this batch yield?

20 cups

Problem 6

from Unit 1, Lesson 9

Triangle P has a base of 12 inches and a corresponding height of 8 inches. Triangle Q has a base of 15 inches and a corresponding height of 6.5 inches. Which triangle has a greater area? Show or explain your reasoning.

Triangle Q has a larger area.

Sample reasoning: The area of Triangle P is $\frac{1}{2} \cdot 12 \cdot 8$, or 48 square inches. The area of Triangle Q is $\frac{1}{2} \cdot 15 \cdot (6.5)$, or 48.75 square inches.