

**Unit 6.1, Lesson 1: Practice Problems**

Name \_\_\_\_\_

**Warm-Up**Select **all** the numbers that are equivalent to 12.

$4 \cdot 3$

$2 + 6$

$24 \cdot \frac{1}{2}$

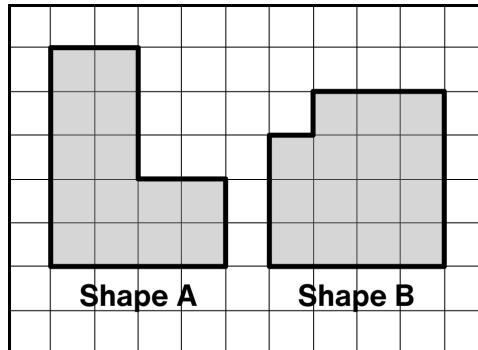
$24 \cdot 2$

$4 + 4 \cdot 2$

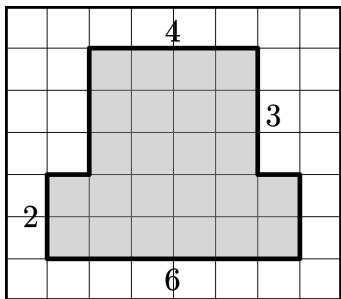
**Practice**

1. Which shape has a greater area?

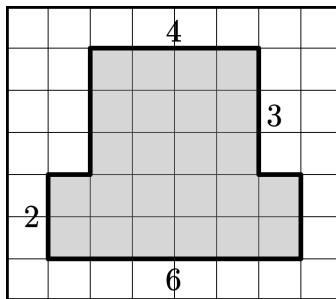
Show or explain how you know.



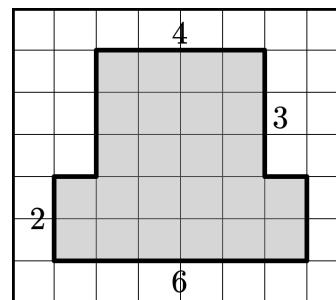
- 2.1 Determine the area of this shape.
- 
- Write your answer in square units.



- 2.2 Describe or show another way to determine the area of this shape.



- 2.3 Describe or show how you could change this shape so it has an area of 26 square units.

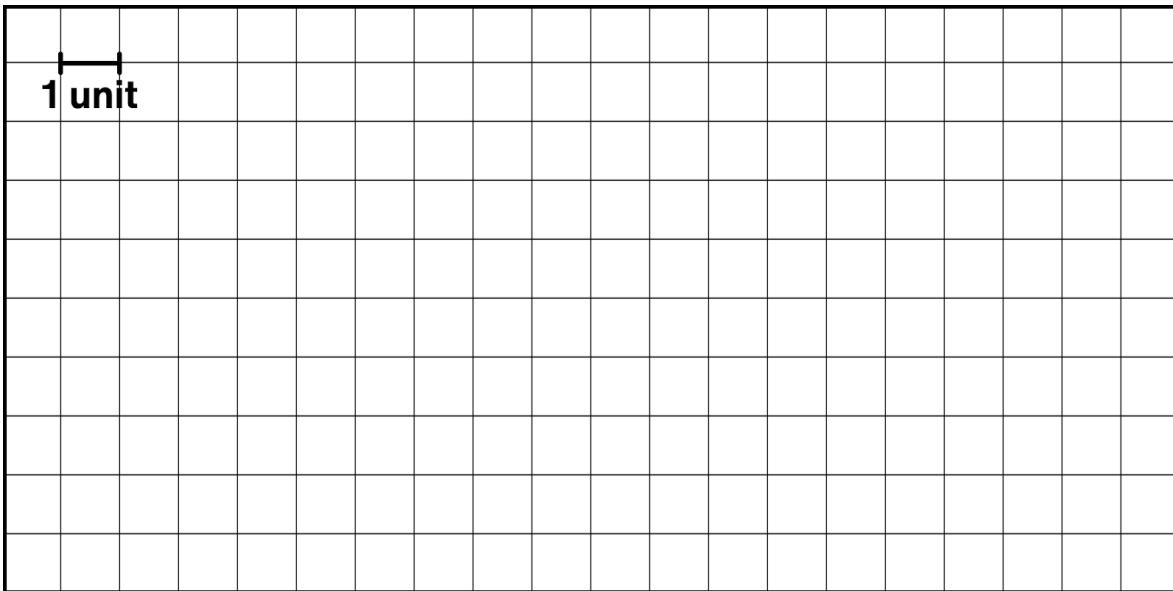




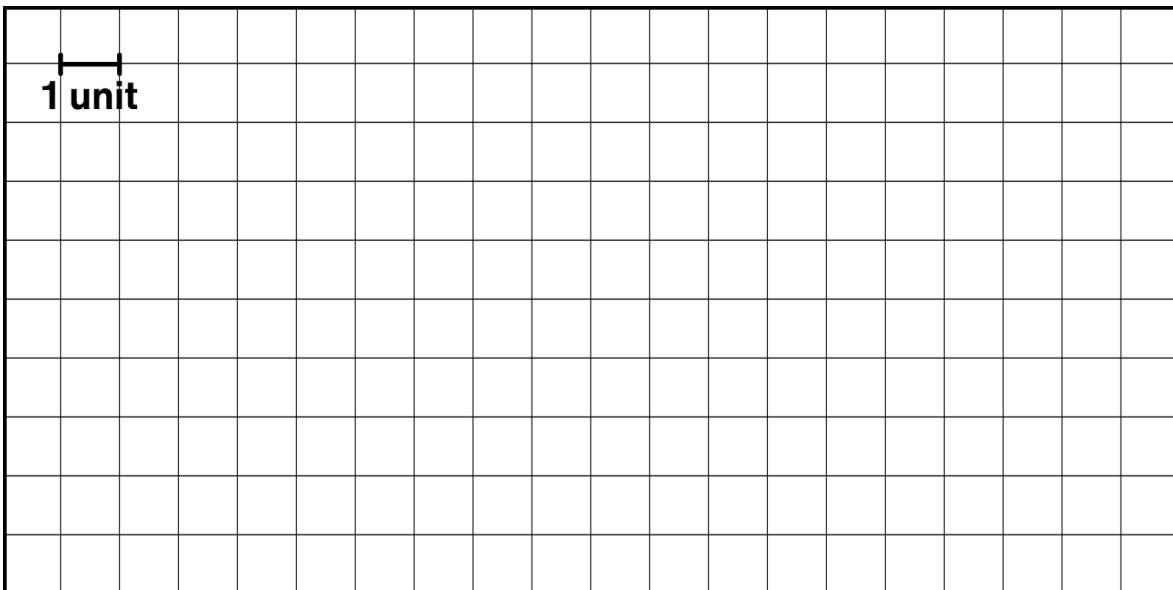
## Unit 6.1, Lesson 1: Practice Problems

### Explore

Draw as many different shapes as you can that each have an area of 12 square units.



Draw a shape that looks like an animal that has an area of 40 square units. Write the name of the animal. Hint: Use rectangles and triangles to create your design.



### Reflect

1. Put a star next to the question you understood best.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$4 \cdot 3$

$2 + 6$

$24 \cdot \frac{1}{2}$

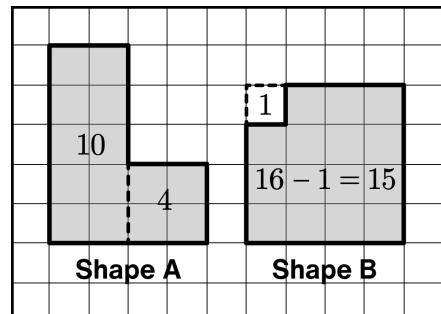
$24 \cdot 2$

$4 + 4 \cdot 2$

## Practice

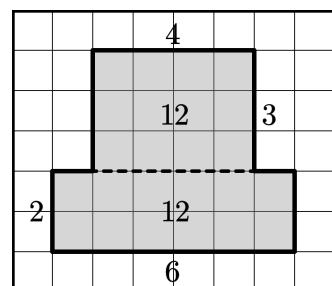
1. Shape B

*Explanations vary.* Shape A is made up of a rectangle and a square, and has an area of 14 square units, whereas Shape B is a square with a smaller square cut out from the corner that has an area of 15 square units.

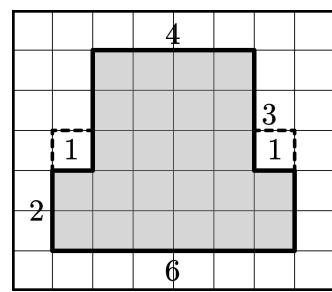


- 2.1 24 square units

- 2.2 *Responses vary.* The shape can be split into two rectangles, each with an area of 12 square units.

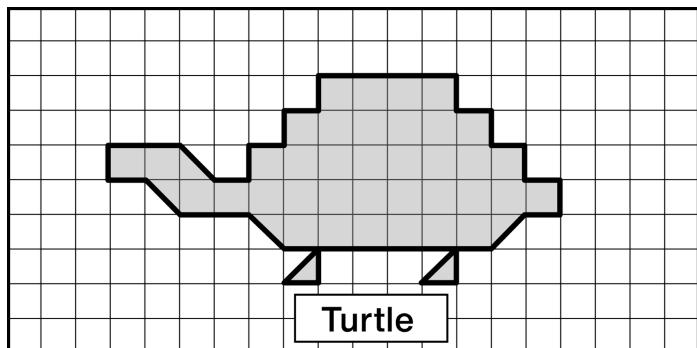
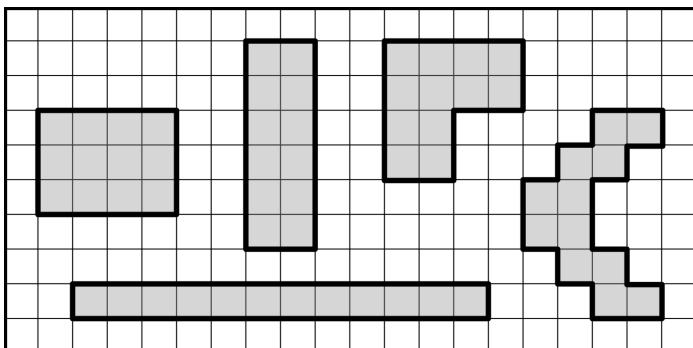


- 2.3 *Responses vary.* Two smaller squares can be added to either side to increase the area by 2 square units.



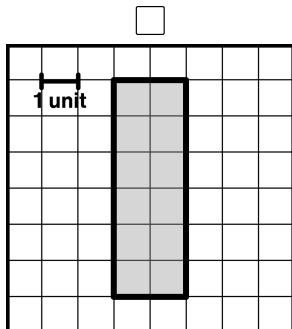
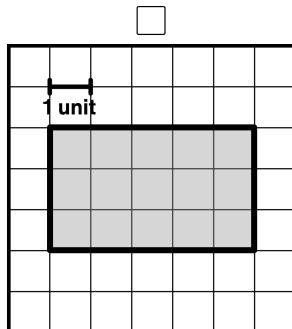
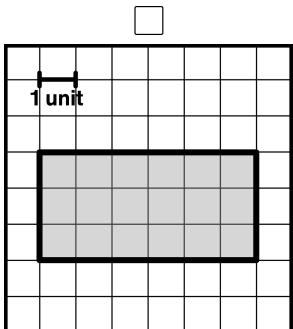
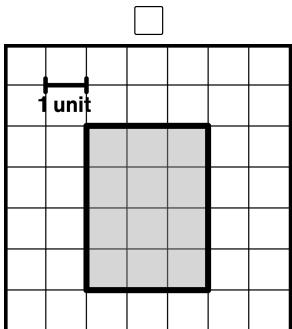
## Explore

*Responses vary.*



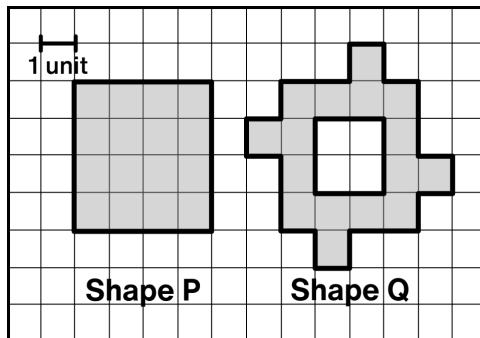
## Warm-Up

Select all the rectangles with an area of 12 square units.



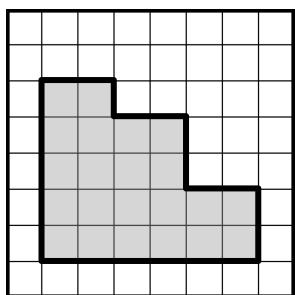
## Practice

- Which shape has a larger area?  
Show or explain how you know.

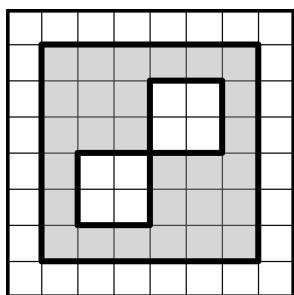


Determine the area of each shape. Each small square represents one square unit.

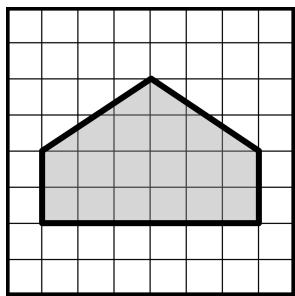
2.1



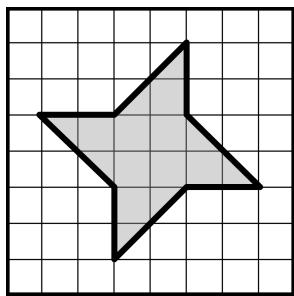
2.2



2.3



2.4

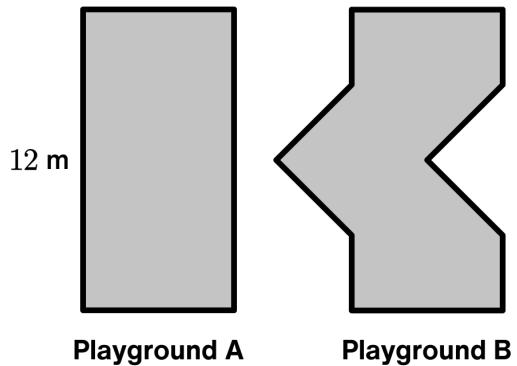


**Unit 6.1, Lesson 2: Practice Problems**

Here are outlines of two playgrounds.

- 3.1 The area of Playground A is 72 square meters.

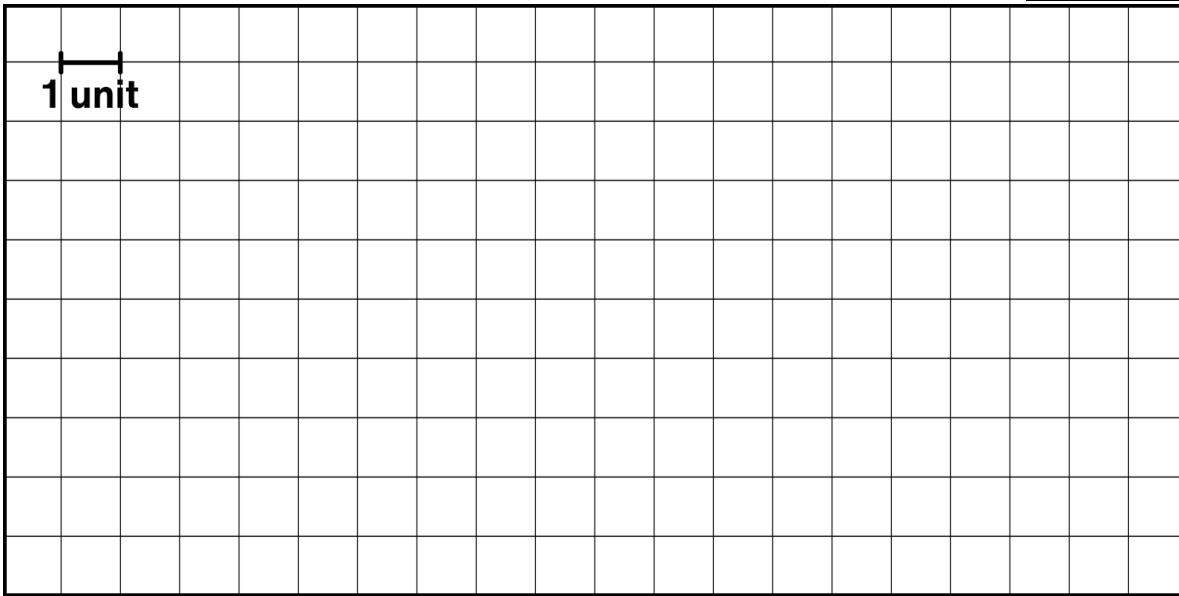
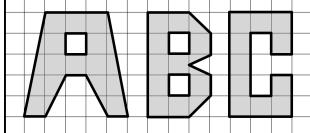
If its length is 12 meters, what is its width?



- 3.2 Fabiana claims that Playground A and B have the same area. Do you agree? Explain your reasoning.

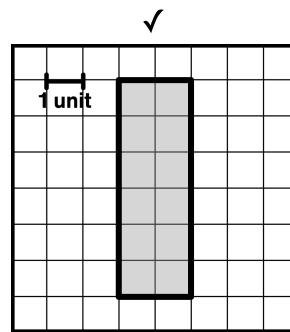
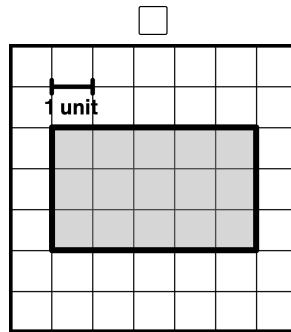
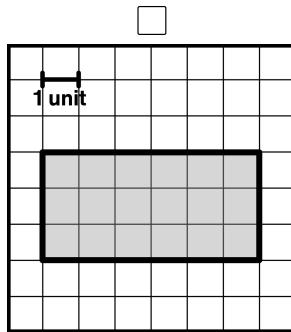
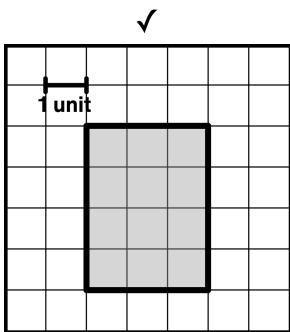
**Explore**

1. Draw your initials in block lettering.
2. Calculate the area of each initial.

**Example****Reflect**

1. Put a circle next to a question you are still curious about.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up



## Practice

1. They have the same area.

*Explanations vary.* Shape Q has four small squares on the outside that fit into the hole of the shape, resulting in Shape P.

2.1 22 square units

2.2 28 square units

2.3 18 square units

2.4 12 square units

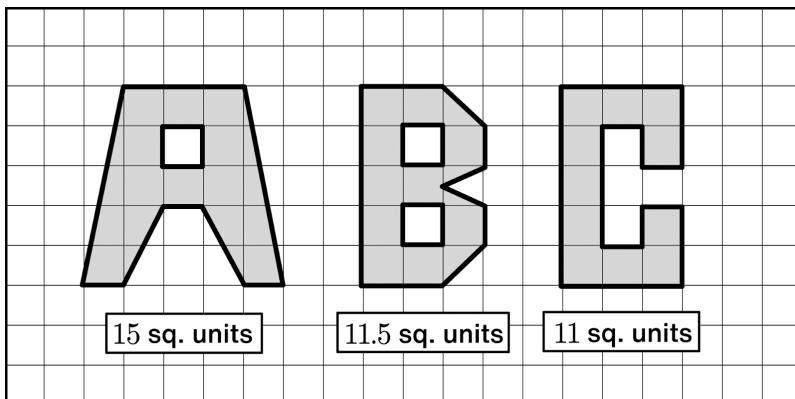
3.1 6 meters

3.2 Yes.

*Explanations vary.* Playground B has a triangle on the left-hand side that fits in the gap on the right-hand side, resulting in the same shape as Playground A.

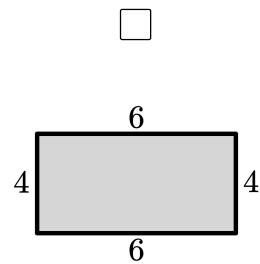
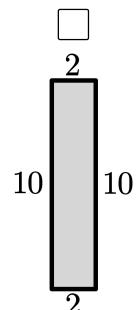
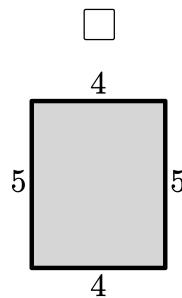
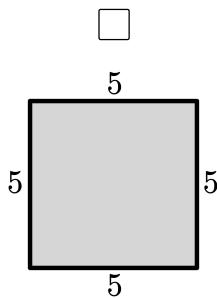
## Explore

Responses vary.



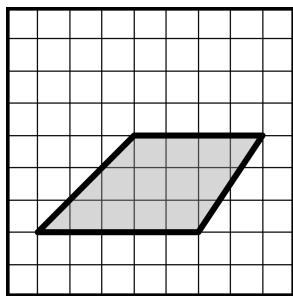
**Unit 6.1, Lesson 3: Practice Problems**

Name \_\_\_\_\_

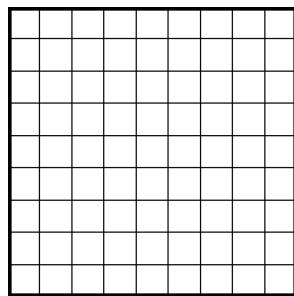
**Warm-Up**Select **all** the rectangles with an area of 20 square units.**Practice**

In this practice set, each small square in the grid represents 1 square centimeter.

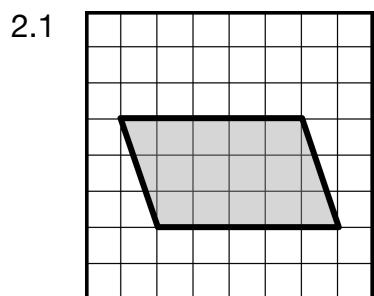
- 1.1 Explain how you know this quadrilateral is
- not**
- a parallelogram.



- 1.2 Draw your own parallelogram. Label its base and height.



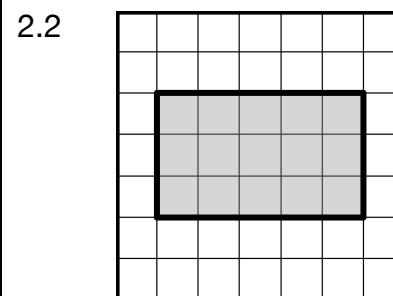
Determine a base and height for each parallelogram. Then determine its area. Use appropriate units.



Base: \_\_\_\_\_

Height: \_\_\_\_\_

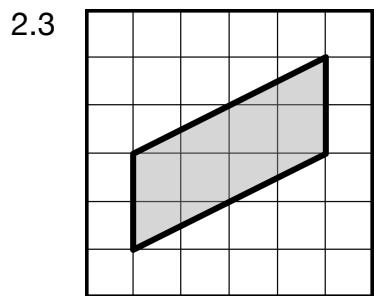
Area: \_\_\_\_\_



Base: \_\_\_\_\_

Height: \_\_\_\_\_

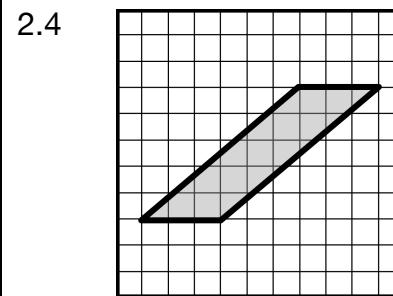
Area: \_\_\_\_\_



Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_



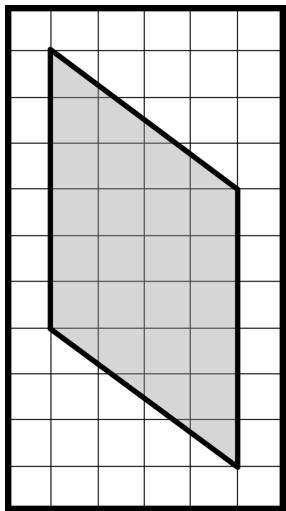
Base: \_\_\_\_\_

Height: \_\_\_\_\_

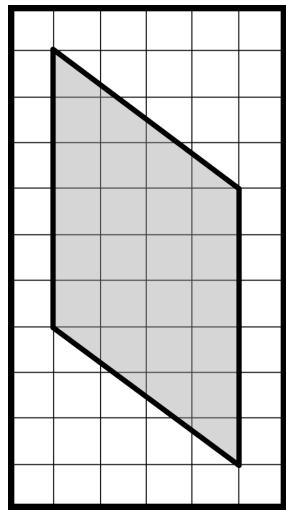
Area: \_\_\_\_\_

**Unit 6.1, Lesson 3: Practice Problems**

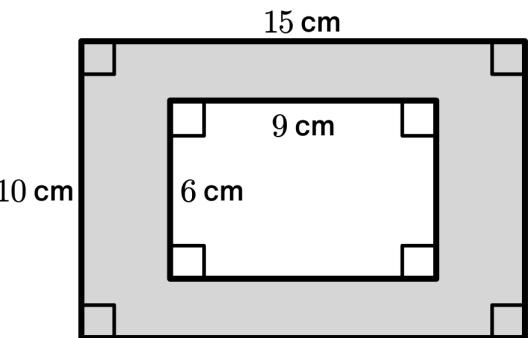
- 3.1 Determine the area of this parallelogram. Write your answer in square units.



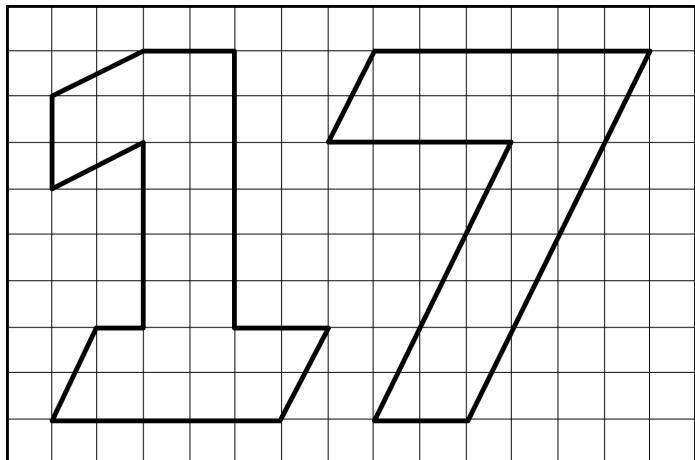
- 3.2 Show or describe another way to determine the area of this parallelogram.



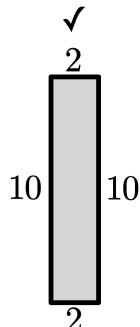
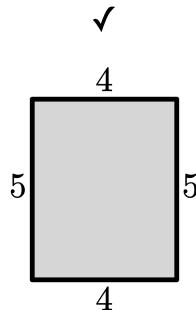
4. Calculate the area of the shaded region. Show all of your thinking.

**Explore**

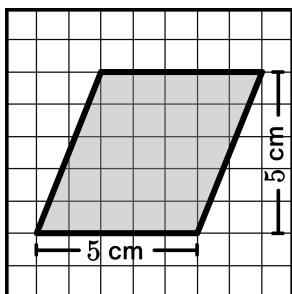
1. Do you have a favorite number? If so, what is it?
2. Calculate the area of Ayaan's favorite number. Show all of your thinking.

**Reflect**

1. Put a heart next to the question you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up****Practice**

- 1.1 *Responses vary.* The shape does not have two pairs of parallel sides.
- 1.2 *Responses vary.*

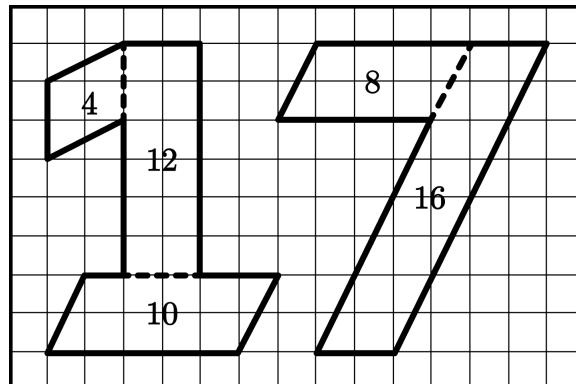


- 2.1 Base: 5 centimeters  
Height: 3 centimeters  
Area: 15 square centimeters
- 2.2 Base: 5 centimeters or 3 centimeters  
Height: 3 centimeters or 5 centimeters  
Area: 15 square centimeters
- 2.3 Base: 2 centimeters  
Height: 4 centimeters  
Area: 8 square centimeters
- 2.4 Base: 3 centimeters  
Height: 5 centimeters  
Area: 15 square centimeters

3.1 24 square centimeters

3.2 *Responses vary.* Cut a right triangle from the top of the shape with height 3 centimeters and width 4 centimeters and place it in the gap at the bottom of the shape, creating a rectangle with height 6 centimeters, width 4 centimeters, and area 24 square centimeters.

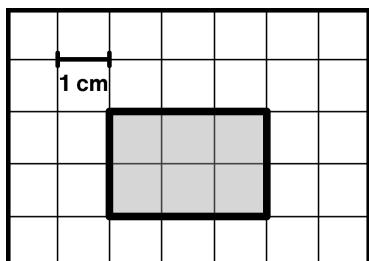
4. 96 square centimeters. Large rectangle area minus the small rectangle area.  
 $(10 \times 15) - (6 \times 9) = 96$  square centimeters.

**Explore**

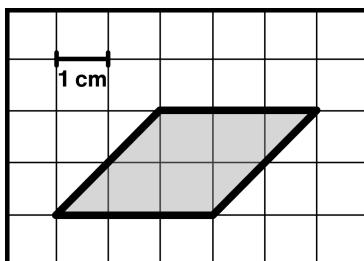
*Explanations vary.* Each number can be split into several parallelograms. The area of each parallelogram can be added together. The total area of the 17 is 50 square centimeters.

**Warm-Up**

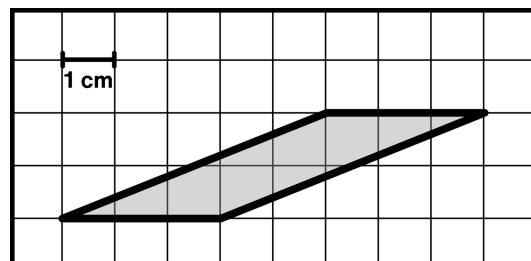
Calculate the area of each parallelogram in square centimeters.



Area: \_\_\_\_\_



Area: \_\_\_\_\_

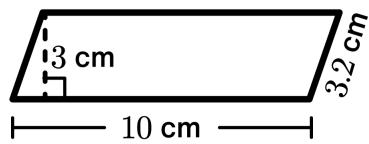


Area: \_\_\_\_\_

**Practice**

Determine a base and height for each parallelogram. Then determine its area. Use appropriate units.

1.1

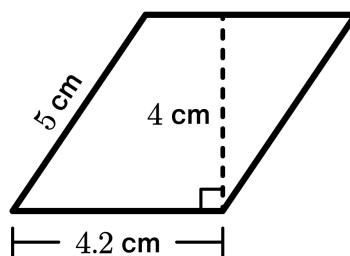


Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_

1.2

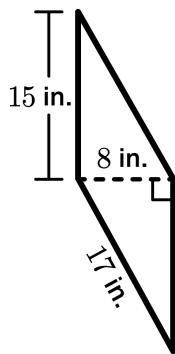


Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_

1.3



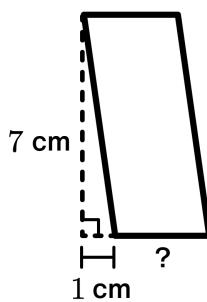
Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_

1.4

The area is 21 square units. What are the base and height?

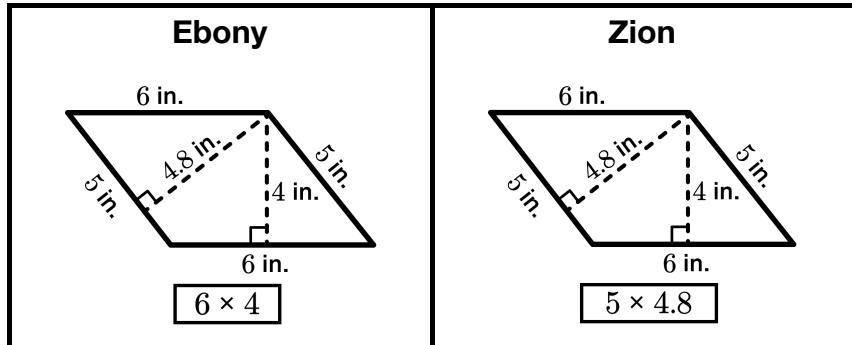


Base: \_\_\_\_\_

Height: \_\_\_\_\_

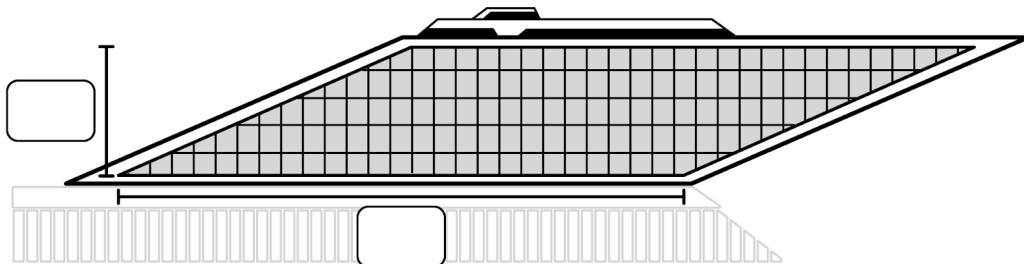
Area: 21 square units

2. Ebony and Zion each calculated the area of the parallelogram. Who is correct? Explain your reasoning.

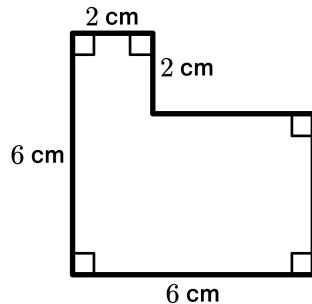


**Unit 6.1, Lesson 4: Practice Problems**

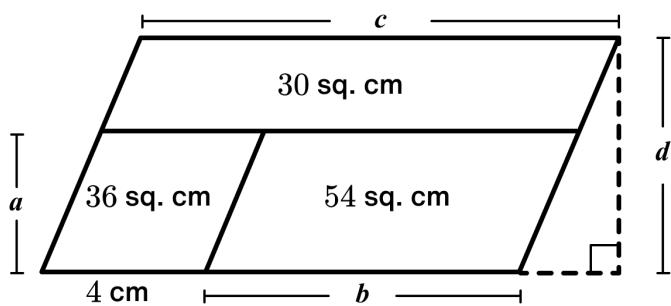
The Dockland Building in Hamburg, Germany, is shaped like a parallelogram. One side of the building is 86 meters long and 55 meters high and is entirely covered in windows.



- 3.1 Label the base and height in the blanks.
- 3.2 What is the approximate area a window washer would need to wash?
  
  
  
4. Calculate the area of this shape. Show all of your thinking.

**Explore**

Determine as many unknown measurements as you can.



Variable	Length (cm)
$a$	
$b$	
$c$	
$d$	

**Reflect**

1. Circle a question you want to talk to a classmate about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

6 square centimeters, 6 square centimeters, 6 square centimeters

**Practice**

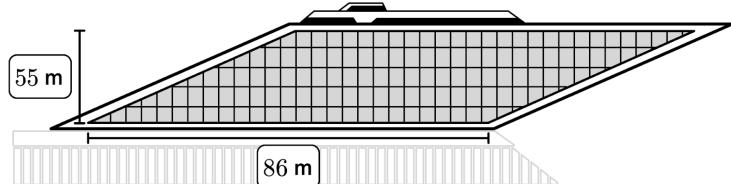
- 1.1 Base: 10 centimeters  
Height: 3 centimeters  
Area: 30 square centimeters

- 1.2 Base: 4.2 centimeters  
Height: 4 centimeters  
Area: 16.8 square centimeters

2. They are both correct.

*Explanations vary.* Ebony and Zion each used a different side as the base, and as a result, a different measurement as the height, but both found the same area for the parallelogram.

3.1



- 3.2 4 730 square meters  
4. 28 square centimeters

*Explanations vary.* The shape can be split up into a small square at the top and a large rectangle at the bottom. Adding these two areas together gives  $(6 \times 4) + (2 \times 2) = 28$  square units.

**Explore**

$$\begin{aligned}a &= 9 \text{ centimeters} \\b &= 6 \text{ centimeters} \\c &= 10 \text{ centimeters} \\d &= 12 \text{ centimeters}\end{aligned}$$

## Unit 6.1, Lesson 5: Practice Problems

Name \_\_\_\_\_

**Warm-Up**Select **all** of the expressions that have the same value as  $8 \div 2$ .

$\frac{8}{2}$

$8 \cdot 2$

$2 \div 8$

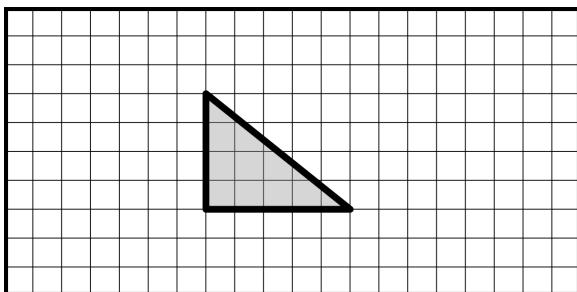
$\frac{1}{2} \cdot 8$

$\frac{2}{8}$

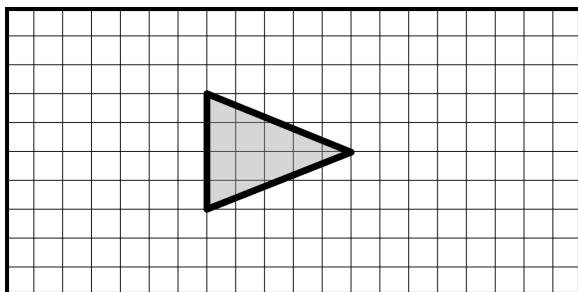
**Practice**

Determine the area of each triangle in square units.

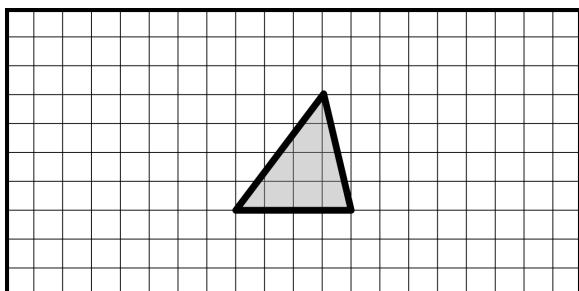
1.1 Area: \_\_\_\_\_



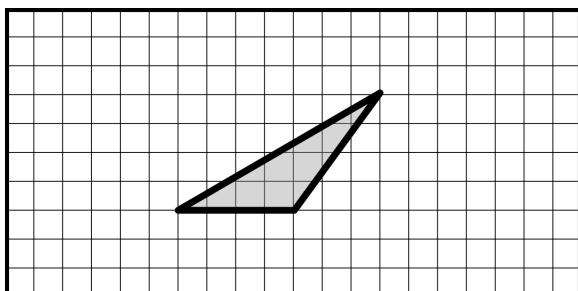
1.2 Area: \_\_\_\_\_



1.3 Area: \_\_\_\_\_



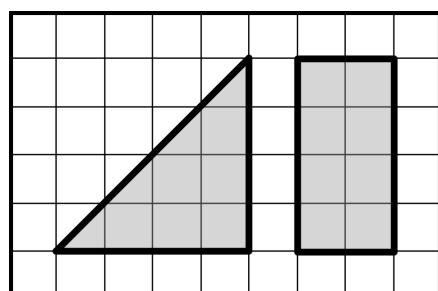
1.4 Area: \_\_\_\_\_



1.5 How are the areas of 1.1 and 1.2 related? Why does this make sense to you?

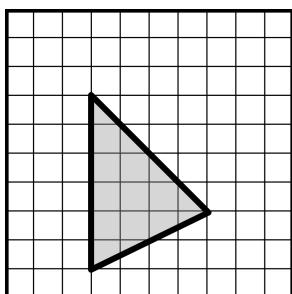
2. Aki thinks that these two shapes have the same area.

Is Aki correct? Explain your reasoning.

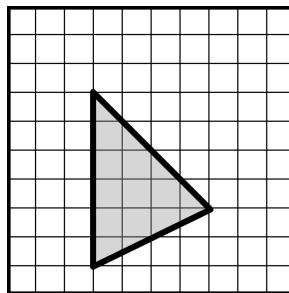


**Unit 6.1, Lesson 5: Practice Problems**

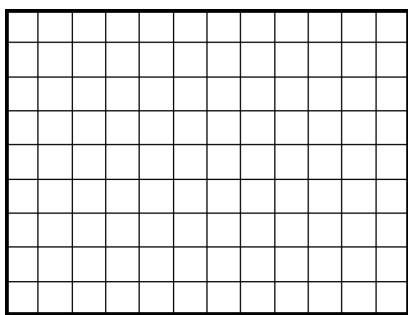
- 3.1 Determine the area of this triangle.



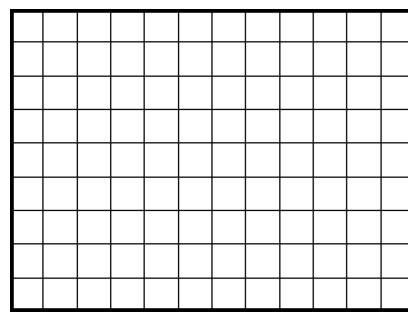
- 3.2 Show or describe another way to determine the area.



4. Draw two different parallelograms with equal areas. Label the base and height of each.



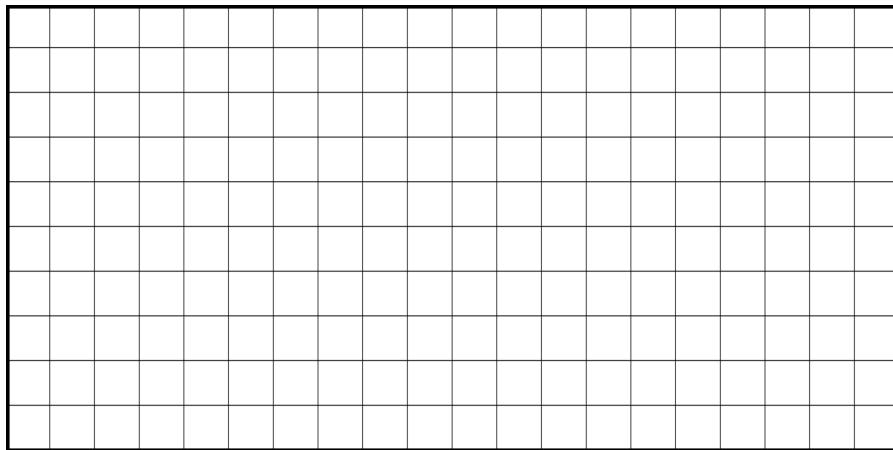
Base: \_\_\_\_\_ Height: \_\_\_\_\_



Base: \_\_\_\_\_ Height: \_\_\_\_\_

## Explore

Draw a design using triangles. Then calculate the area of your design.



## Reflect

1. Put a heart next to the question you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$\checkmark \frac{8}{2}$   
 $\checkmark \frac{1}{2} \cdot 8$

**Practice**

1.1 10 square units

1.2 10 square units

1.3 8 square units

1.4 8 square units

1.5 They are equal.

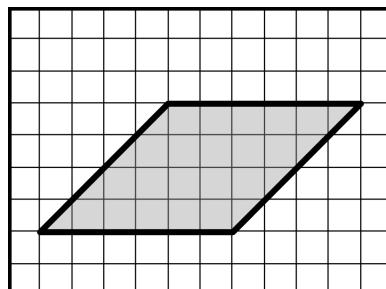
*Explanations vary.* If both triangles were rotated 90 degrees counterclockwise, they would have the same base and height.

2. Yes.

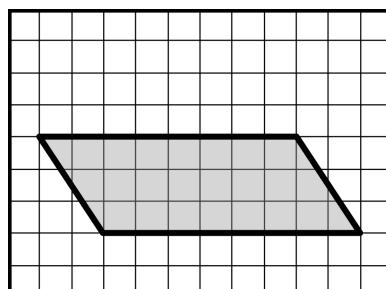
*Explanations vary.* The triangle is half a square with a side length of 4 units, which has been cut diagonally. The rectangle is also half a square with a side length 4 units, which has been cut vertically.

3.1 12 square units

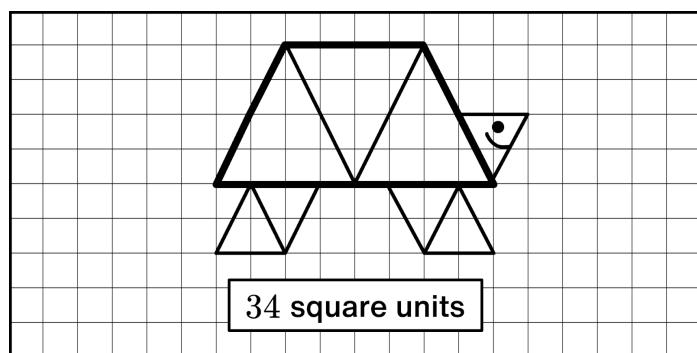
3.2 *Responses vary.* A copy of the triangle can be used to create a parallelogram with area  $6 \cdot 4 = 24$  square units. This can then be halved to find the area of the triangle:  $24 \div 2 = 12$  square units.

4. *Responses vary.*

Base: 6 units Height: 4 units



Base: 8 units Height: 3 units

**Explore***Responses vary.*

## Unit 6.1, Lesson 6: Practice Problems

Name \_\_\_\_\_

**Warm-Up**Select **all** of the expressions that have the same value as  $10 \div 5$ .

$\frac{10}{5}$

$10 \cdot 5$

$\frac{1}{5} \cdot 10$

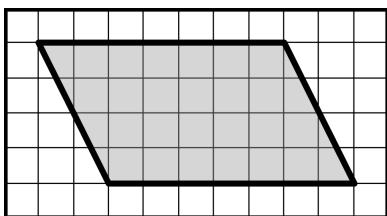
$10 \div 2$

$\frac{10}{2}$

**Practice**

Determine a base and a height for each shape. Then determine its area. Use appropriate units.

1.1

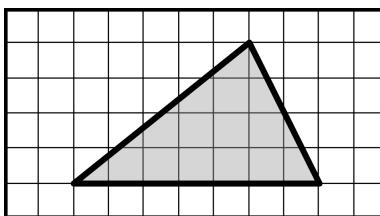


Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_

1.2

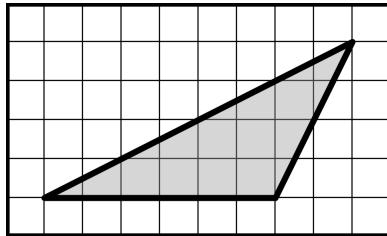


Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_

1.3

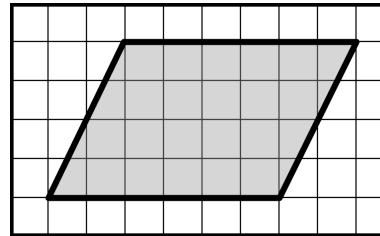


Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_

1.4



Base: \_\_\_\_\_

Height: \_\_\_\_\_

Area: \_\_\_\_\_

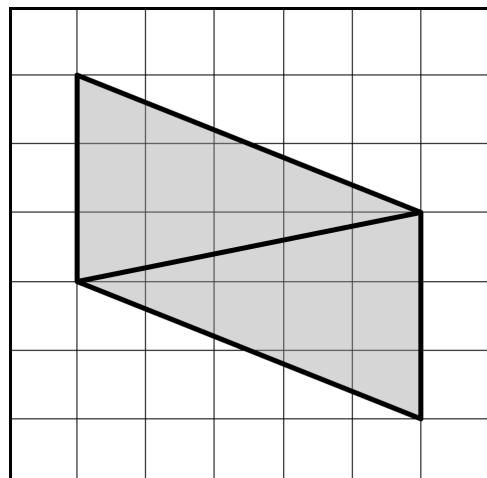
1.5 How are the areas of 1.1 and 1.2 related? Why does this make sense to you?

Here is a parallelogram with a line connecting two corners.

2.1 What is the area of the parallelogram?

2.2 What is the area of the top triangle?

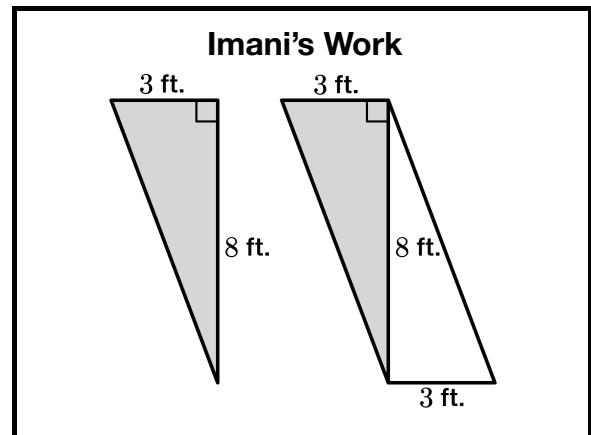
2.3 What is the area of the bottom triangle?



**Unit 6.1, Lesson 6: Practice Problems**

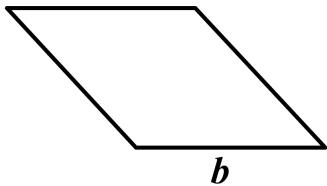
Imani was trying to figure out the area of the triangle on the left. Here is her work.

3. Explain how Imani might use their parallelogram to calculate the area of the triangle.

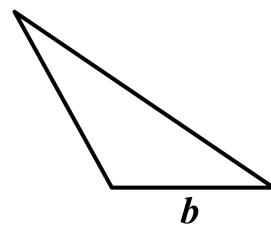


Each shape has a base labeled  $b$ . Draw a line segment that shows a possible height.

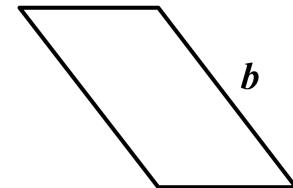
4.1



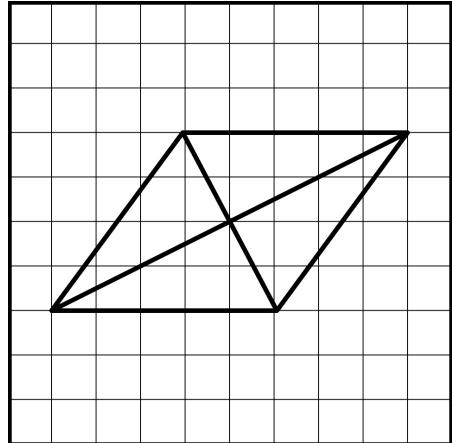
4.2



4.3

**Explore**

Determine the area of as many different shapes in this image as you can.

**Reflect**

1. Put a star next to the question you understood best.
2. Use the space below to ask one question you have or to share something you are proud of.

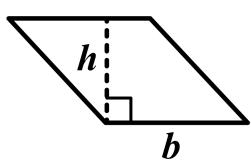
**Warm-Up**

- ✓  $\frac{10}{5}$   
 ✓  $\frac{1}{5} \cdot 10$

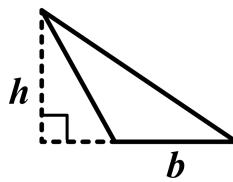
**Practice**

- 1.1 Base: 7 units, Height: 4 units, Area: 28 square units  
 1.2 Base: 7 units, Height: 4 units, Area: 14 square units  
 1.3 Base: 6 units, Height: 4 units, Area: 12 square units  
 1.4 Base: 6 units, Height: 4 units, Area: 24 square units  
 1.5 Responses vary. The area of the parallelogram is double the area of the triangle. This makes sense because the parallelogram can be formed by two copies of the triangle.  
 2.1 15 square units  
 2.2 7.5 square units  
 2.3 7.5 square units  
 3. Responses vary. The parallelogram is made from two copies of the triangle. Imani could find the area of the parallelogram and divide that number by 2.

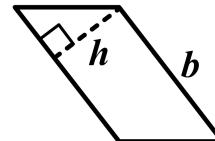
4.1 Responses vary.



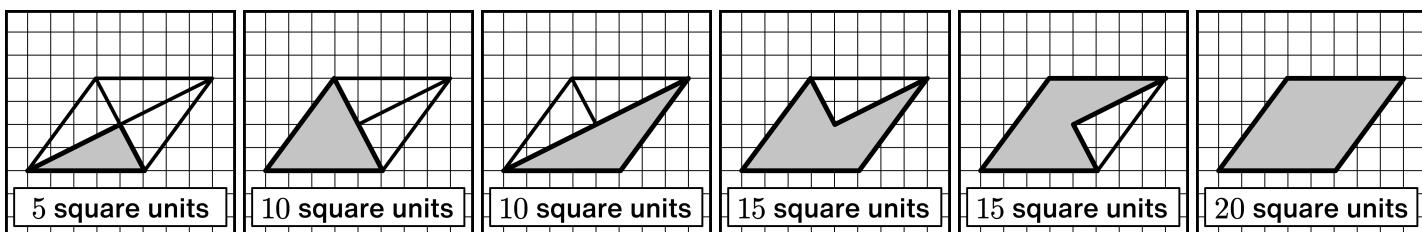
4.2 Responses vary.



4.3 Responses vary.

**Explore**

Orientations vary.



## Warm-Up

Determine the value of each expression.

$$8 \cdot 6 = \underline{\hspace{2cm}}$$

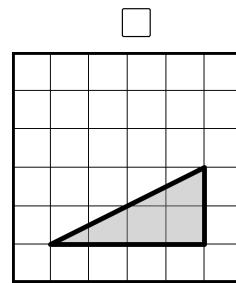
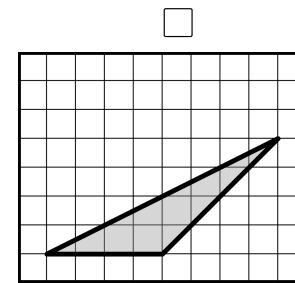
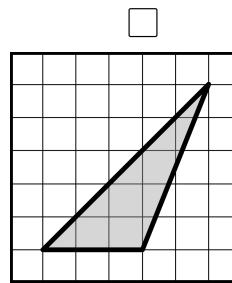
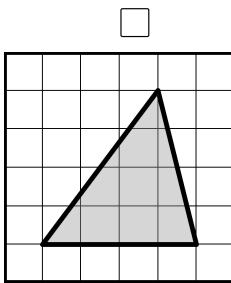
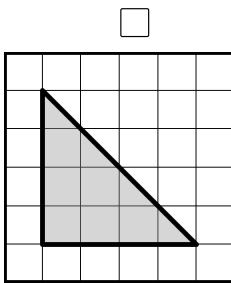
$$\frac{1}{2} \cdot 8 \cdot 6 = \underline{\hspace{2cm}}$$

$$4 \cdot 10 \div 2 = \underline{\hspace{2cm}}$$

$$\frac{4 \cdot 10}{2} = \underline{\hspace{2cm}}$$

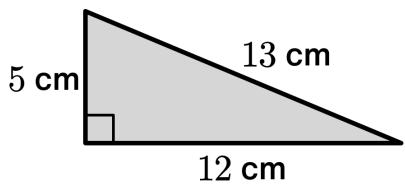
## Practice

1. Select **all** of the triangles that have an area of 8 square units.

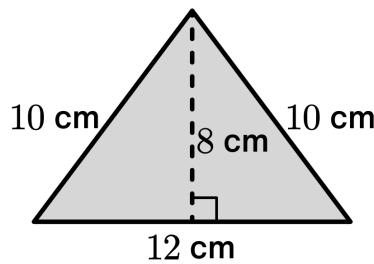


Calculate the area of each triangle. Use appropriate units.

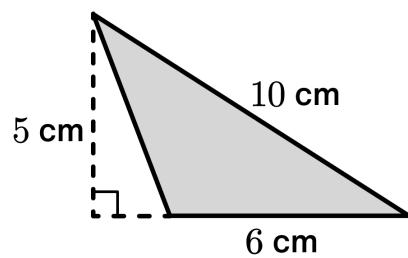
2.1 Area: \_\_\_\_\_



2.2 Area: \_\_\_\_\_



2.3 Area: \_\_\_\_\_

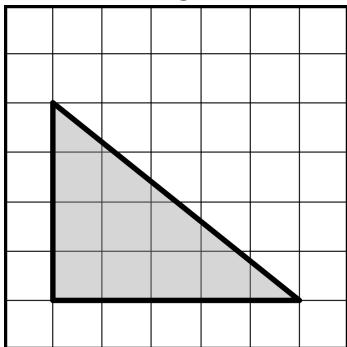


**Unit 6.1, Lesson 7: Practice Problems**

3.1 Draw a different triangle with the same base and height as Triangle 1.

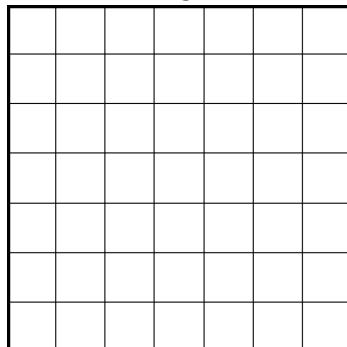
3.2 Calculate the area of each triangle in square units.

Triangle 1



Area: \_\_\_\_\_

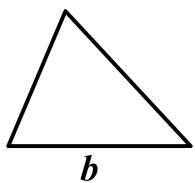
Triangle 2



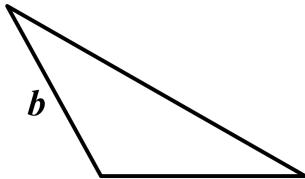
Area: \_\_\_\_\_

Each triangle has a base labeled  $b$ . Draw a line segment on each triangle that shows a possible height.

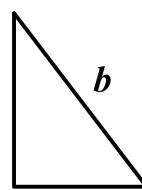
4.1



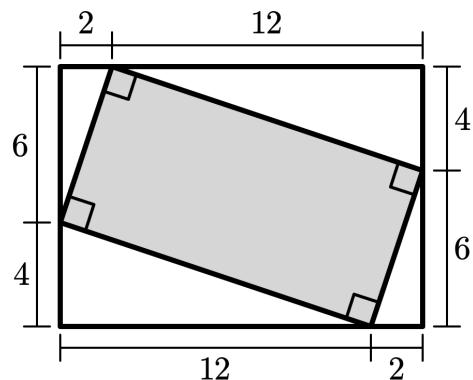
4.2



4.3

**Explore**

Determine the area of as many different shapes in this image as you can.

**Reflect**

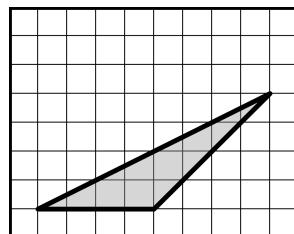
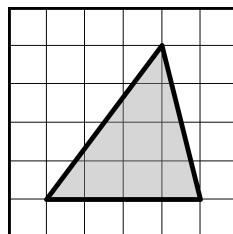
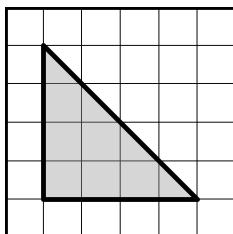
1. Put a question mark next to a question you were feeling stuck on.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

48, 24, 20, 20

**Practice**

1.

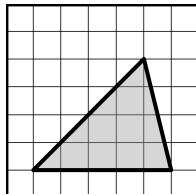


2.1 30 square centimeters

2.2 48 square centimeters

2.3 15 square centimeters

3.1 Responses vary.



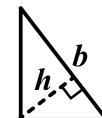
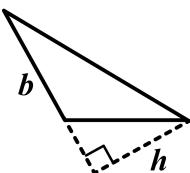
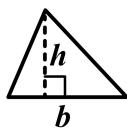
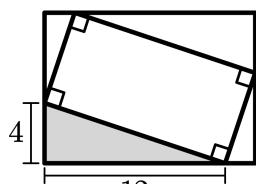
3.2 Triangle 1 Area: 10 square units

Triangle 2 Area: 10 square units

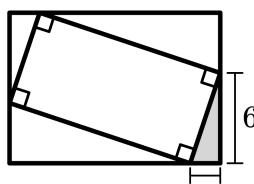
4.1 Responses vary.

4.2 Responses vary.

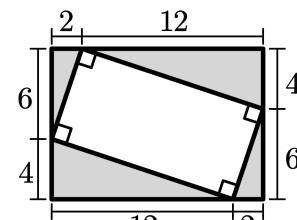
4.3 Responses vary.

**Explore**

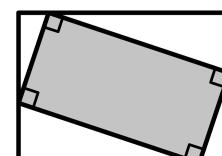
24 square units



6 square units



60 square units



80 square units

## Warm-Up

Complete each sentence with a number that makes the equation true.

$5 \cdot \underline{\quad} = 15$

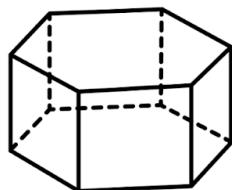
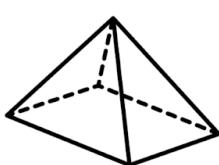
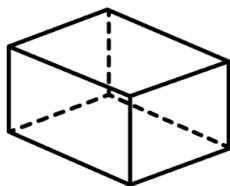
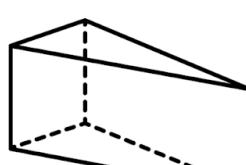
$7 \cdot \underline{\quad} = 28$

$28 \cdot \underline{\quad} = 7$

$12 \cdot \underline{\quad} = 3$

## Practice

Use these five polyhedra to answer the questions below.

**A****B****C****D****E**

1.1 How many faces does A have?

1.3 How many faces does D have?

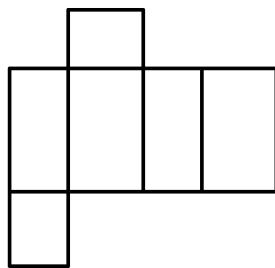
1.2 Describe or draw each of A's faces.

1.4 Describe or draw each of D's faces.

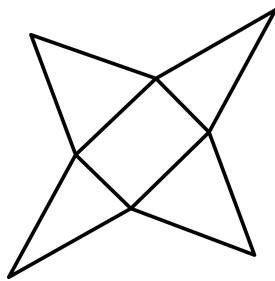
1.5 Write the letter of each polyhedron in the appropriate box.

Prism	Pyramid

1.6 Which polyhedron could this be a net for?



1.7 Which polyhedron could this be a net for?



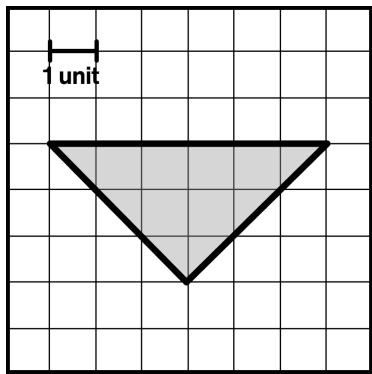
**Unit 6.1, Lesson 10: Practice Problems**

2. Match each quantity with the unit you would most likely use to measure it.

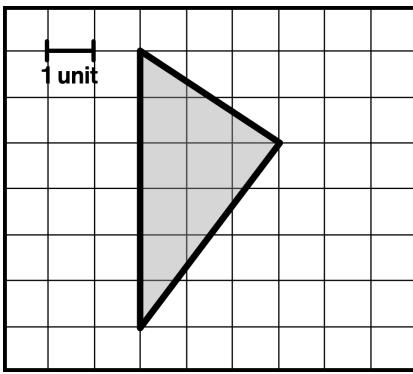
- |   |                       |
|---|-----------------------|
| <input type="checkbox"/> The surface area of a tissue box | A. square meters      |
| <input type="checkbox"/> The amount of water in a glass   | B. yards              |
| <input type="checkbox"/> The area of a parking lot        | C. cubic inches       |
| <input type="checkbox"/> The length of a soccer field     | D. cubic feet         |
| <input type="checkbox"/> The volume of a bathtub          | E. square centimeters |

Show how you know each of these triangles has an area of 9 square units.

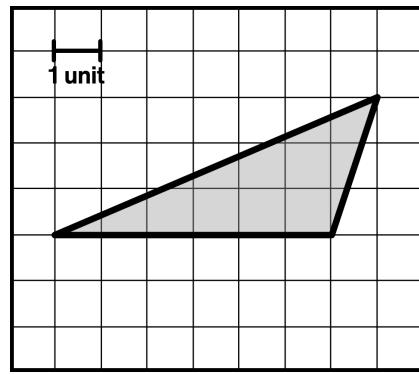
3.1



3.2

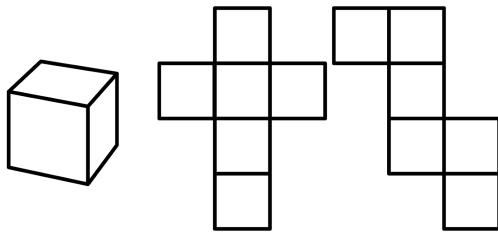


3.3



## Explore

Here is a cube and two possible nets. Draw as many different cube nets as you can.



**Ready for more?** 11 unique nets exist for a cube. Can you draw them all?

## Reflect

1. Circle a question you want to talk to a classmate about.
2. Use the space below to ask one question you have or to share something you are proud of.

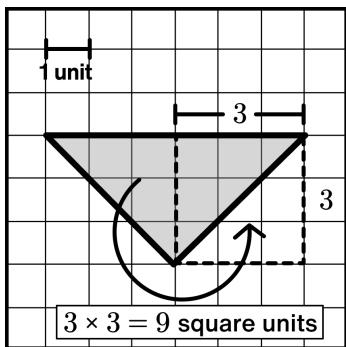
**Warm-Up**

3, 4,  $\frac{1}{4}$ ,  $\frac{1}{4}$

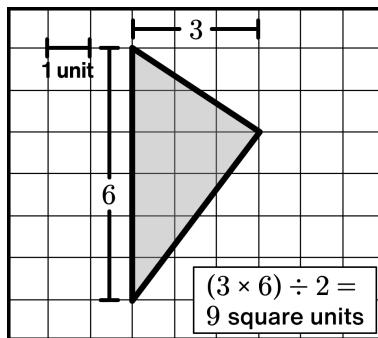
**Practice**

- 1.1 8 faces  
 1.2 2 hexagons and 6 rectangles  
 1.3 5 faces  
 1.4 2 triangles and 3 rectangles  
 1.5 Prism: A, C, D  
 Pyramid: B, E  
 1.6 C. Rectangular prism  
 1.7 B. Rectangular pyramid  
 2. E. The surface area of a tissue box  
 C. The amount of water in a glass  
 A. The area of a parking lot  
 B. The length of a soccer field  
 D. The volume of a bathtub

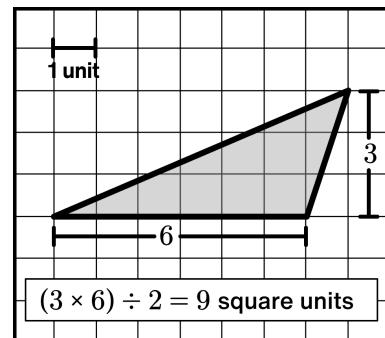
3.1 Responses vary.



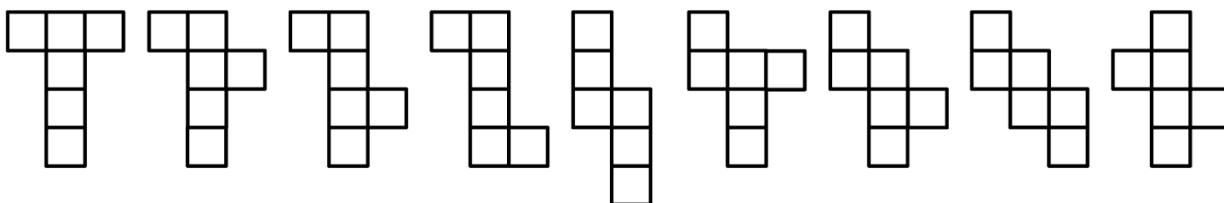
3.2 Responses vary.



3.3 Responses vary.

**Explore**

Orientations vary.



## Warm-Up

Complete each sentence with a number that makes the equation true.

$$3 \cdot \underline{\quad} = 15$$

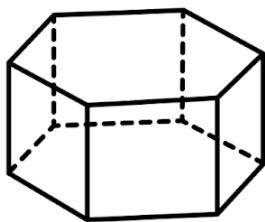
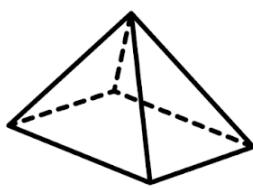
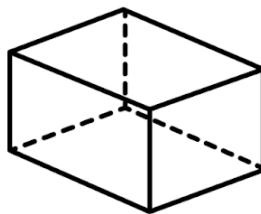
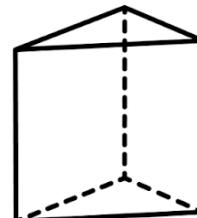
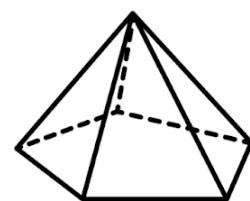
$$15 \cdot \underline{\quad} = 3$$

$$4 \cdot \underline{\quad} = 24$$

$$24 \cdot \underline{\quad} = 4$$

## Practice

Use these five polyhedra to answer the questions below.

**A****B****C****D****E**

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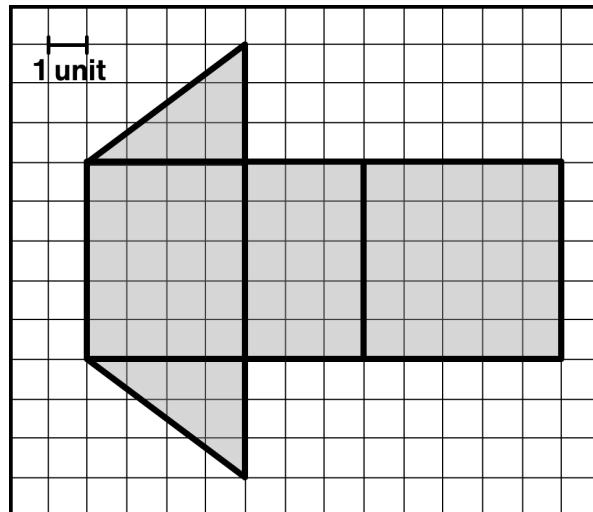
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- 1.1 Write the name of each polyhedron below its picture.

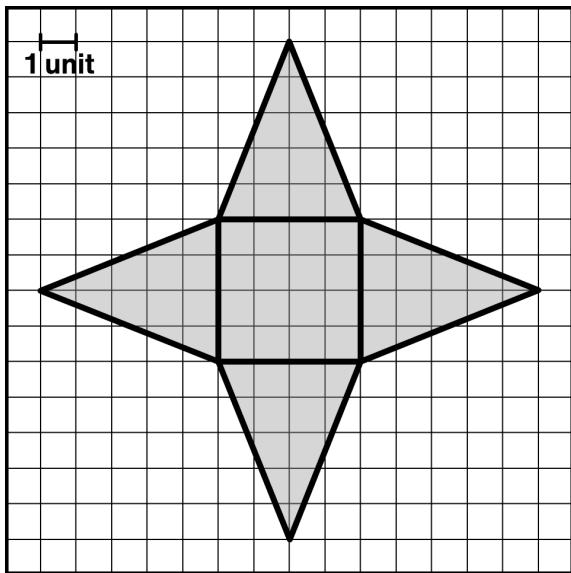
- 1.2 Which polyhedron can be created from this net?  
Explain how you know.

- 1.3 Use the net to calculate the surface area of the polyhedron. Use appropriate units.



2. Select **all** units that can be used to describe surface area.

 Square meters Feet Centimeters Cubic inches Square inches Square feet

**Unit 6.1, Lesson 11: Practice Problems**

- 3.1 What three-dimensional figure can be created from the net?

- 3.2 What is the surface area of the figure?

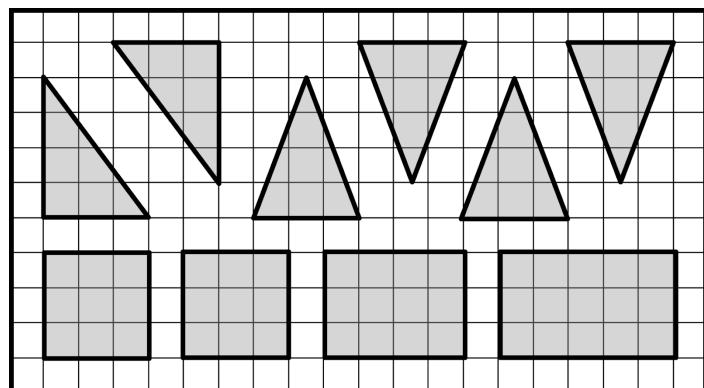
Determine the area of each figure.

- 4.1 A parallelogram with a base of 12 meters and a height of 1.5 meters.

- 4.2 A triangle with a base of 16 inches and a height of  $\frac{1}{8}$  inch.

## Explore

Describe or draw two different polyhedra that could be created using these shapes as faces.



## Reflect

1. Put a heart next to the question you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up** $5, \frac{1}{5}, 6, \frac{1}{6}$ **Practice**

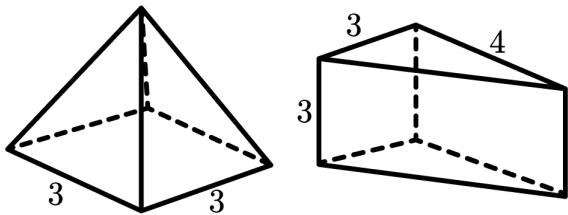
- 1.1 A. Hexagonal prism  
B. Rectangular pyramid  
C. Rectangular prism  
D. Triangular prism  
E. Pentagonal pyramid
- 1.2 D. Triangular prism

*Explanations vary.* This shape has five faces, two of which are triangles and the rest rectangles, which matches polyhedron D.

- 1.3 72 square units
2. ✓ Square meters  
✓ Square inches  
✓ Square feet
- 3.1 Square pyramid or rectangular pyramid
- 3.2 56 square units
- 4.1 18 square meters
- 4.2 1 square inch

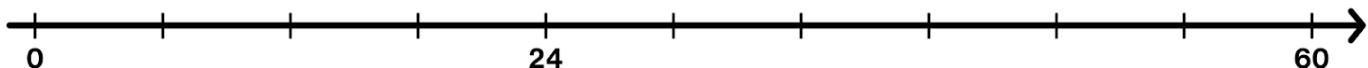
**Explore**

*Responses vary.* A square-based pyramid and a triangular prism.



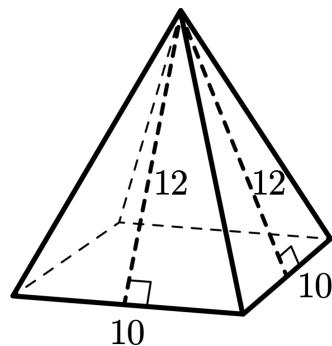
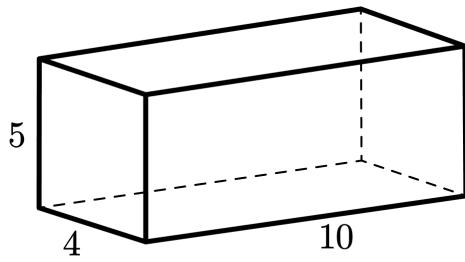
## Warm-Up

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

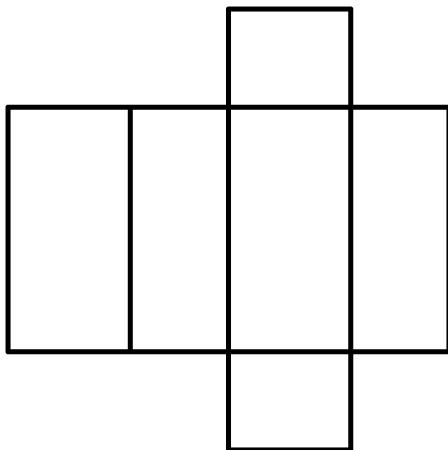


## Practice

Here are two polyhedra and their nets.

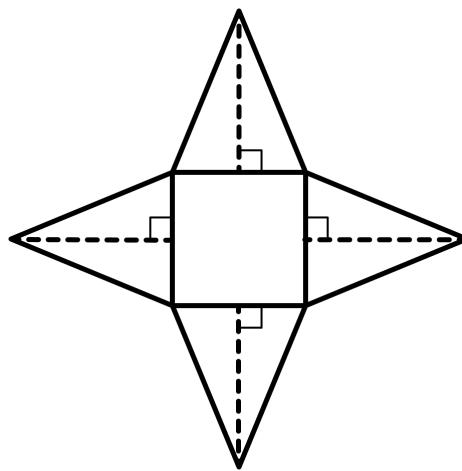


- 1.1 What is the name of this solid?
  
- 1.2 Use the polyhedron above to label all the lengths in this net.



- 1.3 Calculate the surface area.  
Explain or show your reasoning.

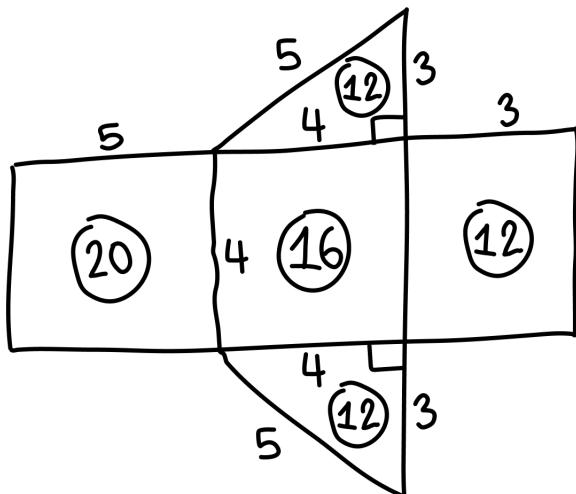
- 2.1 What is the name of this solid?
  
- 2.2 Use the polyhedron above to label all the lengths in this net.



- 2.3 Calculate the surface area.  
Explain or show your reasoning.

**Unit 6.1, Lesson 12: Practice Problems**

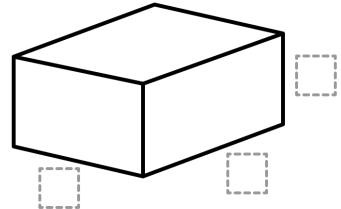
Takeshi drew a net for a polyhedron and calculated its surface area.



- 3.1 What polyhedron can be folded from this net?
- 3.2 Takeshi calculated part of the surface area correctly. What was one thing that he did well?
- 3.3 Takeshi made some mistakes in his calculations. What were the mistakes?

## Explore

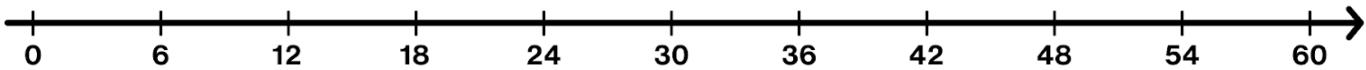
Create a rectangular prism with a surface area of 40 square units.



## Reflect

1. Put a star next to the question you understood best.
2. Use the space below to ask one question you have or to share something you are proud of.

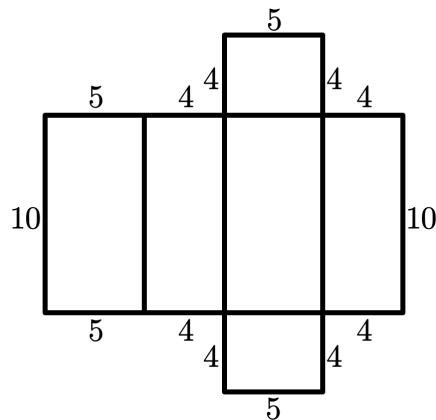
## Warm-Up



## Practice

- 1.1 Rectangular prism

- 1.2



- 1.3 220 square units

*Explanations vary.* The net can be split into a large 10-by-18 rectangle and two 4-by-5 rectangles, which gives a total surface area of 220 square units.

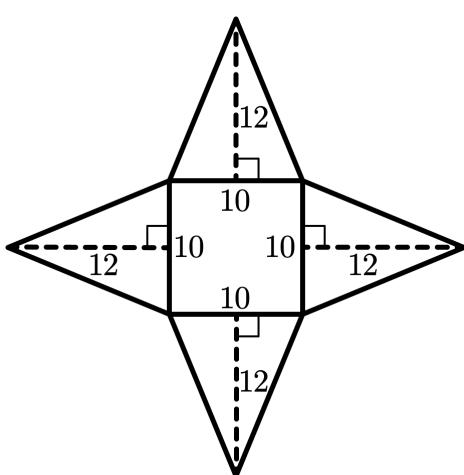
- 3.1 Triangular prism

- 3.2
- Responses vary.*
- He drew an accurate net. If the net were folded, the lengths of the edges would match.

- 3.3 The areas of the triangles are incorrect. They are 6 square units each.

- 2.1 Square pyramid or rectangular pyramid

- 2.2

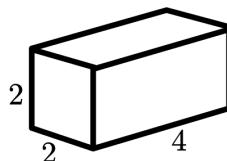


- 2.3 340 square units

*Explanations vary.* The net can be split into a square with a side length of 10 units and four triangles with a height of 12 units and a base of 10 units, which gives a total surface area of 340 square units.

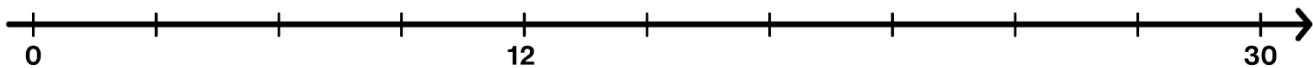
## Explore

*Responses vary.*

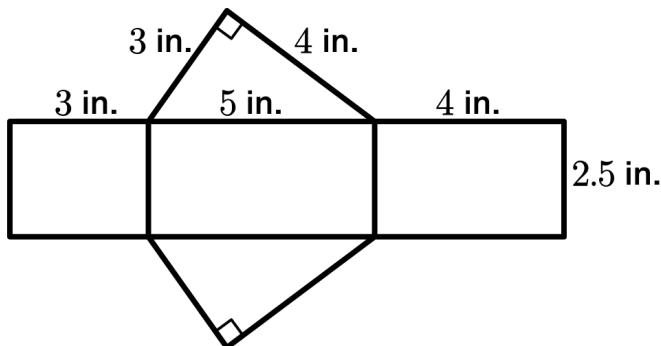


## Warm-Up

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



## Practice

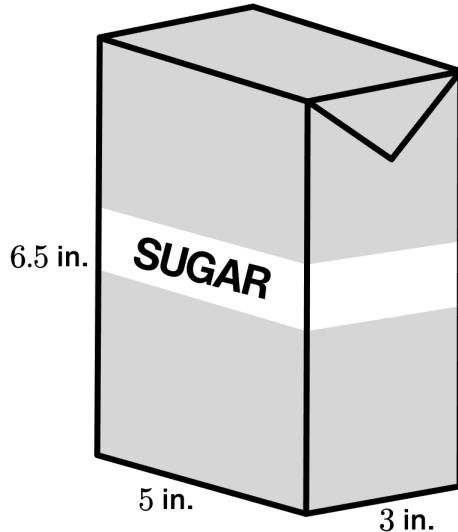


- 1.1 If this net were folded, what polyhedron would it make?
  
- 1.2 What is the surface area of the polyhedron? Explain or show your reasoning.

A box of sugar is 5 inches by 3 inches by 6.5 inches.

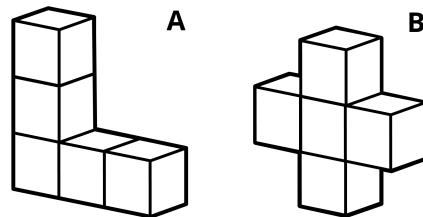
- 2.1 Estimate about how much cardboard the box uses. Show all of your thinking.

- 2.2 Estimate about how much sugar the box can hold. Show all of your thinking.



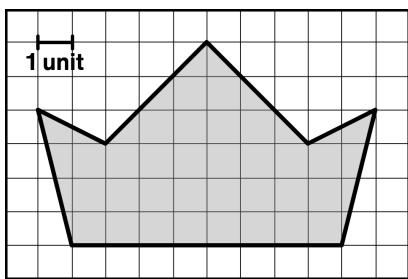
**Unit 6.1, Lesson 13: Practice Problems**

3. Which figure has a greater surface area?  
Show or explain how you know.

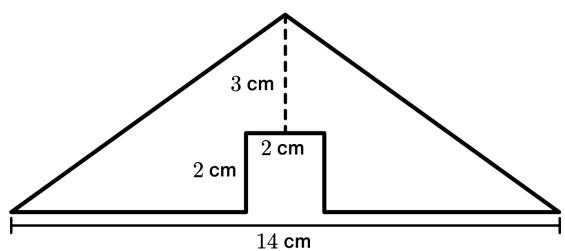


Calculate the area of each polygon. Explain or show your reasoning.

4.1



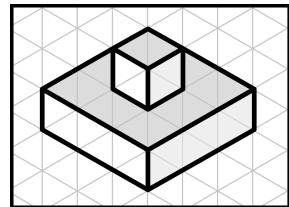
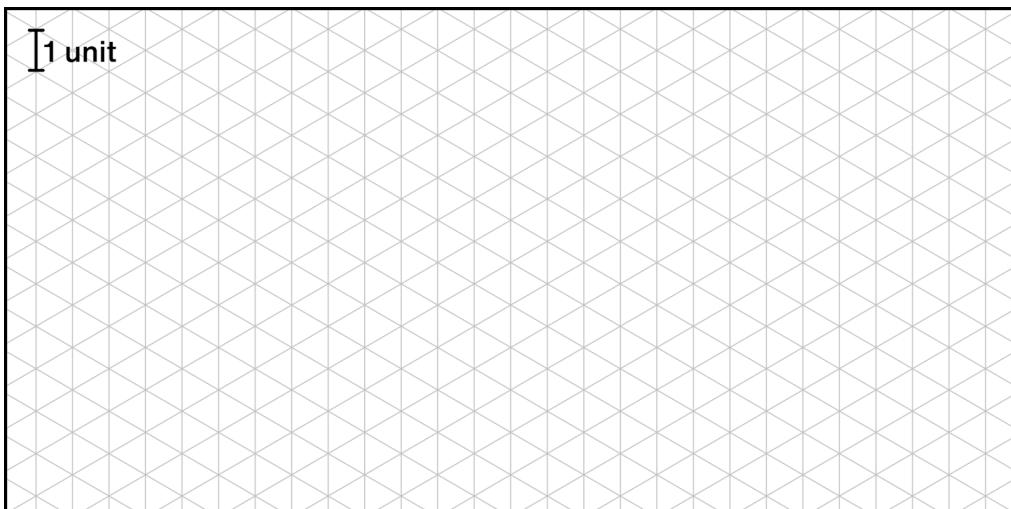
4.2



## Explore

This grid is called an isometric grid. Use the grid to draw your own 3-D solid.

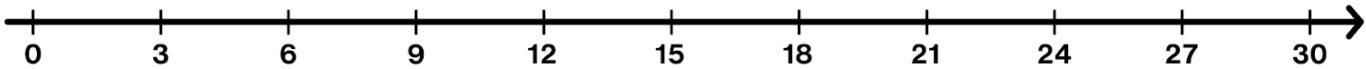
Here is an example.



## Reflect

1. Put a star next to a question you are still curious about.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up



## Practice

1.1 Triangular prism

1.2 42 square inches

*Explanations vary.* The net is made up of two triangles each with an area of 6 square inches and three rectangles with areas 7.5 square inches, 10 square inches, and 12.5 square inches, giving a total surface area of  $(2 \times 6) + 7.5 + 10 + 12.5 = 42$  square inches.

2.1 At least 134 square inches.

*Explanations vary.* The net is made up of three pairs of rectangles with areas 15 square inches, 19.5 square inches, and 32.5 square inches, giving a total surface area of  $2 \times (15 + 19.5 + 32.5) = 134$  square inches.

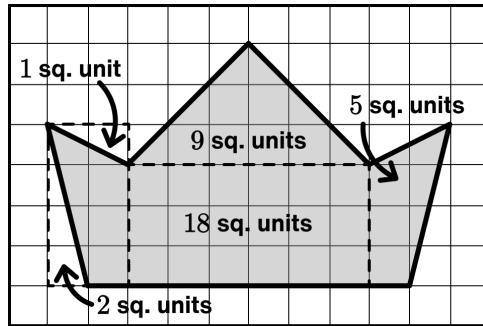
2.2 97.5 cubic inches

*Explanations vary.* Since the box is a rectangular prism, its volume can be found by multiplying the area of the base by the height.  $(3 \times 5) \times 6.5 = 97.5$  cubic inches.

3. They have the same surface area.

*Explanations vary.* Each shape is constructed by joining the faces of two cubes. Each shape has the same number of faces joined together (4 pairs of faces). Since each cube has 6 faces and each shape is made from 5 cubes, they each have a total surface area of  $(5 \times 6) - (4 \times 2) = 22$  square units.

4.1 37 square units



$$(2 \times 5) + 9 + 18 = 37 \text{ square units}$$

4.2 31 square centimeters

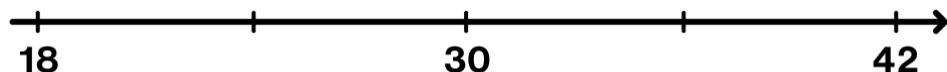
*Explanations vary.* The area of the polygon can be found by subtracting the area of the 2-centimeter square from a triangle with base 14 centimeters and height 5 centimeters.  $(14 \times 5 \times 0.5) - (2 \times 2) = 31$  square centimeters.

## Explore

Responses vary.

## Warm-Up

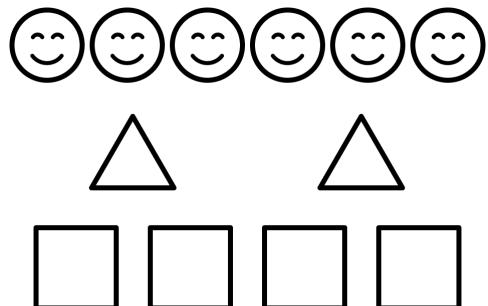
Label the blank tick marks on the number line.



## Practice

Answer the questions based on this picture.

- 1.1 The ratio of smiley faces to triangles is \_\_\_\_ to \_\_\_\_.
- 1.2 The ratio of squares to triangles is \_\_\_\_ : \_\_\_\_.
- 1.3 For every 2 triangles, there are \_\_\_\_\_ squares.
- 1.4 Select the false statement.
  - A. The ratio of smiley faces to squares is 4 : 6 .
  - B. The ratio of squares to triangles is 4 : 2 .
  - C. There are 3 smiley faces for every 1 triangle.

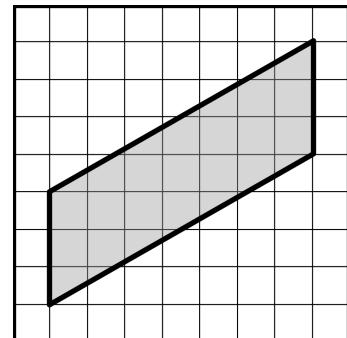


Create a representation for each situation.

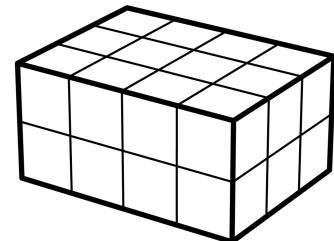
Description	Picture
2.1 The ratio of stars to squares is 1 to 2 .	
2.2 The ratio of stars to hearts is 3 : 2 .	
2.3 There is 1 heart for every 3 squares.	
2.4	
2.5	

**Unit 6.2, Lesson 2: Practice Problems**

3. Determine the area of the parallelogram. Show all of your thinking.



4. Determine the volume and surface area of the prism.  
Show all of your thinking.



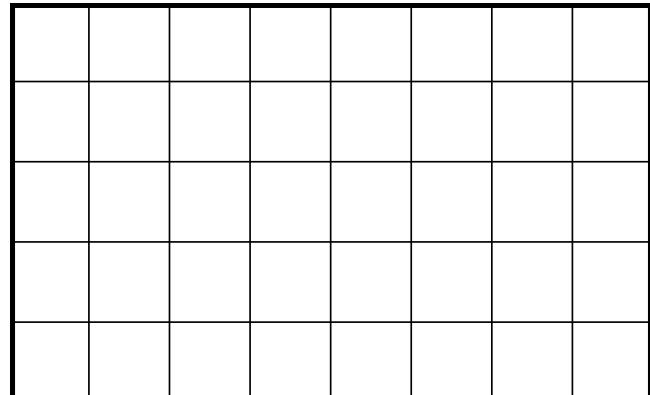
Volume: \_\_\_\_\_

Surface area: \_\_\_\_\_

## Explore

Here is a 5 -by- 8 grid.

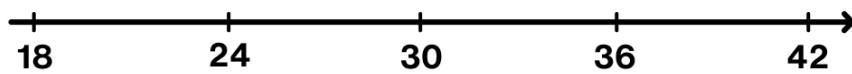
Create a design so that the ratio of unshaded squares to shaded squares is 3 : 2 .



## Reflect

1. Star the question you spent the most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up



## Practice

1.1 3 to 1

1.2 2 : 1

1.3 4

1.4 A. The ratio of smiley faces to squares is 4 : 6.

3. 21 square units

*Explanations vary.* The parallelogram's base is 3 units and the height is 7 units.  $3 \times 7 = 21$ .

4. **Volume:** 24 cubic units

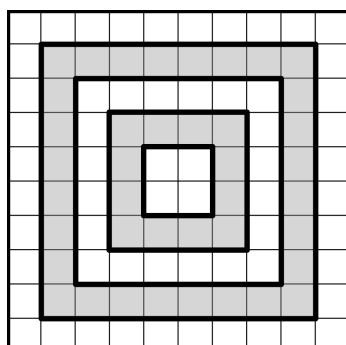
*Explanations vary.* The prism's base is  $3 \times 4 = 12$  square units and the height is 2 units.  
 $12 \times 2 = 24$  cubic units.

**Surface area:** 52 square units

*Explanations vary.* The prism has 6 faces. The area of the three faces I can see is  $(3 \times 4) + (2 \times 3) + (4 \times 2) = 26$  square units. There are two of each face, so the total surface area is  $2 \times 26 = 52$  square units.

## Explore

Responses vary.

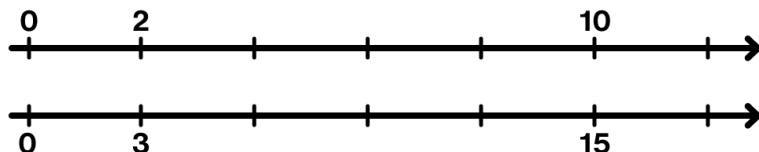
2.1 2.2 2.3 

2.4 The ratio of smiley faces to triangles is 2 to 1.

2.5 The ratio of hearts to triangles is 2 to 3.

## Warm-Up

Label the blank tick marks on each number line.

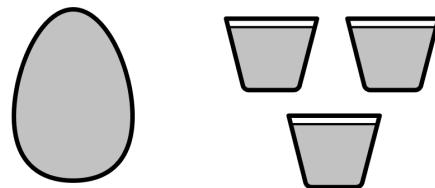


## Practice

There are many recipes for pasta. Some of them call for the following ratio of eggs to flour.

- 1.1 Draw a picture that shows how many ounces of flour you would need for 2 eggs.

Mix 1 egg for every 3 ounces of flour.



Fill in the blanks to create equivalent ratios.

1.2

- 4 eggs
- \_\_\_\_ ounces of flour

1.3

- \_\_\_\_ eggs
- 15 ounces of flour

- 1.4 Thiago mixed 3 eggs with 6 ounces of flour.

Will his pasta taste the same as the original? Explain your thinking.

2. A bakery uses this ratio of water to flour to bake their bread recipe.

List 2 other ratios of water to flour that would make the same type of bread.

\_\_\_\_ pounds of water : \_\_\_\_ pounds of flour

\_\_\_\_ pounds of water : \_\_\_\_ pounds of flour

Mix 3 pounds water for every 5 pounds flour.





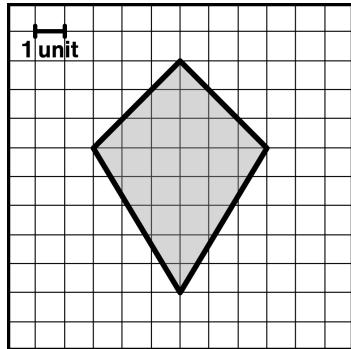
## Unit 6.2, Lesson 3: Practice Problems

Koharu's pie dough recipe uses 6 ounces of flour, 4 ounces of butter, and 2 ounces of water. Complete the sentences to describe the ratios in her recipe.

- 3.1 For every 2 \_\_\_\_\_, there are 6 \_\_\_\_\_.
- 3.2 The ratio of \_\_\_\_\_ to \_\_\_\_\_ is  $6 : 2$ .
- 3.3 The ratio of \_\_\_\_\_ to \_\_\_\_\_ is  $2 : 3$ .
- 3.4 The ratio of \_\_\_\_\_ to \_\_\_\_\_ is  $3 : 2$ .
- 3.5 Koharu made a new batch of pie dough with 3 ounces of flour, 2 ounces of butter, and 1 ounce of water.

Will her pie dough taste the same as the original recipe? Explain your reasoning.

4. Determine the area of this polygon.  
Explain or show your strategy.



## Explore

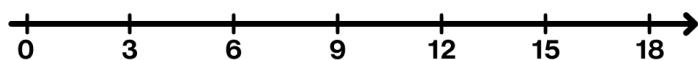
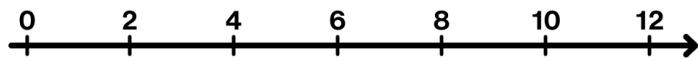
Make a true statement by filling in each blank using the digits 0 to 9 without repeating.

[ ] : [ ] is equivalent to [ ] [ ] : [ ] [ ]

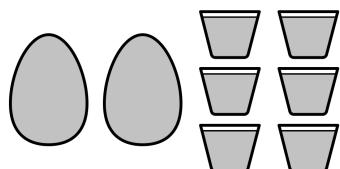
Explain how you know your statement is true.

## Reflect

1. Put a heart next to the problem you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up****Practice**

- 1.1 *Responses vary.*



- 1.2 12

- 1.3 5

- 1.4 No.

*Explanations vary.* The ratio of eggs to flour is not equivalent to the recipe. There is one egg too many for that much flour.

2. *Responses vary.*

6 pounds of water : 10 pounds of flour

9 pounds of water : 15 pounds of flour

- 3.1 For every 2 ounces of water, there are 6 ounces of flour.

- 3.2 The ratio of flour to water is 6 : 2.

- 3.3 The ratio of butter to flour is 2 : 3.

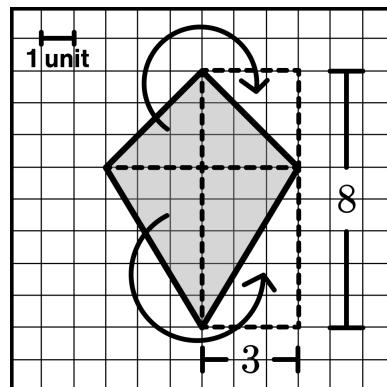
- 3.4 The ratio of flour to butter is 3 : 2.

- 3.5 Yes.

*Explanations vary.* The ratios of all the ingredients are equivalent to the original. Koharu has used half the amount of each ingredient in the recipe.

4. 24 square units

The polygon can be split up into four triangles and rearranged into a 3-by-4 rectangle.

**Explore**

*Responses and explanations vary.*

9 : 2 is equivalent to 45 : 10 .

Each value in the ratio 9 : 2 can be multiplied by 5 to equal 45 : 10 .



## Science Mom Lesson 14

### Unit 6.2, Lesson 5: Practice Problems

Name \_\_\_\_\_

### Warm-Up

Determine the value of each expression.

$7 \cdot 4 = \underline{\hspace{2cm}}$

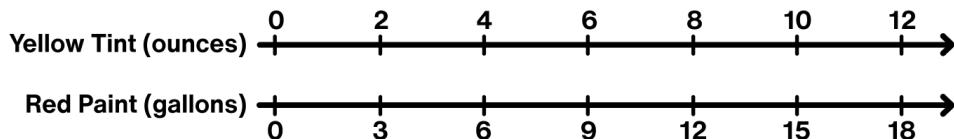
$7 \cdot 30 = \underline{\hspace{2cm}}$

$7 \cdot 34 = \underline{\hspace{2cm}}$

$7 \cdot 68 = \underline{\hspace{2cm}}$

### Practice

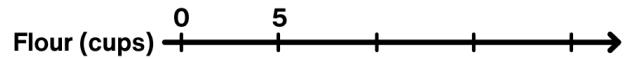
A shade of orange paint is made by mixing 2 ounces of yellow tint with 3 gallons of red paint.



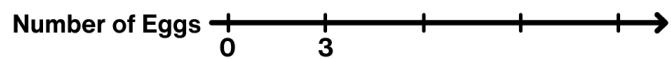
- 1.1 List two other combinations of red paint and yellow tint that can create this shade of orange.
- 1.2 How much red paint do you need for 6 ounces of yellow tint?
- 1.3 How much yellow tint do you need for 12 gallons of red paint?

This double number line diagram shows the amount of flour and eggs for one batch of cookies.

- 2.1 Complete the double number line.



- 2.2 What is the ratio of cups of flour to eggs?



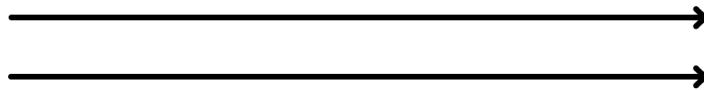
- 2.3 How much flour do you need for 12 eggs?

- 2.4 How many eggs do you need for 15 cups of flour? Explain or show your thinking.

**Unit 6.2, Lesson 5: Practice Problems**

Metropolis Elementary recommends 2 adults for every 15 students on a field trip.

- 3.1 Draw a double number line to represent this situation.



- 3.2 How many adults would you need to take 75 students on a trip?

- 3.3 How many adults would you recommend for 50 students? Explain your thinking.

Each pair of ratios are equivalent. Explain or show how you know they are equivalent.

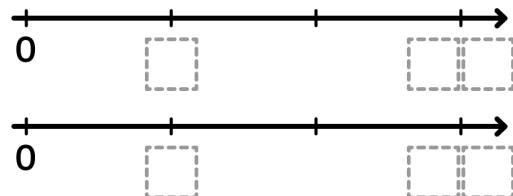
4.1  $5 : 2$  and  $15 : 6$

4.2  $18 : 3$  and  $6 : 1$

4.3  $2 : 7$  and  $100 : 350$

## Explore

Using the digits 0–9 without repetition, fill in each blank to create a double number line.



## Reflect

1. Put a smiley face next to a question that you understood well.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

28, 210, 238, 476

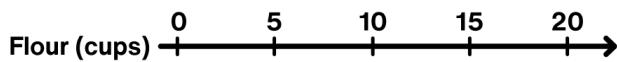
**Practice**

- 1.1 Responses vary. 20 ounces of yellow tint and 30 gallons of red paint, or 12 ounces of yellow tint and 18 gallons of red paint.

1.2 9 gallons

1.3 8 ounces

2.1



2.2 5 : 3

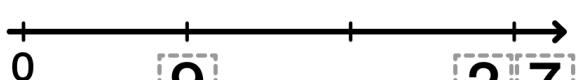
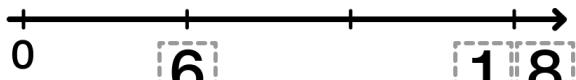
2.3 20 cups

2.4 9 eggs

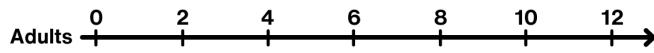
*Explanations vary.* The 15 cups of flour on the double number line lines up with the 9 eggs.

**Explore**

Responses vary.



- 3.1 Responses vary.



- 3.2 10 adults

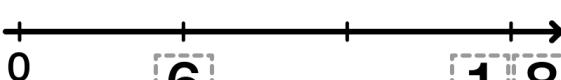
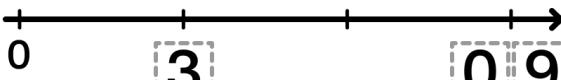
- 3.3 6 or 7 adults

*Explanations vary.* The number of adults required for 45 students is 6, so I would want another adult for the last 5 students.

- 4.1 *Explanations vary.* You can multiply the values in the ratio 5 : 2 by 3 to equal 15 : 6.

- 4.2 *Explanations vary.* You can divide the values in the ratio 18 : 3 by 3 to equal 6 : 1.

- 4.3 *Explanations vary.* You can multiply the values in the ratio 2 : 7 by 50 to equal 100 : 350.



## Warm-Up

Determine the value of each expression.

$8 \cdot 10 = \underline{\hspace{2cm}}$

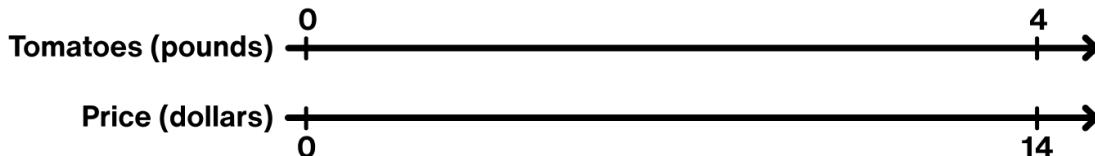
$8 \cdot 40 = \underline{\hspace{2cm}}$

$8 \cdot 41 = \underline{\hspace{2cm}}$

$8 \cdot 38 = \underline{\hspace{2cm}}$

## Practice

The double number line below shows that 4 pounds of tomatoes cost \$14.



- 1.1 Draw and label tick marks that show the prices of 1, 2, and 3 pounds of tomatoes.
- 1.2 Ariel needs 6 pounds of tomatoes to make sauce. How much would that cost?

Callen bought several items at the grocery store. Calculate the price per item.

2.1 12 eggs for \$3

2.2 3 bags of rice for \$7.50

2.3 10 apples for \$3.50

At these rates, how much would it cost for:

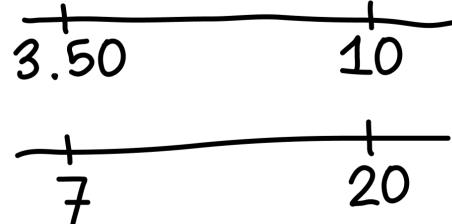
2.4 6 eggs?

2.5 4 bags of rice?

2.6 7 apples?

Callen drew a double number line for Problem 2.6.

- 3.1 What did Callen do well?



- 3.2 What advice would you give them?

**Unit 6.2, Lesson 6: Practice Problems**

4 movie tickets cost \$48 . At this rate, what is the cost of:

4.1 5 movie tickets?

4.2 11 movie tickets?

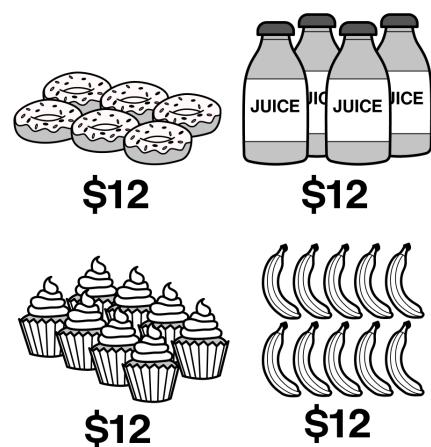
4.3 Describe a strategy that can help you figure out the cost of any number of movie tickets.

5. Explain or show why  $4 : 6$  and  $8 : 10$  are **not** equivalent ratios.

## Explore

Here are four groups of items.

1. If you bought one of each item, would your total be more or less than \$10 ? Explain or show your reasoning.



2. Create a list of these items with a total price of exactly \$10 .

## Reflect

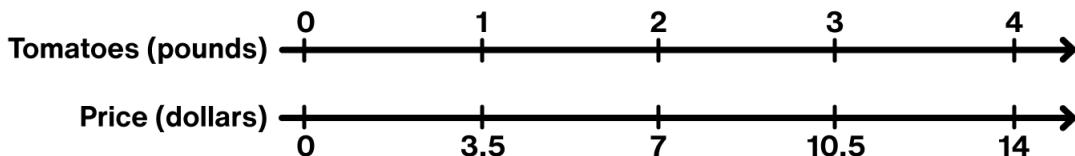
1. Put a question mark next to a question you are feeling unsure of.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

80, 320, 328, 304

**Practice**

1.1



1.2 \$21

2.1 \$0.25

2.2 \$2.50

2.3 \$0.35

2.4 \$1.50

2.5 \$10

2.6 \$2.45

3.1 *Responses vary.* Callen drew a double number line, which makes it easier to see their thinking. Also, they put on all of the important values from the problem.

3.2 *Responses vary.* I would tell them to label each number line. If they do this, they will realize that the number of apples and prices are on the same number line.

4.1 \$60

4.2 \$132

4.3 *Responses vary.* Calculate the price of one ticket and multiply it by the number of tickets bought.

5. *Responses vary.* If the ratios were equivalent, then you could multiply the values in one ratio by the same number to get the other ratio.  $4 \cdot 2 = 8$ , but  $6 \cdot 2$  is not 10.

**Explore**

1. Less

*Explanations vary.* The unit prices of each item are \$2, \$3, \$1.50, and \$1.20. In total, that is \$7.70.

2. *Responses vary.* 2 donuts, 1 juice, and 2 cupcakes.



## Warm-Up

Complete each equation with a number that makes it true.

$$8 \cdot 40 = \underline{\hspace{2cm}}$$

$$8 \cdot \underline{\hspace{2cm}} = 40$$

$$40 \cdot \underline{\hspace{2cm}} = 8$$

$$40 \cdot \underline{\hspace{2cm}} = 5$$

## Practice

To make 1 can of sky-blue paint, Ama mixes 2 ounces of blue tint with 3 gallons of white paint.

1.1 How much of each color does Ama need to make 4 cans?

1.2 Write a ratio of blue tint to white paint that would be a darker shade of blue.

1.3 Write a ratio of blue tint to white paint that would be a lighter shade of blue.

2. Here are two mixtures of light-purple paint.

- Peony Purple: 5 ounces of purple tint for every 2 cups of white paint
- Purple Pizazz: 15 ounces of purple tint for every 8 cups of white paint

Which mixture is a lighter shade of purple? Explain your reasoning.

3. Here are three mixtures of green paint.

- 2 gallons white : 4 ounces green
- 3 gallons white : 5 ounces green
- 5 gallons white : 8 ounces green

Order the mixtures from lightest green to darkest green.

Lightest green

\_\_\_\_\_

Darkest green

**Unit 6.2, Lesson 7: Practice Problems**

4. At DesGrocery, 5 tulips cost \$11. At GroceryMos, 6 tulips cost \$13. Is the price per tulip at each store equivalent? Explain how you know.

DesGrocery is selling frozen vegetables at 4 bags for \$9. At this rate, what is the cost of:

5.1 6 bags?

5.2 1 bag?

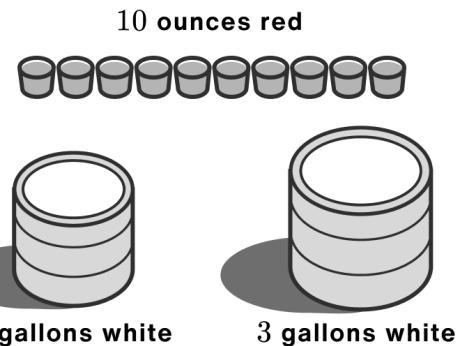
5.3 9 bags?

## Explore

You have 10 ounces of red tint and two containers of white paint: one with 2 gallons and one with 3 gallons.

Divide the red tint between the two containers so that each container will be the same shade of pink.

Explain how you know they will be the same shade.



## Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

320, 5, 0.2, 0.125

**Practice**

- 1.1 8 ounces of blue tint and 12 gallons of white paint
- 1.2 *Responses vary.* 3 ounces of blue tint : 2 gallons of white paint.
- 1.3 *Responses vary.* 1 ounce of blue tint : 3 gallons of white paint.
2. Purple Pizazz

*Explanations vary.* The Purple Pizazz uses less tint for 8 cups of white paint. Purple Pizazz uses 15 ounces of purple tint and Peony Purple uses  $5 \cdot 4 = 20$  ounces of purple tint.

3. **Lightest**  
5 gallons white : 8 ounces green  
3 gallons white : 5 ounces green  
2 gallons white : 4 ounces green

**Darkest**

4. No.

*Explanations vary.* 30 tulips cost  $\$11 \cdot 6 = \$66$  at DesGrocery and  $\$13 \cdot 5 = \$65$  at GroceryMos.

- 5.1 \$13.50
- 5.2 \$2.25
- 5.3 \$20.25

**Explore**

- Mix 4 ounces of red tint into the 2 gallons of white paint.
- Mix 6 ounces of red tint into the 3 gallons of white paint.

*Explanations vary.* These are the same shade of pink because both cans have a ratio equivalent to 2 ounces of red tint to 1 gallon of white paint.

## Warm-Up

Complete each equation with a number that makes it true.

$$35 \cdot 5 = \underline{\hspace{2cm}}$$

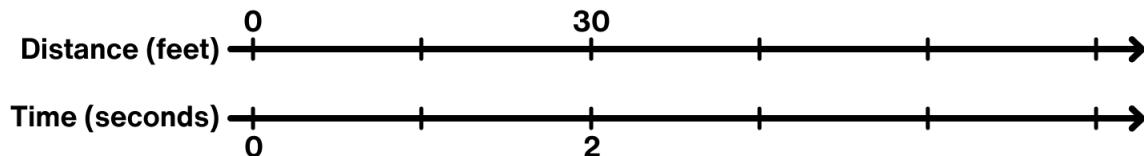
$$35 \div 5 = \underline{\hspace{2cm}}$$

$$5 \div \underline{\hspace{2cm}} = 1$$

$$5 \cdot \underline{\hspace{2cm}} = 1$$

## Practice

A person on a scooter travels 30 feet in 2 seconds at a constant rate.



- 1.1 Fill in the missing values on the double number line.
- 1.2 What is the speed of the scooter in feet per second? \_\_\_\_\_
- 1.3 At this rate, determine how long it would take the scooter to travel 105 feet.
  
- 1.4 A person on a skateboard travels 55 feet in 4 seconds. Is the skateboard traveling faster than, slower than, or at the same speed as the scooter? Explain or show your reasoning.
  
- 1.5 A person on roller blades travels 90 feet in 5 seconds. Are the roller blades traveling faster than, slower than, or at the same speed as the scooter? Explain or show your reasoning.
  
2. Did you know the top speeds of these animals?
  - Galapagos tortoise: 16 meters in 3 minutes
  - Garden snail: 8 meters in 5 minutes
  - Three-toed sloth: 9 meters in 2 minutes

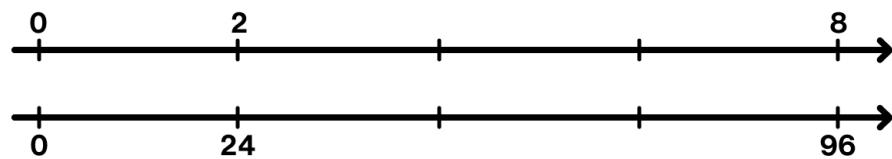
Order the animals from slowest to fastest.

Slowest \_\_\_\_\_ Fastest \_\_\_\_\_

**Unit 6.2, Lesson 8: Practice Problems**

3. Ariana gets paid \$90 for every 5 hours of work in her neighbor's garden. Last summer, Lucy got paid \$36 for every 2 hours of work in the same garden. Are they paid at the same rate? Explain your thinking.

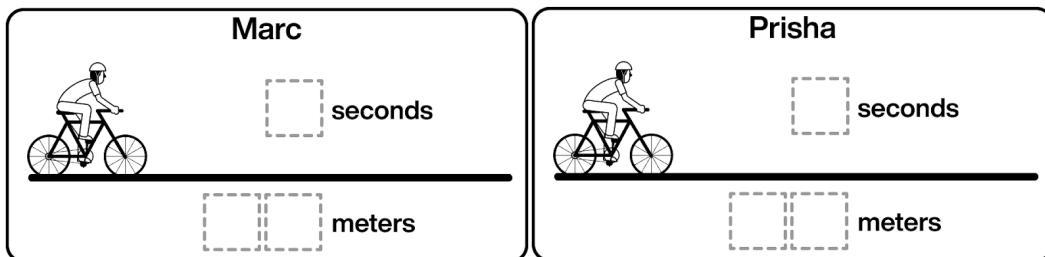
Metropolis Elementary recommends a ratio of 2 adults for every 24 children on every field trip.



- 4.1 Label the axis of each number line and fill in the missing values to represent the situation.
- 4.2 If there are 72 children on the field trip, how many adults are needed?
- 4.3 The school has 20 adults and 350 students. If everyone goes on a field trip, would that meet the recommendation? Explain your thinking.

## Explore

Using the digits 0–9 without repeating, fill the blanks so that Marc and Prisha have the same speed.

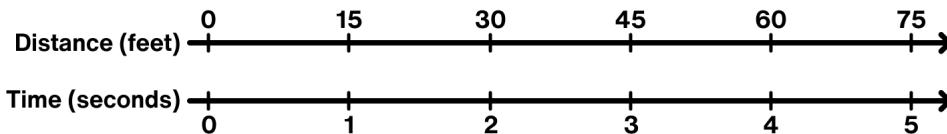


## Reflect

1. Put a star next to the question you spent most of your time on.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**175, 7, 5,  $\frac{1}{5}$ **Practice**

1.1

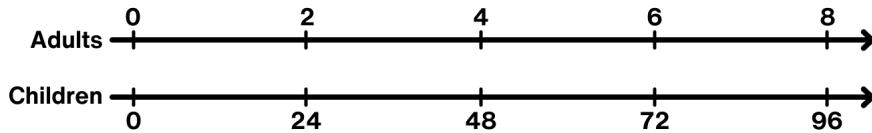


1.2 15 feet per second

1.3 7 seconds

1.4 Slower. *Explanations vary.* The skateboard is traveling at a speed of 13.75 feet per second, which is slower than the scooter.1.5 Faster. *Explanations vary.* The roller blades are traveling at a speed of 18 feet per second, which is faster than the scooter.2. **Slowest** Garden snail Three-toed sloth Galapagos tortoise **Fastest**3. Yes. *Explanations vary.* Ariana's rate is  $\frac{\$90}{5} = \$18$  per hour and Lucy's is  $\frac{\$36}{2} = \$18$  per hour.

4.1



4.2 6 adults

4.3 No. *Explanations vary.* 20 adults is only enough to go on a field trip with 240 students.**Explore**

Responses vary.

**Marc**



seconds

**Prisha**



seconds

<input type="text" value="3} <input type="text" value="0} meters</p>

## Warm-Up

Complete each equation with a number that makes it true.

$$8 \cdot \underline{\quad} = 40$$

$$8 \cdot \underline{\quad} = 20$$

$$8 \cdot \underline{\quad} = 200$$

$$8 \cdot \underline{\quad} = 2$$

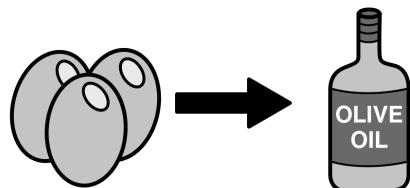
## Practice

Did you know it takes about 40 pounds of olives to make 3 liters of olive oil?

- 1.1 Orchard A grew about 2 000 pounds of olives.

How many liters of olive oil would this make?

Use the table if it helps you with your thinking.



- 1.2 Orchard B grew about 3 000 pounds of olives.

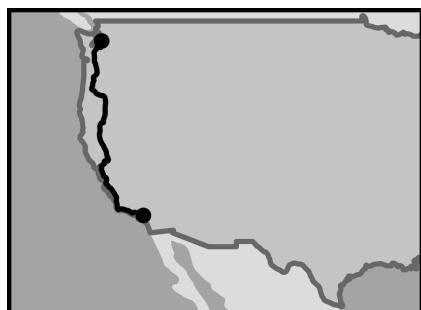
How many liters of olive oil would this make?

Olives (lb.)	Olive Oil (L)
40	3

There is a train that travels from Seattle, Washington, to Los Angeles, California. In its first 2 hours, the train went about 80 miles, including stops.

- 2.1 At this rate, how far does the train travel per hour?

- 2.2 At this rate, how long will it take to travel the 1 400 miles from Seattle to Los Angeles?



**Unit 6.2, Lesson 9: Practice Problems**

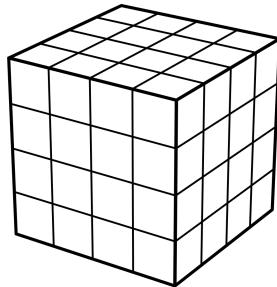
3. A park fountain sprayed 20 gallons of water in  $\frac{1}{2}$  an hour, then was turned off for awhile.

When it was turned back on, it sprayed 30 gallons in  $\frac{3}{4}$  of an hour.

Explain how you know that the fountain sprayed water at the same rate both times it was on.

4. Explain or show how you know that 600: 450, 60: 45, and 4: 3 are all equivalent.

- 5.1 What is the volume of this cube?



- 5.2 What is its surface area?

## Explore

South Africa broke the world record for largest pizza in 1990. It weighed 26 833 pounds!

1. 3 medium pizzas weigh about 2 pounds with toppings. About how many medium pizzas are equivalent to the world's largest pizza?
  
  
  
  
  
2. How many people do you think the world's largest pizza could feed?

## Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

5, 2. 5, 25, 0. 25

**Practice**

1.1 150 liters

1.2 225 liters

2.1 40 miles per hour

2.2 35 hours

3. *Responses vary.* The fountain sprayed 40 gallons per hour both times.4. *Responses vary.* You can divide the values in the ratio 600: 450 by 10 to equal 60: 45, and you can multiply each value of 4: 3 by 15 to equal 60: 45.

5.1 64 cubic units

5.2 96 square units

**Explore**

1. 40 249. 5 pizzas

2. *Responses vary.* About 80 500 people if each person eats half of a medium pizza.

## Warm-Up

Complete each equation with a number that makes it true.

$$8 \cdot \underline{\quad} = 1$$

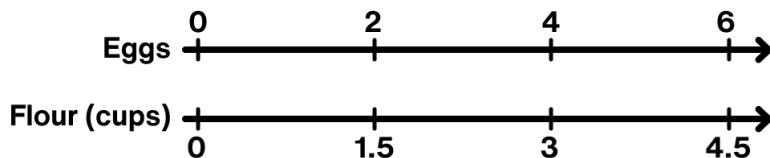
$$\frac{1}{8} \cdot 8 = \underline{\quad}$$

$$\frac{5}{8} \cdot 8 = \underline{\quad}$$

$$8 \cdot \underline{\quad} = 3$$

## Practice

Here is part of a recipe for different-size cakes, showing the ratio of eggs to flour.

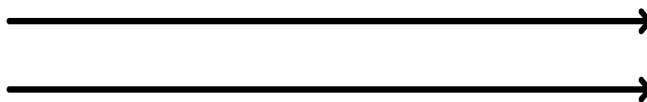


- 1.1 Make a table that represents the same situation.
- 1.2 How much flour do you need for each egg in this recipe?
- 1.3 How many eggs would you need for a bag that contains 18 cups of flour?

Eggs	Flour (cups)

The same cake recipe uses 2 cups of sugar for every 3 cups of flour.

- 2.1 Draw a double number line to represent this situation.



- 2.2 How much sugar would you need for a bag that contains 18 cups of flour?
- 2.3 Which representation do you prefer to answer the previous question: a table or a double number line? Explain your thinking.

**Unit 6.2, Lesson 10: Practice Problems**

Inola is making personal pizzas for her birthday party. For 4 pizzas, she uses 10 ounces of cheese. At this rate, how much cheese does she need if she makes:

3.1 12 pizzas?

3.2 22 pizzas?

3.3 11 pizzas?

Inola went to the farmers market to get ingredients. Determine the price per item of each vegetable.

4.1 6 onions for \$1.80

4.2 12 mushrooms for \$3

4.3 5 peppers for \$5.50

**Explore**

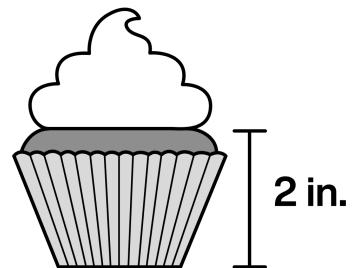
People have very different opinions about the perfect amount of cupcake frosting.

What do you think is the appropriate thickness of frosting for a 2 -inch cake?

\_\_\_\_\_ inches of frosting : 2 inches of cake

At this rate, how thick would the frosting be if the cake were:

- 3 inches tall?
- 31 inches tall (close to the world record)?
- 1 centimeter tall?

**Reflect**

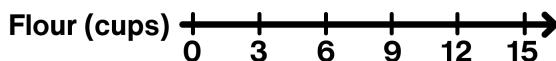
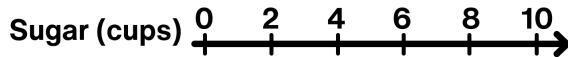
1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up** $\frac{1}{8}, 1, 5, \frac{3}{8}$ **Practice**1.1 *Responses vary.*

Eggs	Flour (cups)
0	0
2	1.5
4	3
6	4.5

1.2  $\frac{3}{4}$  of a cup

1.3 24 eggs

2.1 *Responses vary.*

2.2 12 cups

2.3 *Responses and explanations vary.*

3.1 30 ounces

3.2 55 ounces

3.3 27.5 ounces

4.1 \$0.30

4.2 \$0.25

4.3 \$1.10

**Explore***Responses vary.*

Based on a ratio of 1 inch of frosting : 2 inches of cake:

- 1.5 inches
- 15.5 inches
- 0.5 centimeters

## Warm-Up

What is  $\frac{1}{2}$  of 12?

What is  $\frac{1}{4}$  of 12?

What is  $\frac{3}{4}$  of 12?

## Practice

The ratio of coaches to players at practice is 2 : 5. There are 21 people at practice.

- 1.1 Label the tape diagram to represent the situation. Include the value of each small rectangle.

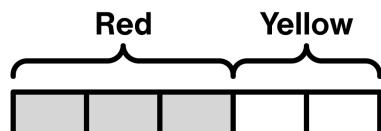


- 1.2 How many coaches are in the room?

- 1.3 How many players are in the room?

Here is a tape diagram representing the ratio of red paint to yellow paint in a mixture of orange paint.

- 2.1 What is the ratio of red paint to yellow paint?



- 2.2 If I had 6 gallons of red paint, how much yellow paint would I need? \_\_\_\_\_

How much red and yellow paint would I need if I wanted:

- 2.3 25 gallons of orange?

- 2.4 30 gallons of orange?

Red paint: \_\_\_\_\_ Yellow paint: \_\_\_\_\_

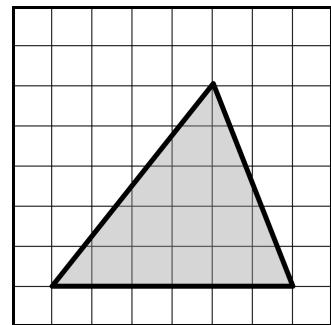
Red paint: \_\_\_\_\_ Yellow paint: \_\_\_\_\_

**Unit 6.2, Lesson 12: Practice Problems**

3. Taylor entered a 100 -mile bike race. They know they can ride 32 miles in 160 minutes.

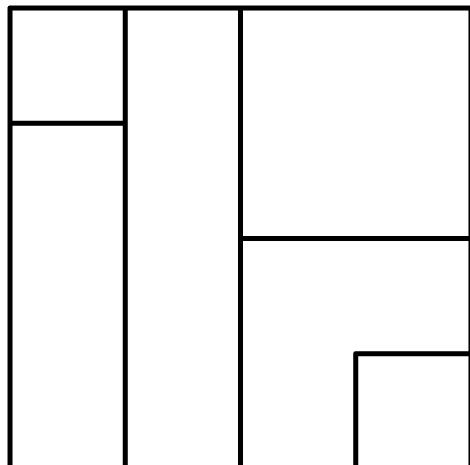
At this rate, how long will it take them to finish the race? Use any strategy you find helpful.

4. Determine the area of the triangle and show your reasoning.

**Explore**

Use what you know about area to shade in the figure so that the ratio of shaded area to unshaded area is  $1 : 3$ .

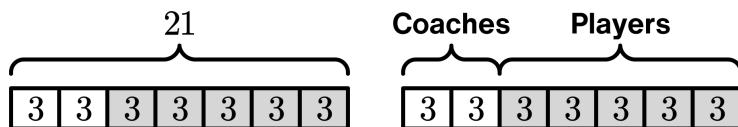
Explain how you know the ratio is  $1 : 3$ .

**Reflect**

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

6, 3, 9

**Practice**1.1 *Responses vary.*

1.2 6 coaches

1.3 15 players

2.1 3 : 2

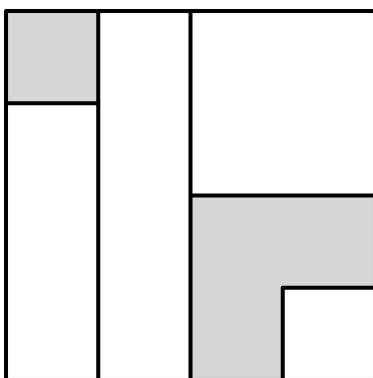
2.2 4 gallons

2.3 **Red paint:** 15 gallons, **Yellow paint:** 10 gallons2.4 **Red paint:** 18 gallons, **Yellow paint:** 12 gallons

3. 500 minutes

4. 15 square units

*Explanations vary.* The triangle has a base of 6 units and height of 5 units.  $6 \times 5 \times \frac{1}{2} = 15$  square units.

**Explore***Responses and explanations vary.*

If the total area of the square is 16 square units, then the shaded area must be 4 square units and the unshaded area must be 12 square units. This would make the ratio of shaded area to unshaded area 4 : 12, which is equivalent to 1 : 3.

## Warm-Up

What is  $\frac{1}{2}$  of 20?

What is  $\frac{1}{5}$  of 20?

What is  $\frac{3}{5}$  of 20?

## Practice

Pasta is made from 3 parts water and 5 parts flour. Sora is making 32 ounces of pasta for a party.

- 1.1 Label the tape diagram to represent the situation.



- 1.2 How much water does Sora need to make 32 ounces of pasta?

- 1.3 How much flour does Sora need to make 32 ounces of pasta?

Sora is also making a salad. Her salad dressing recipe uses 6 teaspoons of vinegar for every 15 teaspoons of olive oil.

- 2.1 How much vinegar does Sora need for 5 teaspoons of olive oil?

- 2.2 How much olive oil does Sora need for 8 teaspoons of vinegar?

- 2.3 If Sora makes 42 teaspoons of salad dressing, how much of each ingredient is in it?

- 2.4 If Sora makes 14 teaspoons of salad dressing, how much of each ingredient is in it?

**Unit 6.2, Lesson 13: Practice Problems**

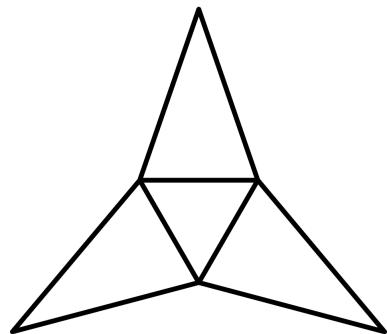
3. At the town book fair, all books cost the same amount. Katie paid \$13 for 4 books.

Sydney bought 10 books. How much did she pay?

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

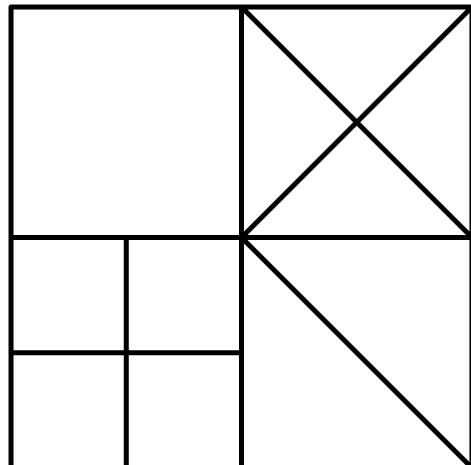
- A. A triangular pyramid
- B. A trapezoidal prism
- C. A triangular prism
- D. A rectangular pyramid

4.2 Describe a strategy for calculating the surface area of this polyhedron.

**Explore**

Use what you know about area to shade in the figure so that the ratio of shaded area to unshaded area is 3: 5.

Explain how you know the ratio is 3: 5.

**Reflect**

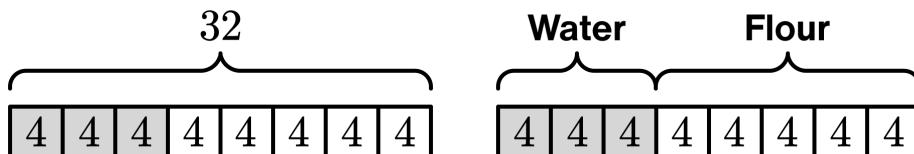
1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

10, 4, 12

**Practice**

- 1.1
- Responses vary.*



- 1.2 12 ounces

- 1.3 20 ounces

- 2.1 2 teaspoons

- 2.2 20 teaspoons

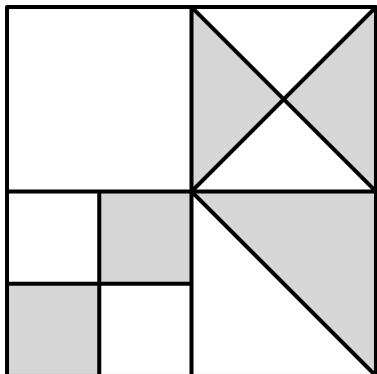
- 2.3 12 teaspoons of vinegar and 30 teaspoons of olive oil

- 2.4 4 teaspoons of vinegar and 10 teaspoons of olive oil

3. \$32.50

- 4.1 A. A triangular pyramid

- 4.2
- Responses vary.*
- Find the area of one of the larger triangle faces, multiply it by 3, and add it to the area of the base.

**Explore***Responses and explanations vary.*

If the total area of the square is 16 square units, then the shaded area must be 6 square units and the unshaded area must be 10 square units. This would make the ratio of shaded area to unshaded area 6:10, which is equivalent to 3:5.



## Warm-Up

Select all the expressions that are equivalent to  $2 \cdot \frac{2}{5}$ .

 0.8  $\frac{4}{10}$   $\frac{1}{5}$  2.4  $\frac{4}{5}$ 

## Practice

Choose the unit you would most likely use to measure each object.

- 1.1 The height of a building \_\_\_\_
- 1.2 The length of a fingernail \_\_\_\_
- 1.3 The mass of a paper clip \_\_\_\_
- 1.4 The distance between two cities \_\_\_\_
- 1.5 The weight of a package \_\_\_\_
- 1.6 The volume of a water cooler \_\_\_\_

- A. Gallons
- B. Centimeters
- C. Grams
- D. Pounds
- E. Feet
- F. Kilometers

Circle the larger unit of measure. Then determine if the unit measures length, volume, or mass.

- 2.1 meter or kilometer
- 2.2 yard or foot
- 2.3 pound or ounce

Name an object that:

- 3.1 Is about 1 meter in length.
- 3.2 Weighs about 5 pounds.

- 3.3 Has an area around 1 square foot.
- 3.4 Is about 1 centimeter in length.

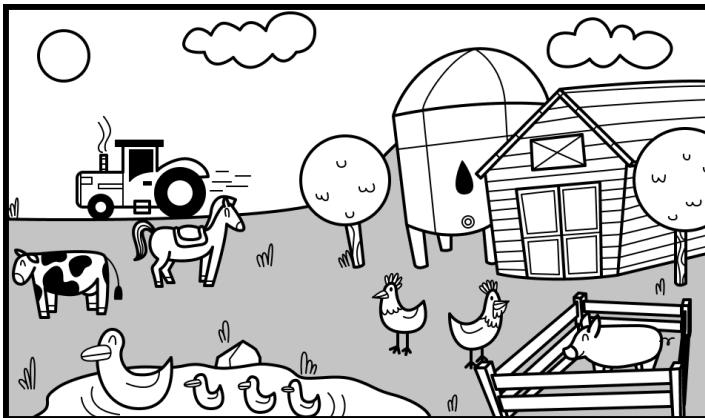
**Unit 6.3, Lesson 1: Practice Problems**

Jalen earns \$33 for babysitting 4 hours.

- 4.1 At this rate, how much will he earn if he babysits for 7 hours? Explain your thinking.
  
- 4.2 After how many hours of babysitting will Jalen have made over \$500? Explain your thinking.

**Explore**

Use the image below to find examples of each unit.



Appropriate Unit of Measure	Example
Feet	Length of the tractor
Gallons	
Square inches	
Miles per hour	
Centimeters	

**Reflect**

1. Star the problem you spent the most time on.
  
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

- 0.8
- $\frac{4}{5}$

**Practice**

- 1.1 E. Feet  
 1.2 B. Centimeters  
 1.3 C. Grams  
 1.4 F. Kilometers  
 1.5 D. Pounds  
 1.6 A. Gallons

- 2.1 Kilometers are larger. They measure length.  
 2.2 Yards are larger. They measure length.  
 2.3 Pounds are larger. They measure mass.

- 3.1 *Responses vary.* A guitar.                            3.2 *Responses vary.* A small dog.  
 3.3 *Responses vary.* The surface of a notebook.      3.4 *Responses vary.* The length of a staple.  
 4.1 \$57.75. *Explanations vary.* I divided \$33 by 4 to get an hourly rate (\$8.25) and then multiplied that by 7 hours.  
 4.2 60.6 hours (or 61 hours). *Explanations vary.* I divided \$500 by \$8.25 (the rate per hour). That gave me 60.6 hours. Once he completes 61 hours, he'll have  $61 \cdot 8.25 = \$503.25$ .

**Explore**

*Responses vary.*

Appropriate Unit of Measure	Example
Feet	Length of the tractor
Gallons	Amount of water in water tank
Square inches	Size of the pig pen
Miles per hour	Speed of the tractor
Centimeters	Length of a blade of grass



# Science Mom Lesson 23

## Unit 6.3, Lesson 3: Practice Problems

Name \_\_\_\_\_

### Warm-Up

Select all the expressions that are equivalent to  $4 \cdot \frac{3}{8}$ .

$\frac{12}{8}$

$\frac{3}{2}$

$\frac{12}{32}$

4.325

1.5

### Practice

$1 \text{ kg} = 1000 \text{ g}$

$3 \text{ oz.} \approx 85 \text{ g}$

$4 \text{ kg} \approx 141 \text{ oz.}$

$11 \text{ lb.} \approx 5 \text{ kg}$

1.1 15 oz. is approximately  
\_\_\_\_\_ g.

1.2 2 kg is approximately  
\_\_\_\_\_ oz.

1.3 20 lb. is approximately  
\_\_\_\_\_ kg.

2. Malik's height is 57 inches. What could be his height in centimeters? (100 inches = 254 cm)

A. 22.4

B. 57

C. 144.8

D. 3 551

Explain your reasoning.

Jordan's family exchanged 250 dollars for 5 000 pesos.

3.1 Jordan bought a sweater for 550 pesos. How many dollars did the sweater cost?

3.2 If Jordan's family exchanges 200 dollars at the same rate, how many pesos will they have?

**Unit 6.3, Lesson 3: Practice Problems**

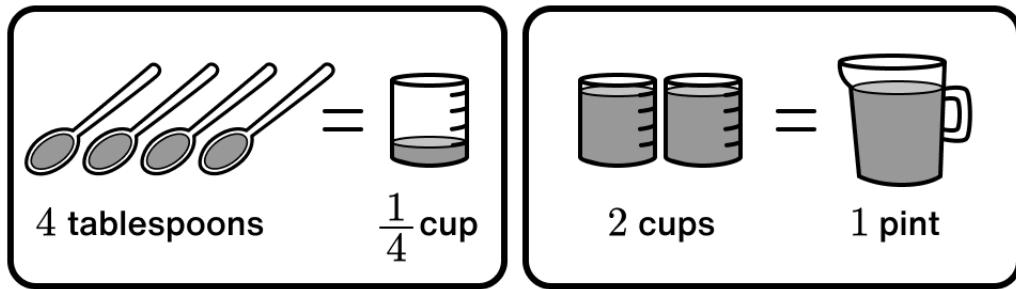
4. 5 gallons is about equal to 19 liters. Which has a larger volume: 1 gallon or 1 liter?

Explain your reasoning.

Kwasi bought 15 postage stamps for \$8.25 . All stamps cost the same amount.

5.1 How much will 12 stamps cost?

5.2 How many stamps can Kwasi purchase with \$22 ?

**Explore**

4 tablespoons are in  $\frac{1}{4}$  of a cup. 2 cups are in 1 pint. How many tablespoons are there in 1 pint?

If you get stuck, consider making a double number line or making a table.

**Reflect**

1. Put a question mark next to a problem you would like to compare with a classmate.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

- ✓  $\frac{12}{8}$       ✓  $\frac{3}{2}$       ✓ 1.5

**Practice**

- 1.1 Approximately 425 grams  
1.2 Approximately 70.5 ounces  
1.3 Approximately 9.1 kilograms  
2. C. 144.8 centimeters

*Explanations vary.* There are about 2.5 cm for every inch, so the number we want is about 60 (rounded from 57) multiplied by 2.5, or 150. 144.8 is the only choice that is close.

- 3.1 \$27.50  
3.2 4 000 pesos  
4. 1 gallon

*Explanations vary.* 1 liter is equal to approximately  $\frac{5}{19}$  of a gallon.

- 5.1 \$6.60  
5.2 40 stamps

**Explore**

32 tablespoons



## Warm-Up

Order these from slowest to fastest speed. Every speed is in miles per hour.

10.5

10.05

 $\frac{43}{5}$  $\frac{43}{4}$ 

Slowest speed \_\_\_\_\_ Fastest speed \_\_\_\_\_

## Practice

Mia and Liam were trying out new remote control cars. Mia's traveled 135 feet in 3 seconds. Liam's traveled 228 feet in 6 seconds. Both cars traveled at a constant speed.

- |   |  |                            |
|---|--|----------------------------|
| 1.1 How far did Mia's car travel in 1 second? | 1.2 How far did Liam's car travel in 1 second? | 1.3 Whose traveled faster? |
|---|--|----------------------------|
- 1.4 Deven says he has a remote control car that can travel 12 yards per second. Is his car faster or slower than the other two?
2. The cost of 5 cans of pinto beans is \$3.35 . At this rate, how much do 11 cans of pinto beans cost? Explain your reasoning.
3. Ivan is curious if he can run faster than a rabbit. He runs 90 feet in 5 seconds. The average rabbit can run at a speed of 35 feet per second. Is Ivan faster than the rabbit?  
Explain your reasoning.

**Unit 6.3, Lesson 4: Practice Problems**

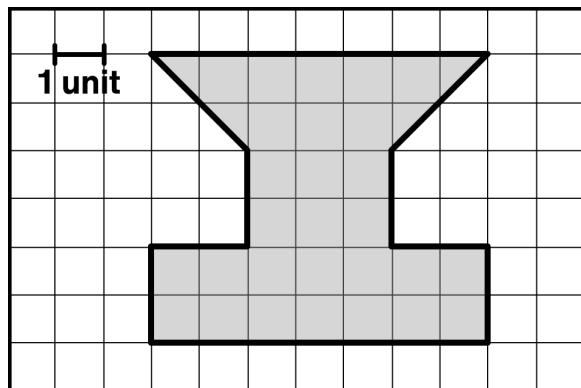
Name an object that:

4.1 Has a weight of about 10 pounds.

4.2 Is about 10 meters tall.

5.1 Decompose this polygon so that its area can be calculated.

5.2 Calculate the area of the polygon.



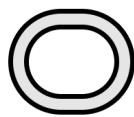
## Explore

Here are three model train tracks. The trains on each track travel at the same speed. Fill in the blanks using the digits 0–9 without repeating to show possible times for completing 1 lap on each track.

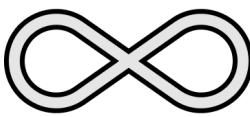
sec.

sec.

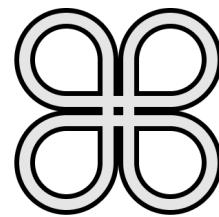
sec.



100 cm



200 cm



400 cm

## Reflect

1. Circle the question you spent the most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

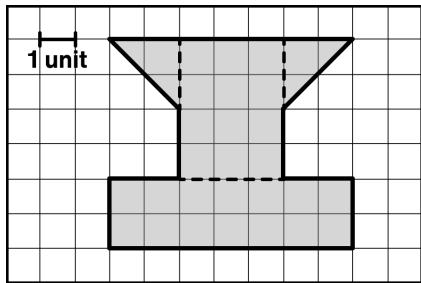
Slowest Speed	$\frac{43}{5}$	10.05	10.5	$\frac{43}{4}$	Fastest Speed
---------------	----------------	-------	------	----------------	---------------

**Practice**

- 1.1 45 feet  
 1.2 38 feet  
 1.3 Mia's remote control car  
 1.4 Slower  
 2. \$7.37

*Explanations vary.* Each can is \$0.67, so 11 cans cost  $11 \times \$0.67 = \$7.37$ .

3. No. *Explanations vary.* Ivan runs at  $90 \div 5 = 18$  feet per second.  
 4.1 *Responses vary.* A bag of potatoes.  
 4.2 *Responses vary.* A flagpole at school.  
 5.1 *Responses vary.*

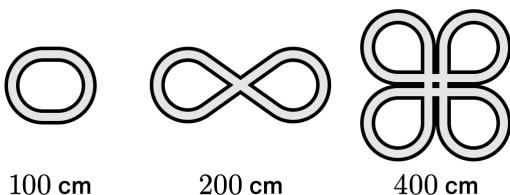


- 5.2 30 square units

**Explore**

*Responses vary.*

$\boxed{8}$  sec.     $\boxed{1} \boxed{6}$  sec.     $\boxed{3} \boxed{2}$  sec.





## Warm-Up

Determine the value of each expression.

$$\frac{1}{4} \text{ of } 60 =$$

$$\frac{3}{4} \cdot 60 =$$

$$\frac{1}{4} \cdot 30 =$$

$$\frac{3}{4} \cdot 30 =$$

## Practice

A copy machine can make 500 copies every 4 minutes.

1.1 How many copies per minute can it make?

1.2 How many minutes per copy?

1.3 How many copies can it make in 10 minutes?

1.4 A teacher made 700 copies.  
How long did it take to make?

Jamar's class painted 50 square feet of a mural using 4 cans of paint.

2.1 How many square feet could they paint **per can of paint?**

2.2 How many cans did they use **per square foot?**

2.3 They want to paint a total of 310 square feet. How many cans of paint will they need?

Show or explain your thinking.

2.4 Jamar predicted that they would need 3 875 cans of paint. His work is below.

$$310 \cdot 12.5 \text{ cans per square foot} = 3875 \text{ cans}$$

Do you agree? Explain your reasoning.

**Unit 6.3, Lesson 5: Practice Problems**

At the grocery store, Abdullah purchased 3 pounds of mac and cheese for \$7.50.

3.1 What does mac and cheese cost per pound?

3.2 How much mac and cheese does he get per dollar?

3.3 How much mac and cheese could Abdullah buy with \$20?

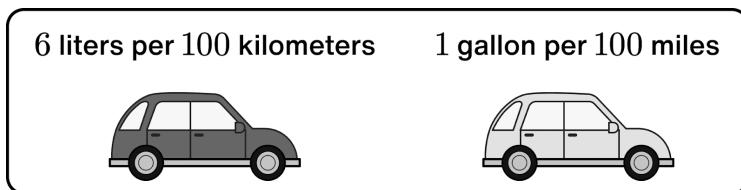
4. Here are the prices for cans of juice at different stores. The cans are the same brand and size.

Store A	Store B	Store C
4 cans for \$2.48	5 cans for \$3.00	59 cents per can

Which store offers the best deal? Explain your reasoning.

## Explore

Here is information about gasoline usage for two cars. Which car is more fuel efficient (uses gas at a lower rate)?



Note:  
5 miles  $\approx$  8 kilometers  
5 gallons  $\approx$  19 liters

## Reflect

1. Put a heart next to a question that you understand well.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

15, 45, 7.5, 22.5

**Practice**

1.1 125 copies per minute

1.2 0.008 minutes per copy

1.3 1250 copies

1.4 5.6 minutes

2.1 12.5 square feet per can

2.2 0.08 cans per square foot

2.3 *Responses and explanations vary.* 25 cans. If they use the same calculation of 0.08 cans of paint per square foot, they would need  $0.08 \cdot 310 = 24.8$  cans of paint. I rounded up to 25, since it's better to have a little bit more paint than not enough.

2.4 No.

*Explanations vary.* Jamar used the wrong rate for cans of paint per square foot. This is the rate for square feet per can of paint.

3.1 \$2.50 per pound

3.2 0.4 pounds per dollar

3.3 8 pounds

4. Store C

*Explanations vary.* Cans are sold at 62 cents each at Store A and 60 cents each at Store B.

**Explore**1 gallon per 100 miles ( $\approx 2.375$  liters per 100 kilometers)



## Warm-Up

Determine the value of each expression.

$\frac{1}{3} \text{ of } 66 =$

$\frac{1}{3} \cdot 33 =$

$\frac{2}{3} \cdot 33 =$

$\frac{5}{3} \cdot 33 =$

## Practice

The table shows the amounts of onions and tomatoes in different-size batches of a salsa recipe.

- 1.1 How many onions do you need to go with 40 tomatoes?

Onions	Tomatoes
2	16
4	32
10	80

- 1.2 How many tomatoes do you need to go with 3.5 onions?

- 1.3 One unit rate in this situation is 8. What does it mean?

- 1.4 Another unit rate is  $\frac{1}{8}$ . What does it mean?

It takes 10 pounds of potatoes to make 15 servings of mashed potatoes. At this rate:

- 2.1 How many servings of mashed potatoes can be made with 15 pounds of potatoes?  
Use the table if it helps with your thinking.

Potatoes (lb.)	Mashed Potatoes (servings)
10	15

- 2.2 How many pounds of potatoes are needed to make 50 servings of mashed potatoes?

**Unit 6.3, Lesson 6: Practice Problems**

3. A train is traveling at a constant rate. Complete the table.

Time (hours)	Distance Traveled (miles)
2	110
1	
	27.5
$1\frac{1}{2}$	
	165

4. A pet hamster is placed on a digital scale. The scale reads 4.3. What could be the units?
- A. Milligrams      B. Ounces      C. Pounds      D. Inches
5. Lola's family is looking to purchase a car that is 176.5 inches long. They have a parking space that is 16.25 feet long. Can this car fit in the parking space? Explain your answer.

## Explore

Aditi wants to use one measurement tool to make their fruit salad. She chooses a  $\frac{1}{4}$  cup scoop.

Complete the table with the number of  $\frac{1}{4}$  cup scoops Aditi needs for each ingredient in the recipe.

### Fruit Salad Recipe

$\frac{3}{4}$  cup of chopped strawberries  
2 cups of sliced bananas  
 $1\frac{1}{4}$  cups of diced apples  
 $\frac{1}{4}$  cup of blueberries

Ingredient	Number of $\frac{1}{4}$ cups
Strawberries	
Bananas	
Apples	
Blueberries	

## Reflect

- Put a star next to one question you are still wondering about.
- Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

22, 11, 22, 55

**Practice**

1.1 5 onions

1.2 28 tomatoes

1.3 The number of tomatoes per onion

1.4 The number of onions per tomato

2.1 22.5 servings of mashed potatoes

2.2 About 33.3 pounds of potatoes

3.

Time (hours)	Distance Traveled (miles)
2	110
1	55
0.5	27.5
1 $\frac{1}{2}$	82.5
3	165

4. **B.** Ounces5. Yes. *Explanations vary.* The parking space is  $16.25 \cdot 12 = 195$  inches long.**Explore**

Ingredient	Number of $1/4$ cups
Strawberries	3
Bananas	8
Apples	5
Blueberries	1



# Science Mom Lesson 27

## Unit 6.4, Lesson 3: Practice Problems

Name \_\_\_\_\_

### Warm-Up

Shade each fraction of the rectangle below it.

$$\frac{5}{6}$$

--	--	--	--	--	--

$$\frac{1}{2}$$

--	--	--	--	--	--

$$\frac{2}{3}$$

--	--	--	--	--	--

### Practice

Biryani is a rice dish from South Asia. Three students made Alisha's biryani recipe using different-size scoops.

If Alisha's biryani recipe uses 4 cups of rice, how many scoops of rice does each student need?

1.1 Alisha: 2 -cup scoop

1.2 Lukas:  $\frac{1}{2}$  -cup scoop

1.3 Emma:  $\frac{1}{3}$  -cup scoop

1.4 Explain why you can represent Emma's situation with the equation  $4 \div \frac{1}{3} = ?$ .

Answer each question.

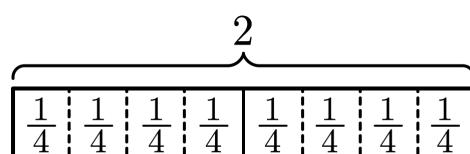
2.1 How many  $\frac{1}{2}$ 's make 5?

2.2 How many  $\frac{1}{4}$ 's make 3?

2.3 How many  $\frac{3}{4}$ 's make 3?

Lukas drew this diagram to represent "how many  $\frac{1}{4}$ 's make 2."

3.1 Write an equation to represent Lukas's diagram.



3.2 Answer Lukas's question.



## Unit 6.4, Lesson 3: Practice Problems

4. Decide if this statement is always, sometimes, or never true:

*When you divide one number by another, the result will be smaller than the first number.*

Circle one: Always      Sometimes      Never

Explain your reasoning.

Emma gets paid \$50 every month for babysitting.

- 5.1 Emma wants to save 30% of her pay. How much should she save each month?

- 5.2 Emma spends \$10 every month on a video streaming service.

What percent of her pay is this?

## Explore

A pancake recipe calls for 8 eggs, but Alisha only has 3 eggs. Adjust the amount needed for each ingredient in the table so that the recipe still tastes the same with only 3 eggs.

Ingredient	Recipe	Adjusted Recipe
Eggs	8	3
Flour	4 cups	cups
Milk	6 cups	cups
Sugar	$1\frac{1}{3}$ cups	cups

## Reflect

- Put a question mark next to a problem you would like to compare with a classmate.
- Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$$\frac{5}{6}$$



$$\frac{1}{2}$$



$$\frac{2}{3}$$



## Practice

1.1 2 scoops

1.2 8 scoops

1.3 12 scoops

1.4 The equation  $4 \div \frac{1}{3} = ?$  can represent “how many  $\frac{1}{3}$ -cup scoops are in 4 cups?”

2.1 10

2.2 12

2.3 4

3.1  $2 \div \frac{1}{4} = ?$

3.2 8

4. Sometimes

*Explanations vary.* If you divide by a positive number less than 1, the result will be greater than the original, like in  $4 \div \frac{1}{3} = 12$ .

5.1 \$15

5.2 20%

## Explore

Ingredient	Recipe	Adjusted Recipe
Eggs	8	3
Flour	4 cups	$1\frac{1}{2}$ cups
Milk	6 cups	$2\frac{1}{4}$ cups
Sugar	$1\frac{1}{3}$ cups	$\frac{1}{2}$ cup

**Unit 6.4, Lesson 4: Practice Problems**

Name \_\_\_\_\_

**Warm-Up**Select **all** the equations where the value of the ? is 4.

$$\square 12 \div 3 = ? \quad \square 3 \cdot ? = 12 \quad \square \frac{3}{12} = ? \quad \square 12 \cdot ? = 3 \quad \square \frac{12}{3} = ?$$

**Practice**

Abena is planting vegetables in her backyard. Determine how many of each vegetable Abena can plant in 1 planter. Use the diagrams if they help you with your thinking.

- 1.1 10 onions filled  $\frac{1}{2}$  of a planter.



- 1.2 8 asparagus filled  $\frac{2}{3}$  of a planter.



- 1.3 6 potatoes filled  $\frac{3}{4}$  of a planter.

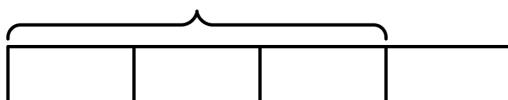


- 1.4 Abena wrote the expression  $6 \div \frac{3}{4}$  to represent how many potatoes fill 1 planter.

Describe a situation that represents  $8 \div \frac{4}{5}$ .

Ashley picked 9 strawberries from her backyard, which filled  $\frac{3}{4}$  of a cup.

- 2.1 Label the tape diagram to represent Ashley's situation.



- 2.2 How many strawberries fill 1 cup? Use the tape diagram if it helps you with your thinking.

**Unit 6.4, Lesson 4: Practice Problems**

3. Draw a tape diagram to represent and answer  $4 \div \frac{2}{5}$ .

Karima made 9 pairs of earrings in 6 hours. At this rate:

- 4.1 How long will it take Karima to make 12 pairs of earrings?

- 4.2 How many pairs of earrings can Karima make in 10 hours?

Calculate each unknown number.

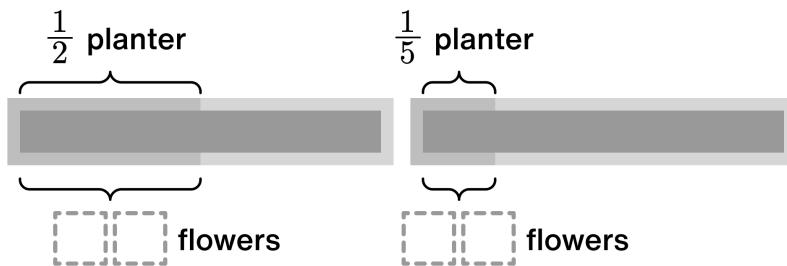
- 5.1 5 is 50% of what number?

- 5.2 10% of what number is 300?

- 5.3 18 is 150% of what number?

## Explore

Use the digits 0–9 to fill in each blank such that the same number of flowers fill each planter.



## Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

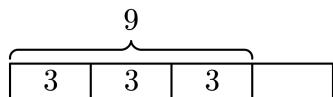
$$\checkmark 12 \div 3 = ? \quad \checkmark 3 \cdot ? = 12 \quad \checkmark \frac{12}{3} = ?$$

**Practice**

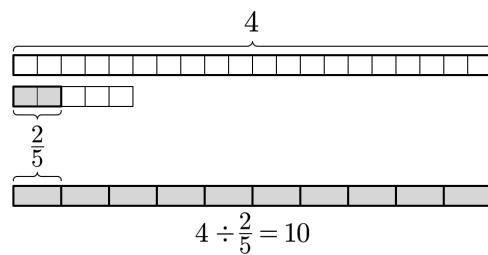
1.1 20 onions

1.2 12 asparagus

1.3 8 potatoes

1.4 *Responses vary.* 8 pumpkins filled  $\frac{4}{5}$  of a planter.2.1 *Responses vary.*

2.2 12 strawberries

3. *Drawings vary.*  $4 \div \frac{2}{5}$ 

4.1 8 hours

4.2 15 pairs of earrings

5.1 10

5.2 3 000

5.3 12

**Explore***Responses vary.*

## Unit 6.4, Lesson 5: Practice Problems

Name \_\_\_\_\_

**Warm-Up**

Write each mixed number as an improper fraction. For example:  $5 \frac{1}{2} = \frac{11}{2}$ .

$$1 \frac{1}{2} = \underline{\hspace{2cm}}$$

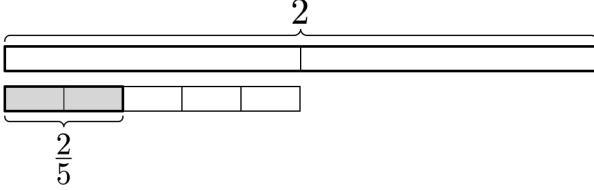
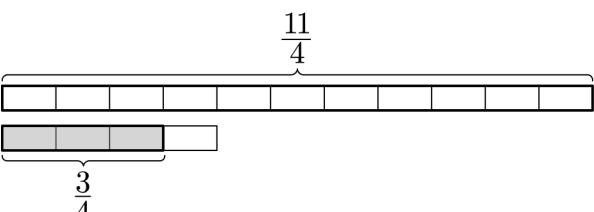
$$1 \frac{3}{4} = \underline{\hspace{2cm}}$$

$$2 \frac{3}{5} = \underline{\hspace{2cm}}$$

$$5 \frac{2}{3} = \underline{\hspace{2cm}}$$

**Practice**

Complete each row in the table.

Question	Tape Diagram	Answer
1.1 How many $\frac{1}{4}$ s are in 3?		
1.2 How many $\frac{2}{5}$ s are in 2?		
1.3 How many $\frac{3}{5}$ s are in 2?		
1.4 What is $3 \frac{2}{5} \div \frac{4}{5}$ ?		
1.5 What is _____ $\div$ _____?		
1.6 What is $6 \frac{1}{2} \div \frac{3}{4}$ ?		

**Unit 6.4, Lesson 5: Practice Problems**

2. Kayleen buys one 3-pound bag of cat food. Her cat eats about  $\frac{3}{4}$  of a pound every week. How many weeks does one bag last? Use a tape diagram if it helps you with your thinking.

A recipe uses 5 cups of flour for every 2 cups of sugar.

- 3.1 How much sugar is used for every cup of flour? \_\_\_\_\_
- 3.2 How much flour is used for every cup of sugar? \_\_\_\_\_

Calculate each percentage.

4.1  $25\%$  of 320

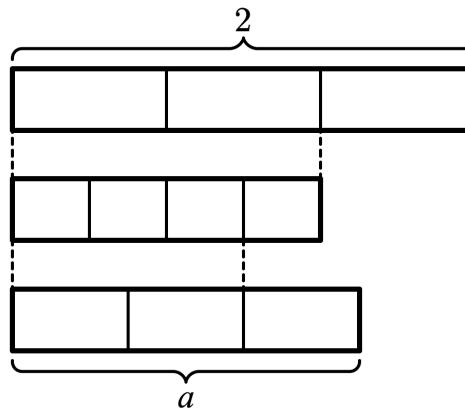
4.2  $70\%$  of 320

4.3  $44\%$  of 320

4.4  $44\%$  of 65

**Explore**

Determine the value of  $a$ .

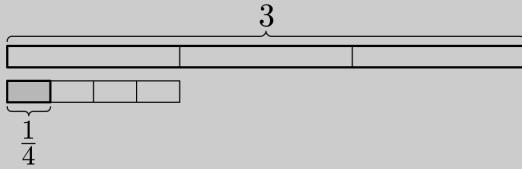
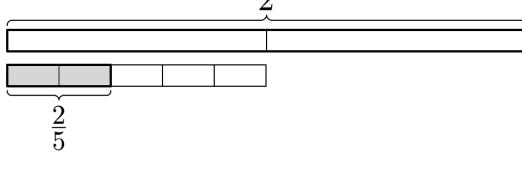
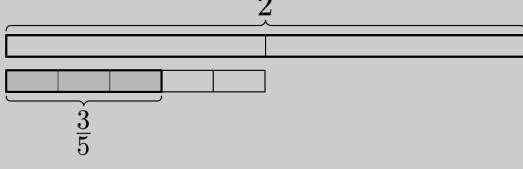
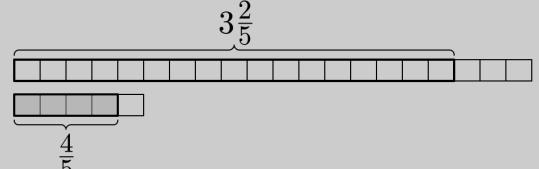
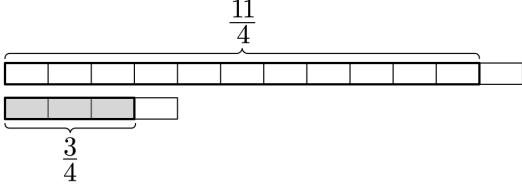
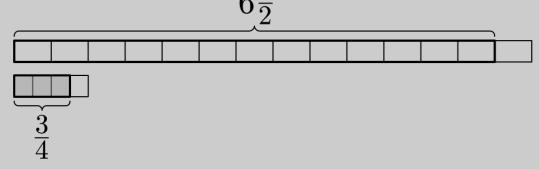
**Reflect**

1. Put a smiley face next to a question that you understood well.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$$\frac{3}{2}, \frac{7}{4}, \frac{13}{5}, \frac{17}{3}$$

## Practice

Question	Tape Diagram	Answer
1.1 How many $\frac{1}{4}$ s are in 3 ?		12
1.2 How many $\frac{2}{5}$ s are in 2 ?		5
1.3 How many $\frac{3}{5}$ s are in 2 ?		$3\frac{1}{3}$ (or equivalent)
1.4 What is $3\frac{2}{5} \div \frac{4}{5}$ ?		$4\frac{1}{4}$ (or equivalent)
1.5 What is $\frac{11}{4} \div \frac{3}{4}$ ?		$3\frac{2}{3}$ (or equivalent)
1.6 What is $6\frac{1}{2} \div \frac{3}{4}$ ?		$8\frac{2}{3}$ (or equivalent)



## Unit 6.4, Lesson 5: Practice Problems

2. 4 weeks

3.1  $\frac{2}{5}$  cups

3.2  $\frac{5}{2}$  cups

4.1 80

4.2 224

4.3 140.8

4.4 28.6

### Explore

$a = 1.5$  (or equivalent)



# Science Mom Lesson 30

## Unit 6.4, Lesson 6: Practice Problems

Name \_\_\_\_\_

### Warm-Up

Write each improper fraction as a mixed number. For example:  $\frac{11}{2} = 5\ \frac{1}{2}$ .

$$\frac{9}{5} = \underline{\hspace{2cm}}$$

$$\frac{9}{4} = \underline{\hspace{2cm}}$$

$$\frac{15}{4} = \underline{\hspace{2cm}}$$

$$\frac{16}{5} = \underline{\hspace{2cm}}$$

### Practice

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

$\frac{2}{3} \div 5$

$5 \div \frac{2}{3}$

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

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

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

Afia uses a  $\frac{1}{2}$ -cup scoop for flour. How many scoops does Afia need for each amount of flour?

2.1    1 cup of flour

2.2     $\frac{1}{4}$  cups of flour

2.3     $\frac{3}{4}$  cups of flour

Determine if the value of each expression will be greater than or less than 1. Then calculate its value. Use the tape diagrams if they help you with your thinking.

3.1     $1\ \frac{1}{2} \div \frac{2}{3}$

**Circle One**

Less than 1

Greater than 1



3.2     $\frac{4}{3} \div \frac{3}{2}$

**Circle One**

Less than 1

Greater than 1



Value:

Value:

**Unit 6.4, Lesson 6: Practice Problems**

Ella buys 5 tickets to a museum for \$21.25 . At this rate:

4.1 How much does each ticket cost?

4.2 How much would 3 tickets cost?

A school's Latino Student Union has a budget of \$240 for the year.

5.1 The club wants to spend 40% of their budget on snacks. How much money should they spend on snacks?

5.2 The club spent \$36 on decorations for Dia de los Muertos. What percent of their budget is this?

## Explore

Using the digits 1–9 without repeating, fill in each blank to make this equation true.

$$\frac{\square}{\square} \div \frac{\square}{\square} = 1$$

Using the digits 1–9 without repeating, fill in each blank to make this inequality true.

$$\frac{\square}{\square} \div \frac{\square}{\square} > 1$$

**Are you ready for more?** Find a solution using the digits 1–9 without repeating in either problem.

## Reflect

1. Put a star next to one question you are still wondering about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$$1 \frac{4}{5}, 2 \frac{1}{4}, 3 \frac{3}{4}, 3 \frac{1}{5}$$

**Practice**

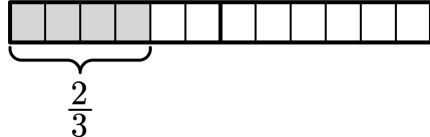
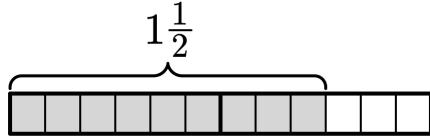
1. ✓  $5 \div \frac{2}{3}$       ✓  $\frac{4}{5} \div \frac{1}{3}$

2.1 2 scoops

2.2  $\frac{1}{2}$  of a scoop

2.3  $1 \frac{1}{2}$  scoops

3.1 Greater than  $1, \frac{9}{4}$  (or equivalent)



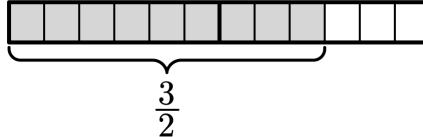
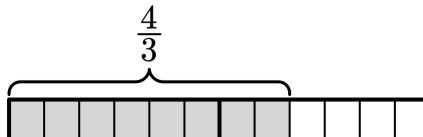
4.1 \$4.25

4.2 \$12.75

5.1 \$96

5.2 15%

3.2 Less than  $1, \frac{8}{9}$  (or equivalent)

**Explore**

Responses vary.

$$\frac{\boxed{1}}{\boxed{2}} \div \frac{\boxed{3}}{\boxed{6}} = 1$$

Responses vary.

$$\frac{\boxed{5}}{\boxed{4}} \div \frac{\boxed{7}}{\boxed{8}} > 1$$

**Are you ready for more?** See above.



## Warm-Up

Write each mixed number as an improper fraction and each improper fraction as a mixed number.

$$1\frac{3}{5} = \underline{\hspace{2cm}}$$

$$\frac{17}{4} = \underline{\hspace{2cm}}$$

$$3\frac{1}{4} = \underline{\hspace{2cm}}$$

$$\frac{11}{3} = \underline{\hspace{2cm}}$$

## Practice

1. Here is Irelle's work for calculating  $\frac{2}{3} \div \frac{3}{4}$ . Explain what you think Irelle did at each step.

Step 1:

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

Step 1:  $\frac{8}{12} \div \frac{9}{12}$

Step 2:

Step 2:  $\frac{8}{9}$

Calculate the value of each expression.

2.1  $5 \div \frac{3}{5}$

2.2  $2\frac{1}{2} \div \frac{5}{8}$

2.3  $\frac{4}{3} \div \frac{5}{2}$

2.4  $\frac{10}{4} \div \frac{4}{5}$

- 2.5 Here is Sahana's work for Problem 2.4.  
What advice would you give Sahana?

$$\frac{10}{4} \div \frac{4}{5} \quad 10 \div 5 = 2$$

$$4 \div 4 = 1$$

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

**Unit 6.4, Lesson 7: Practice Problems**

3. A box of pancake mix has 6 cups of mix. Eliza used  $\frac{3}{4}$  of a cup for a recipe.

What fraction of the box of pancake mix did she use? Show or explain your thinking.

4. Eliza and Irelle are running on a track. Eliza ran 100 meters in 20 seconds. Irelle ran 150 meters in 35 seconds. Who ran faster? Explain or show your reasoning.

Calculate each percentage.

5.1 30% of 150

5.2 75% of 150

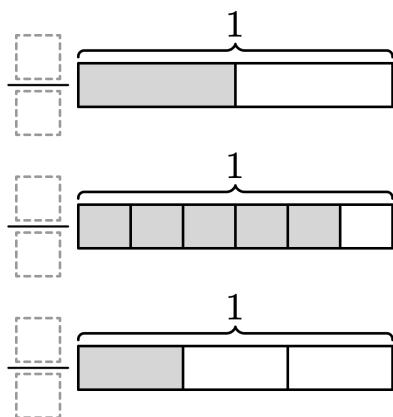
5.3 35% of 150

5.4 22% of 150

**Explore**

Here are three tape diagrams.

Write a fraction to represent each tape diagram.



Determine which of the fractions on the left would make each statement below true.

$$\frac{\square}{\square} \div \frac{\square}{\square} = \frac{3}{5}$$

$$\frac{\square}{\square} \div \frac{\square}{\square} = 2\frac{1}{2}$$

**Reflect**

1. Circle a problem you want to check in with a classmate about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$$\frac{8}{5}, 4\frac{1}{4}, \frac{13}{4}, 3\frac{2}{3}$$

**Practice**

1. Responses vary.

Step 1: Found a common denominator.

Step 2: Since the two fractions in Step 1 have the same denominator, the parts of each fraction are the same size and the quotient can be represented as  $\frac{8}{9}$ .

2.1  $\frac{25}{3}$  (or equivalent)

2.3  $\frac{8}{15}$  (or equivalent)

2.2 4 (or equivalent)

2.4  $\frac{50}{16}$  (or equivalent)

- 2.5 Responses vary. Find a common denominator for the two fractions.

3.  $\frac{1}{8}$ . Explanations vary.  $\frac{3}{4} \div 6$  can be written as  $\frac{3}{4} \div \frac{24}{4}$ . Since the two fractions have the same denominator,  $3 \div 24 = \frac{3}{24} = \frac{1}{8}$ .

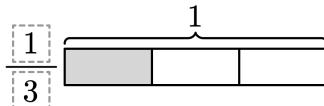
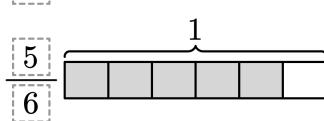
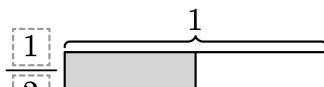
4. Eliza. Explanations vary. Eliza ran 5 meters per second. Irelle only ran about 4.29 meters per second.

5.1 45

5.2 112.5

5.3 52.5

5.4 33

**Explore**

$$\frac{1}{2} \div \frac{5}{6} = \frac{3}{5}$$

$$\frac{5}{6} \div \frac{1}{3} = 2\frac{1}{2}$$

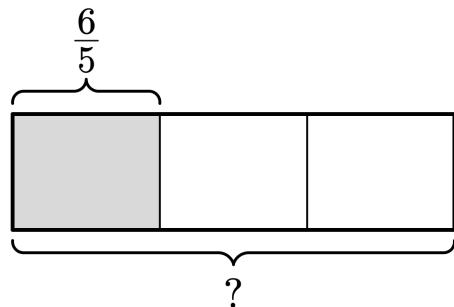
**Warm-Up**

Determine the value of each expression.

$$\frac{6}{5} \div \frac{3}{5} = \underline{\hspace{2cm}} \quad \frac{1}{5} \div \frac{3}{5} = \underline{\hspace{2cm}} \quad \frac{8}{3} \div \frac{2}{3} = \underline{\hspace{2cm}} \quad \frac{5}{3} \div \frac{2}{3} = \underline{\hspace{2cm}}$$

**Practice**

1. Use this tape diagram to help you calculate  $\frac{6}{5} \div \frac{1}{3}$ .



Complete each row in the table. Draw a tape diagram if it helps you with your thinking.

Question	Expression	Answer
2.1 6 bags of soil fill 2 gardens. How many bags fill 1 garden?		
2.2 2 bags of soil fill $\frac{1}{3}$ of a garden. How many bags fill 1 garden?	$2 \div \frac{1}{3}$	
2.3 $\frac{2}{3}$ cups of chocolate chips fill $\frac{1}{4}$ of a jar. How many cups fill 1 jar?		
2.4	$6 \div \frac{1}{4}$	



## Unit 6.4, Lesson 8: Practice Problems

Decide if each statement is always, sometimes, or never true. Explain your reasoning.

- 3.1 Dividing the same numbers in a different order keeps the value the same, like  $2 \div 3 = 3 \div 2$ .

Circle one: Always      Sometimes      Never

- 3.2 Dividing a number by  $\frac{1}{3}$  has the same value as multiplying it by 3.

Circle one: Always      Sometimes      Never

Calculate each unknown number.

- 4.1 7 is 5% of what number?

- 4.2 20 is 80% of what number?

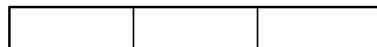
## Explore

Fill the blanks so that each equation is true. Show your thinking using the tape diagrams.

$$\frac{3}{5} \div \frac{\square}{\square} = \frac{3}{4}$$



$$\frac{2}{3} \div \frac{\square}{\square} = 1\frac{1}{3}$$



## Reflect

1. Put a smiley face next to a question you were stuck on and then figured out.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$$2, \frac{1}{3}, 4, \frac{5}{2}$$

**Practice**

1.  $\frac{18}{5}$  (or equivalent)

Question	Expression	Answer
2.1 6 bags of soil fill 2 gardens. How many bags fill 1 garden?	$6 \div 2$	3 bags
2.2 2 bags of soil fill $\frac{1}{3}$ of a garden. How many bags fill 1 garden?	$2 \div \frac{1}{3}$	6 bags
2.3 $\frac{2}{3}$ cups of chocolate chips fill $\frac{1}{4}$ of a jar. How many cups fill 1 jar?	$\frac{2}{3} \div \frac{1}{4}$	$\frac{8}{3}$ cups
2.4 Responses vary. I ate 6 cookies, which was $\frac{1}{4}$ of the box of cookies. How many cookies were in the whole box?	$6 \div \frac{1}{4}$	24 cookies

- 3.1 Sometimes. *Explanations vary.* If the numbers are the same, then switching the order doesn't matter. For example,  $2 \div 2 = 2 \div 2$ . If the numbers are different, then switching the order changes the quotient from greater than 1 to less than 1 or vice versa. For example,  $3 \div 2 > 1$  and  $2 \div 3 < 1$ .
- 3.2 Always. *Explanations vary.* One way to think about dividing a number by  $\frac{1}{3}$  is that  $\frac{1}{3}$  of a container is full and you need to figure out how much fills the whole container. To do that, you would need to multiply that number by 3.

4.1 140

4.2 25

**Explore**

$$\frac{3}{5} \div \frac{[4]}{[5]} = \frac{3}{4}$$



$$\frac{2}{3} \div \frac{[1]}{[2]} = 1\frac{1}{3}$$





## Warm-Up

Determine the value of each expression.

$$\frac{1}{4} \cdot 4 = \underline{\hspace{2cm}}$$

$$\frac{3}{4} \cdot 4 = \underline{\hspace{2cm}}$$

$$\frac{4}{5} \cdot 2 = \underline{\hspace{2cm}}$$

$$\frac{4}{5} \div 2 = \underline{\hspace{2cm}}$$

## Practice

Use any strategy to calculate each quotient.

1.1     $10 \div \frac{1}{5}$

1.2     $10 \div \frac{3}{5}$

---

1.3     $3\frac{3}{4} \div \frac{3}{8}$

1.4     $\frac{1}{2} \div \frac{5}{3}$

2. It took 15 days to build  $\frac{3}{5}$  of a new road. At this rate, how long will it take to build the whole road? Show or explain your thinking.



## Unit 6.4, Lesson 9: Practice Problems

How many groups of  $\frac{3}{4}$  are in:

3.1     $4 \frac{1}{2}$  ?

3.2     $2 \frac{2}{3}$  ?

One batch of trail mix uses 2 cups of cereal,  $\frac{1}{4}$  cup of raisins, and  $\frac{2}{3}$  cup of almonds.

How much of each ingredient do you need to make:

4.1    3 batches?

4.2    4 batches?

### Explore

Hamza found a pattern with some division expressions.

1. Calculate each quotient.
2. Describe a pattern you see.
3. Create your own example that would fit the pattern.

$$\frac{3}{5} \div \frac{9}{25}$$

$$\frac{2}{7} \div \frac{4}{49}$$

$$\frac{9}{4} \div \frac{81}{16}$$

### Reflect

1. Circle a question you are still curious about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

1, 3,  $\frac{8}{5}$ ,  $\frac{2}{5}$

**Practice**

1.1 50

1.2  $\frac{50}{3}$  (or equivalent)

1.3 10

1.4  $\frac{3}{10}$  (or equivalent)

2. 25 days. It took 5 days to build  $\frac{1}{5}$  of the new road, so it will take 25 days in all.

3.1 6 groups

3.2  $3\frac{5}{9}$  groups (or equivalent)

4.1 6 cups of cereal,  $\frac{3}{4}$  cup of raisins, and 2 cups of almonds

4.2 8 cups of cereal, 1 cup of raisins, and  $2\frac{2}{3}$  cups of almonds

**Explore**

1.  $\frac{3}{5} \div \frac{9}{25} = \frac{5}{3}$ ,  $\frac{2}{7} \div \frac{4}{49} = \frac{7}{2}$ ,  $\frac{9}{4} \div \frac{81}{16} = \frac{4}{9}$

2. *Responses vary.* Each quotient is the same as the first fraction with the numerator and denominator switched.

3. *Responses vary.*  $\frac{2}{3} \div \frac{4}{9} = \frac{3}{2}$



## Warm-Up

Determine the value of each expression.

$$\frac{3}{5} \cdot 5 = \underline{\hspace{2cm}}$$

$$\frac{3}{5} \cdot 3 = \underline{\hspace{2cm}}$$

$$\frac{3}{5} \div 3 = \underline{\hspace{2cm}}$$

$$\frac{3}{5} \div 5 = \underline{\hspace{2cm}}$$

## Practice

Use any strategy to calculate each quotient.

1.1  $2\frac{1}{2} \div \frac{5}{8}$

1.2  $\frac{4}{3} \div \frac{5}{2}$

---

1.3  $3\frac{1}{2} \div \frac{1}{3}$

1.4  $3 \div \frac{2}{3}$

2.1 Describe a situation that could be represented by the expression  $3 \div \frac{2}{3}$ .

2.2 Explain what the value of  $3 \div \frac{2}{3}$  means in your situation.

**Unit 6.4, Lesson 10: Practice Problems**

3.  $\frac{2}{5}$  of a bag of soil fills  $\frac{1}{3}$  of a container.

Is 1 bag of soil enough to fill 1 container? Show or explain your reasoning.

Ethan works as a server in a restaurant. He gets a 15% tip on the cost of every order.

4.1 What tip would he get if the order costs \$50?

4.2 What tip would he get if the order costs \$84?

4.3 Ethan got a \$9 tip. What was the cost of the order?

**Explore**

Kayla is  $\frac{3}{4}$  of the way from New York to Boston.

She began with  $\frac{4}{5}$  of a full tank of gas.

She has  $\frac{1}{5}$  of a tank of gas left.

Does she have enough gas to reach Boston?

Show or explain your thinking.

**Reflect**

1. Circle a question you want to talk to a classmate about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$$3, \frac{9}{5}, \frac{1}{5}, \frac{3}{25}$$

**Practice**

1.1 4

1.2  $\frac{8}{15}$  (or equivalent)

1.3  $10\frac{1}{2}$  (or equivalent)

1.4  $4\frac{1}{2}$  (or equivalent)

2.1 *Responses vary.* 3 small bottles of water filled  $\frac{2}{3}$  of my giant water bottle. How many small bottles do I need to fill the giant water bottle?

2.2 *Responses vary.*  $4\frac{1}{2}$  means that I need  $4\frac{1}{2}$  small water bottles to fill my giant water bottle.

3. No. *Explanations vary.* You would need  $\frac{2}{5} \cdot 3 = \frac{6}{5}$  bags of soil to fill 1 container.  $\frac{6}{5}$  of a bag is more than 1 bag.

4.1 \$7.50

4.2 \$12.60

4.3 \$60

**Explore**

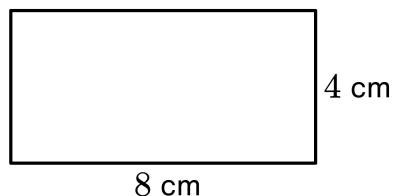
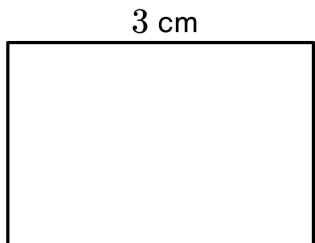
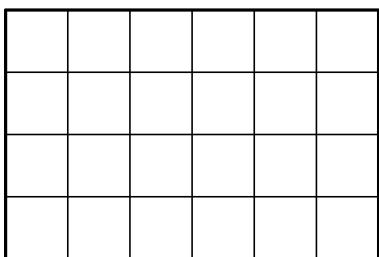
*Responses and explanations vary.*

Kayla used  $\frac{3}{5}$  of a tank to go  $\frac{3}{4}$  of the way to Boston. This means that she uses  $\frac{1}{5}$  of a tank to go  $\frac{1}{4}$  of the way. Since Kayla has exactly  $\frac{1}{5}$  of a tank left and needs to go  $\frac{1}{4}$  of the way, she will just run out of gas when she arrives in Boston.



## Warm-Up

Calculate the area of each rectangle.



\_\_\_\_\_ square units

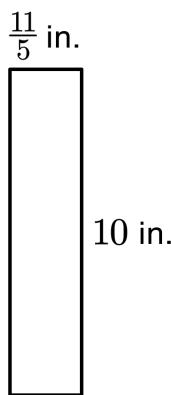
\_\_\_\_\_ square centimeters

\_\_\_\_\_ square centimeters

## Practice

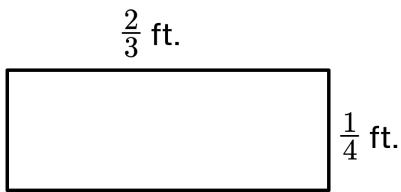
Calculate the area of each rectangle.

1.1



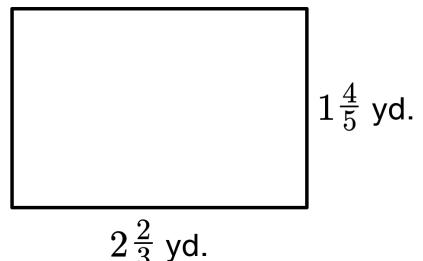
\_\_\_\_\_ square inches

1.2



\_\_\_\_\_ square feet

1.3

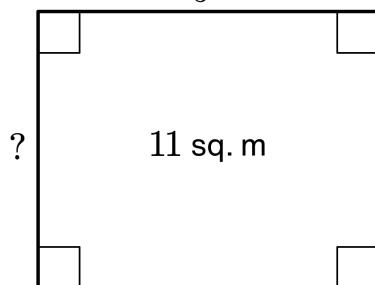


\_\_\_\_\_ square yards

2.1 Calculate the unknown side length of the rectangle.

2.2 Check your answer by multiplying it by  $3\frac{2}{3}$ .

$3\frac{2}{3}$  m



Is the product 11 square meters?

**Unit 6.4, Lesson 12: Practice Problems**

3. Antwon's bookshelf is 42 inches long. How many  $1\frac{1}{2}$ -inch-wide books fit on his bookshelf?

Explain or show your reasoning.

How many groups of  $1\frac{2}{3}$  are in:

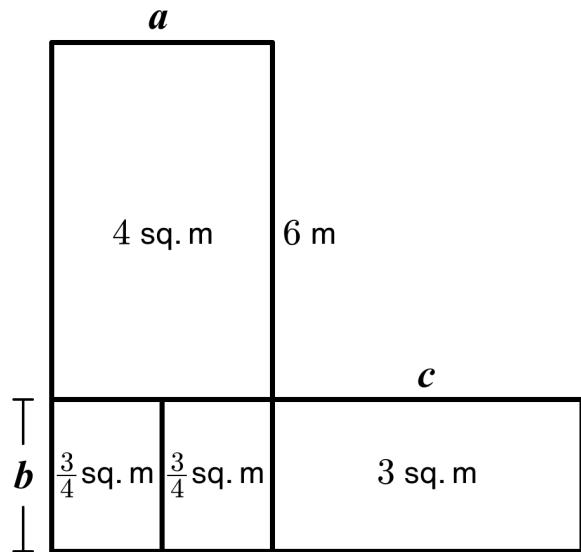
4.1.  $\frac{5}{6}$ ?

4.2.  $4\frac{1}{3}$ ?

4.3.  $1\frac{5}{6}$ ?

**Explore**

Determine the lengths of  $a$ ,  $b$ , and  $c$ .

**Reflect**

1. Put a star next to a question that looked more difficult to solve than it really was.
2. Use the space below to ask one question you have or to share something you are proud of.



## Unit 6.4, Lesson 12: Practice Problems

## Answer Key

### Warm-Up

24 square units

6 square centimeters

32 square centimeters

### Practice

1.1 22 square inches  
(or equivalent)

1.2  $\frac{1}{6}$  square feet  
(or equivalent)

1.3  $4\frac{4}{5}$  square yards  
(or equivalent)

2.1 3 meters

2.2 *Responses vary.*

3. 28 books

*Explanations vary.* Divide the length of the shelf by the width of a book.  $48 \div 1\frac{1}{2} = 28$ .

4.1  $\frac{1}{2}$  of a group  
(or equivalent)

4.2  $2\frac{3}{5}$  groups  
(or equivalent)

4.3  $1\frac{1}{10}$  groups  
(or equivalent)

### Explore

$$a = \frac{2}{3} \text{ (or equivalent)}$$

$$b = \frac{9}{4} \text{ (or equivalent)}$$

$$c = \frac{4}{3} \text{ (or equivalent)}$$

**Unit 6.5, Lesson 2: Practice Problems**

Name \_\_\_\_\_

**Warm-Up**

Complete each equation.

$56 + \underline{\quad} = 100$

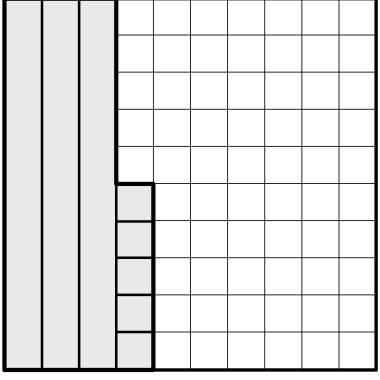
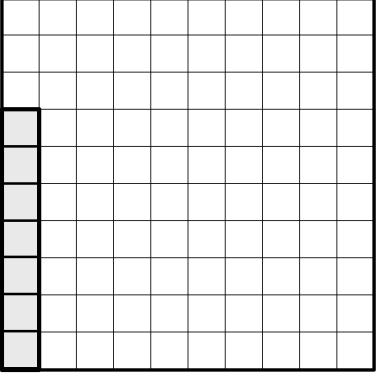
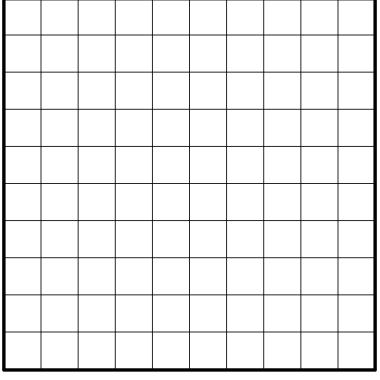
$0.56 + \underline{\quad} = 1$

$8 + \underline{\quad} = 100$

$1 - 0.08 = \underline{\quad}$

**Practice**

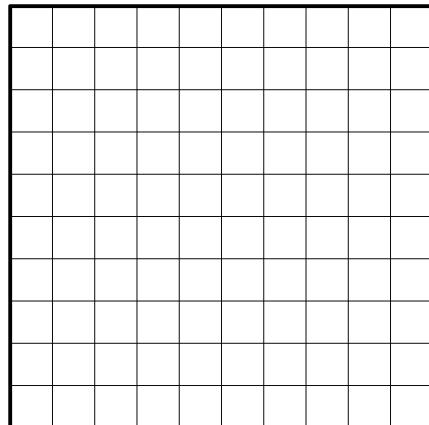
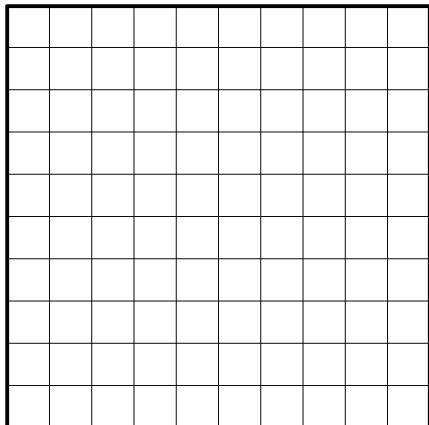
1. The large square is 1. Write the number that goes with the diagram, or make a diagram to go with the number.

Number			0.26
Diagram			

Determine the value of each expression. Use the diagrams if they help you with your thinking.

2.1  $0.24 + 0.607$

2.2  $0.15 - 0.08$



3. Select **all** the expressions that are greater than 1.

$0.52 + 0.49$

$0.7 + 0.04$

$0.85 + 0.072$

A school band has 70 students. 50% of them are sixth graders, 30% are seventh graders, and the rest are eighth graders.

- 4.1 How many band members are sixth graders?

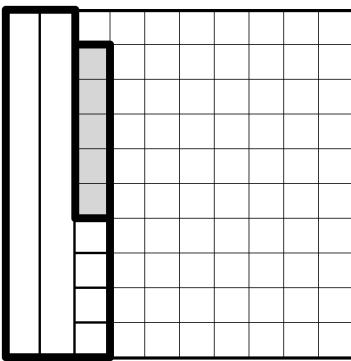
- 4.2 How many band members are seventh graders?

- 4.3 What **percent** of the band members are eighth graders? Explain or show your reasoning.

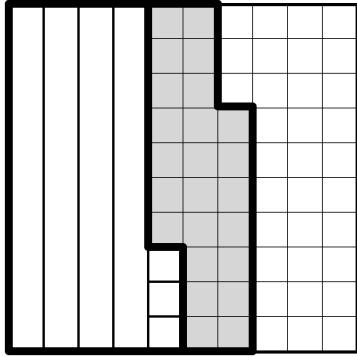
## Explore

Determine the equation that represents each diagram.

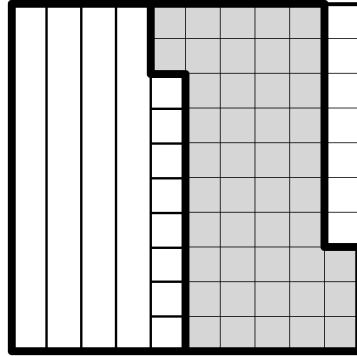
Example



$$0.29 - 0.05 = 0.24$$



=



=

## Reflect

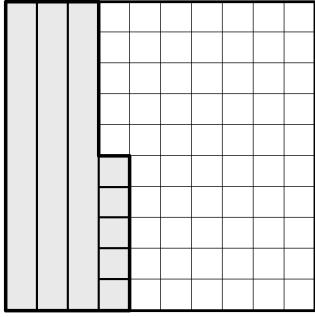
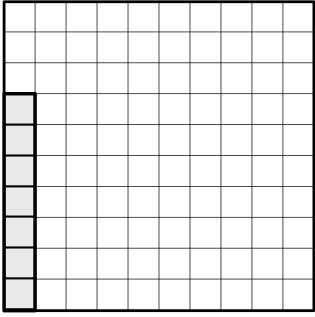
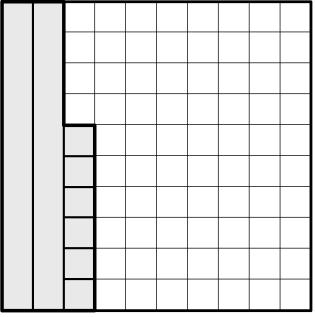
1. Put a heart next to the problem you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

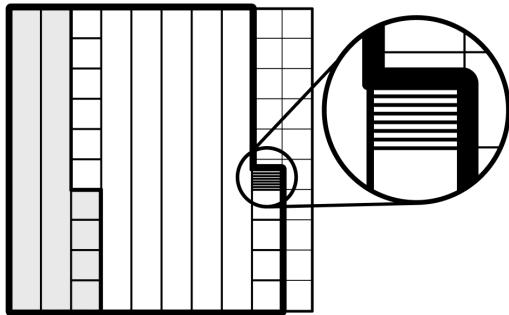
44, 0.44, 92, 0.92

**Practice**

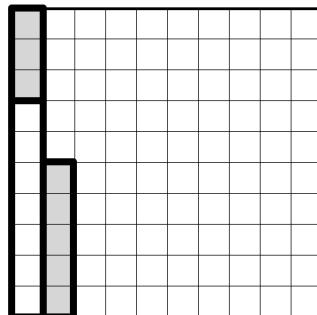
1.

Number	0.35	0.07	0.26
Diagram			

2.1 0.847



2.2 0.07

3. ✓  $0.52 + 0.49$ 

4.1 35 band members are sixth graders.

4.2 21 band members are seventh graders.

4.3 20% are eighth graders.

*Explanations vary.* The total must be 100%.  $100\% - 50\% - 30\% = 20\%$ .

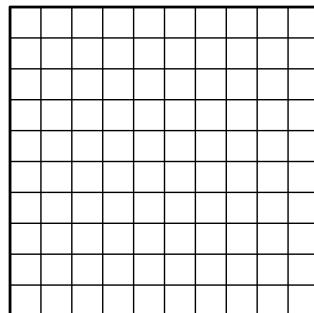
**Explore**

- $0.67 - 0.24 = 0.43$
- $0.93 - 0.45 = 0.48$

**Warm-Up**

Show  $0.2 + 0.31$  by shading in the diagram.

What is the value of  $0.2 + 0.31$ ?

**Practice**

1. Here is how three students calculated  $7.2 - 3.67$ . Whose work is correct?

A.

$$\begin{array}{r} 7.2 \\ - 3.67 \\ \hline 3.05 \end{array}$$

B.

$$\begin{array}{r} 07.2 \\ - 3.67 \\ \hline 3.05 \end{array}$$

C.

$$\begin{array}{r} 7.20 \\ - 3.67 \\ \hline 3.53 \end{array}$$

Fill in the blanks on the addition and subtraction problems to make them true.

2.1

$$\begin{array}{r} 1.036 \\ + \boxed{\phantom{0}\phantom{0}\phantom{0}} \\ \hline 4.000 \end{array}$$

2.2

$$\begin{array}{r} 38.60 \\ - 6.75 \\ \hline \boxed{000}.5 \end{array}$$

2.3

$$\begin{array}{r} 241.76 \\ - 2.18 \\ \hline \boxed{000}.8 \end{array}$$

The label on a bag of chocolates states that there are 0.384 pounds of chocolates.

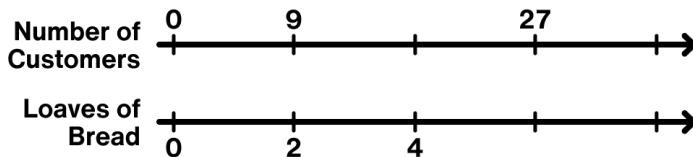
The actual weight of the chocolates is 0.3798 pounds.

- 3.1 Are the chocolates heavier or lighter than the weight stated on the label?      3.2 How much heavier or lighter are the chocolates than stated on the label?

Explain how you know.

For every 9 customers, a chef prepares 2 loaves of bread.

- 4.1 Complete the double number line and table below.



Customers	Loaves
9	2
	4
27	
	14
1	

- 4.2 How many loaves are needed for 63 customers?
- 4.3 How many customers can be fed if the chef prepares 20 loaves?
- 4.4 How much of a loaf of bread does each customer get?

## Explore

In the example on the right, four decimal numbers are created from the grid. They sum to 1.29.

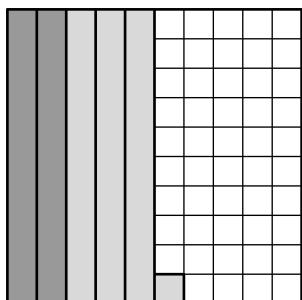
Using the digits 0–9 without repeating, fill in the grid below. Make the sum as close to 1 as possible.

### Example

1	2	→ 0.12	0.12
			+ 0.75
7	5	→ 0.75	+ 0.17
			+ 0.25
			1.29

## Reflect

- Circle the question you spent the most time on.
- Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$$0.2 + 0.31 = 0.51$$

**Practice**

1. C

2.1

$$\begin{array}{r} 1.0\ 3\ 6 \\ + 2.9\ 6\ 4 \\ \hline 4.0\ 0\ 0 \end{array}$$

2.2

$$\begin{array}{r} 3\ 8.\ 6\ 0 \\ - 6.\ 7\ 5 \\ \hline 3\ 1.8\ 5 \end{array}$$

2.3

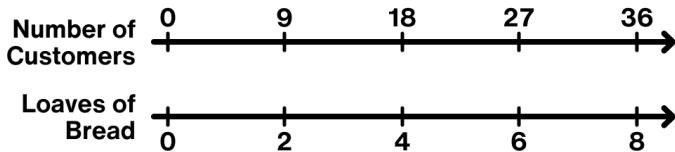
$$\begin{array}{r} 2\ 4\ 1.\ 7\ 6 \\ - 2.\ 1\ 8 \\ \hline 2\ 3\ 9.5\ 8 \end{array}$$

3.1 Lighter.

*Explanations vary.* 0.3798 is 3798 ten-thousandths. 0.384 is 384 thousandths, which is equal to 3840 ten-thousandths, so 0.384 is greater than 0.3798.

3.2 0.0042 pounds lighter

4.1



Customers	Loaves
9	2
18	4
27	6
63	14
1	$\frac{2}{9}$

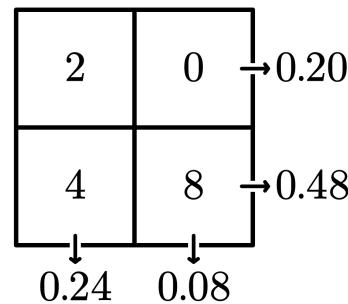
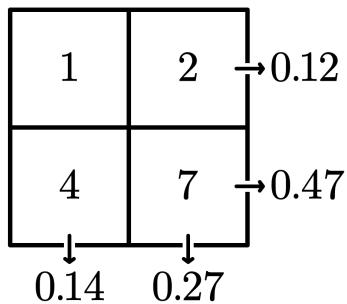
4.2 14 loaves

4.3 90 customers

4.4  $\frac{2}{9}$  of a loaf (or equivalent)**Explore**

There are multiple ways to get exactly 1.

Some examples:





## Warm-Up

Determine the value of each expression.

$$20 \cdot 40$$

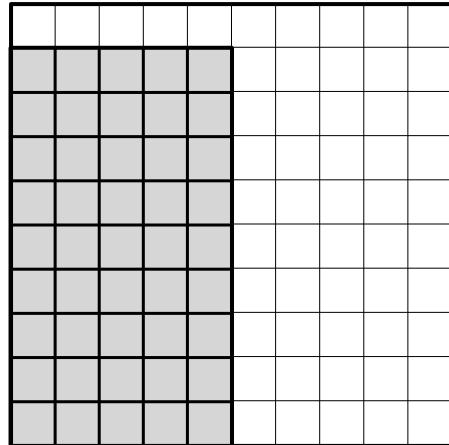
$$200 \cdot 40$$

$$2 \cdot 40$$

$$2 \cdot (0.4)$$

## Practice

- 1.1 Explain why the diagram represents  $(0.5) \cdot (0.9)$ .



- 1.2 What is the value of  $(0.5) \cdot (0.9)$ ?

2. Select **all** the expressions that have the same value as  $(0.05) \cdot (0.6)$ .

$5 \cdot \frac{1}{100} \cdot 6 \cdot \frac{1}{10}$       $5 \cdot 6 \cdot \frac{1}{1000}$       $5 \cdot (0.001) \cdot 6 \cdot (0.01)$      0.03     0.003

3. A student attempted to multiply  $(0.03) \cdot (0.07)$ .

Find the mistake in the student's work.

Then determine the correct value of the expression.

$$0.03 \times 0.07$$

$$\frac{3}{100} \cdot \frac{7}{100}$$

$$\frac{21}{100}$$

$$0.21$$

Determine the value of each expression.

4.1  $(0.3) \cdot (0.2)$

4.2  $(0.5) \cdot (0.02)$

4.3  $(1.2) \cdot 5$

Determine the value of each expression.

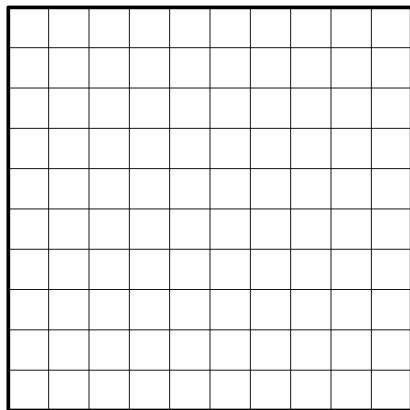
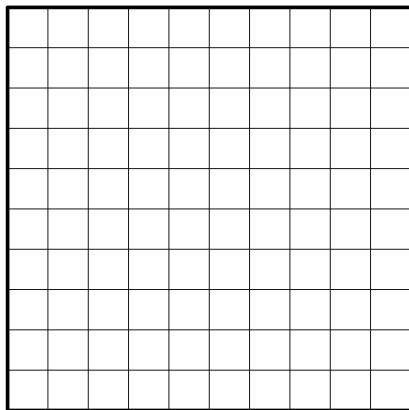
5.1  $0.401 + 9.28$

5.2  $1.075 + 27.105$

5.3  $33.1 + 1.95$

## Explore

Using the digits 0–9, without repeating, fill in each blank to make both equations true. Use the diagrams if they help you with your thinking.



$0.\square \cdot 0.\square = 0.24$

$0.\square \square \cdot 0.\square \square = 0.24$

## Reflect

1. Put a heart next to a question that you understand well.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

800, 8 000, 80, 0.8

**Practice**

- 1.1 Responses vary. The diagram shows a rectangle that has a length of 0.5 and a width of 0.9. Area equals length times width, so the area of this rectangle represents  $(0.5) \cdot (0.9)$ .

1.2 0.45

2. ✓  $5 \cdot \frac{1}{100} \cdot 6 \cdot \frac{1}{10}$     ✓  $5 \cdot 6 \cdot \frac{1}{1000}$     ✓ 0.03

3. Responses vary. The answer 0.21 is not correct, and the step that says  $\frac{21}{100}$  has the mistake.  $\frac{3}{100} \cdot \frac{7}{100}$  actually results in  $\frac{21}{10000}$ . As a decimal, that's 0.0021.

4.1 0.06

4.2 0.01

4.3 6

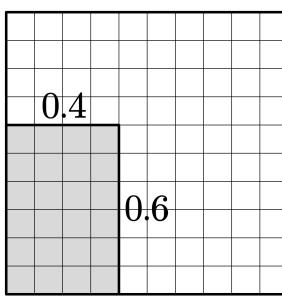
5.1 9.681

5.2 28.18

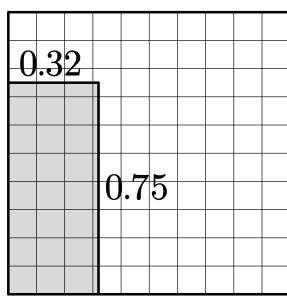
5.3 35.05

**Explore**

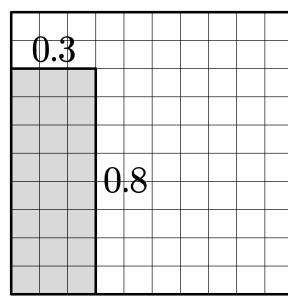
Responses vary.



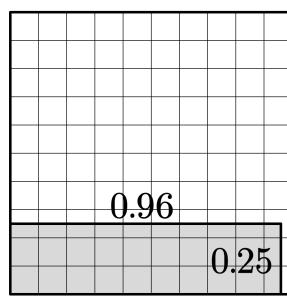
$$0.[4] \cdot 0.[6] = 0.24$$



$$0.[3][2] \cdot 0.[7][5] = 0.24$$



$$0.[3] \cdot 0.[8] = 0.24$$



$$0.[9][6] \cdot 0.[2][5] = 0.24$$

## Warm-Up

Determine the product of each number and 0.01.

322.1

0.118

1350.1

7.04

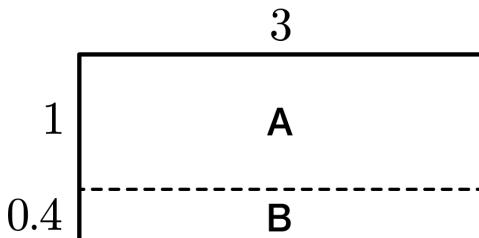
## Practice

Here is a diagram that represents  $3 \cdot (1.4)$ .

- 1.1 Determine the areas of A and B.

$$A =$$

$$B =$$



- 1.2 What is  $3 \cdot (1.4)$ ?

Kala made an error while multiplying  $(5.2) \cdot (2.7)$ .

$$5.2 \cdot 2.7$$

- 2.1 Find the error and explain why it is incorrect.



- 2.2 What is  $(5.2) \cdot (2.7)$ ? Show or explain your reasoning.

$$10 + 0.4 + 3.5 + 1.4 = 15.3$$

3. Draw an area diagram that shows  $(2.5) \cdot (1.4)$ .

Determine the value of each expression.

4.1  $(0.5) \cdot (0.9)$

4.2  $(3.6) \cdot (0.53)$

4.3  $(0.34) \cdot (0.02)$

5. A candy costs \$1.59 at the store. Tariq pays with seven quarters (\$1.75). How much change should he receive?

Complete the calculations so that each problem is correct.

6.1

$$\begin{array}{r} 2.3 \\ + 0.64 \\ \hline 9.05 \end{array}$$

6.2

$$\begin{array}{r} 2.3 \\ + 0.64 \\ \hline 9.02 \end{array}$$

6.3

$$\begin{array}{r} 4.3 \\ + 0.15 \\ \hline 6.02 \end{array}$$

6.4

$$\begin{array}{r} 1.5 \\ + 0.38 \\ \hline 1.04 \end{array}$$

## Explore

Determine the unknown value in the multiplication diagram below.

3	
1.5	0.05
0.24	?

## Reflect

- Put a star next to one question you are still wondering about.
- Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

3. 221, 0.00118, 13.501, 0.0704

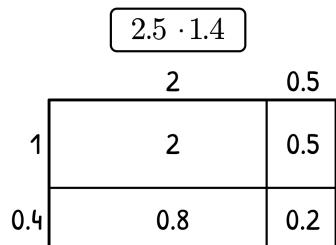
**Practice**

1.1 A = 3, B = 1.2

1.2 4.2

2.1  $(0.2) \cdot (0.7) = 0.14$ , not 1.4.

*Explanations vary.* I knew the value was wrong because 0.2 and 0.7 are both less than 1, so it didn't make sense for the product to be greater than 1.

2.2  $10 + 0.4 + 3.5 + 0.14 = 14.04$ 3. *Diagrams vary.*

$$2 + 0.5 + 0.8 + 0.2 = 3.5$$

4.1 0.45

4.2 1.908

4.3 0.0068

5. \$0.16

6.1

$$\begin{array}{r}
 2.3 \boxed{1} \\
 + \boxed{7}.6 \boxed{4} \\
 \hline
 9.\boxed{9}5
 \end{array}$$

6.2

$$\begin{array}{r}
 2.3 \boxed{8} \\
 + \boxed{6}.6 \boxed{4} \\
 \hline
 9.\boxed{0}2
 \end{array}$$

6.3

$$\begin{array}{r}
 4.3 \boxed{7} \\
 + \boxed{2}.1 \boxed{5} \\
 \hline
 6.\boxed{5}2
 \end{array}$$

6.4

$$\begin{array}{r}
 1.5 \boxed{6} \\
 + \boxed{0}.3 \boxed{8} \\
 \hline
 1.\boxed{9}4
 \end{array}$$

**Explore**

3	0.1	
0.5	1.5	0.05
0.08	0.24	0.008



## Warm-Up

Determine the value of each expression.

$20 \cdot 5$

$20 \cdot 0.8$

$20 \cdot 0.04$

$20 \cdot 5.84$

## Practice

1.  $3 \cdot 65 = 195$ . Explain how that could be used to find  $(0.03) \cdot (0.65)$ .

2. Maia wrote this expression to help her multiply  $(4.5) \cdot (0.17)$ .

$$45 \cdot 17 \cdot \frac{1}{10} \cdot \frac{1}{100}$$

If  $45 \cdot 17 = 765$ , then what is  $(4.5) \cdot (0.17)$ ?

3. Select **all** of the expressions that have a product of 0.042.

$0.07 \cdot 0.6$       $0.7 \cdot 0.06$       $0.07 \cdot 0.06$       $7 \cdot 0.06$       $2.1 \cdot 0.02$

Determine the value of each expression using any strategy.

4.1  $(5.4) \cdot (2.4)$

4.2  $(1.01) \cdot (3.5)$

5. A pound of blueberries costs \$3.50 and a pound of clementines costs \$2.50.  
What is the total cost of 0.6 pounds of blueberries and 1.8 pounds of clementines?

Amari bought 12 mini muffins for \$5.40.

- 6.1 At this rate, what is the price of 4 mini muffins?

- 6.2 How many mini muffins can Amari buy with \$4.00?

Explain or show your reasoning. Use the table if it helps you with your thinking.

Number of Mini Muffins	Price (dollars)
12	5.40

## Explore

Using the digits 0–9, without repeating, fill in each blank to make a true equation.

$$0.\square \times \square.\square = 0.\square \times \square.\square$$

## Reflect

- Put a question mark next to a question you were feeling stuck on.
- Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

100, 16, 0.8, 116.8

**Practice**

1. Responses vary. Because 0.03 is 3 hundredths and 0.65 is 65 hundredths, 195 will need to be multiplied by  $(0.01) \cdot (0.01)$  or 0.0001. In other words, the 195 represents the number of ten-thousandths, or 0.0195.
2. 0.765
3. ✓  $0.07 \cdot 0.6$   
✓  $0.7 \cdot 0.06$   
✓  $2.1 \cdot 0.02$
- 4.1 12.96
- 4.2 3.535
5.  $\$6.60 \cdot (0.6) \cdot (3.50) = \$2.10$  for blueberries.  $(1.8) \cdot (2.50) = \$4.50$  for clementines.  
The combined cost is  $\$2.10 + \$4.50 = \$6.60$ .
- 6.1 \$1.80
- 6.2 8 mini muffins

*Explanations vary.* Since 12 mini muffins cost \$5.40, 1 mini muffin costs  $5.40 \div 12 = \$0.45$ .  
8 mini muffins cost \$3.60. Amari does not have enough money for 9 mini muffins because  
that would cost \$4.05.

**Explore**

Responses vary.

$$0.\boxed{2} \times 9.\boxed{0} = 0.\boxed{5} \times 3.\boxed{6}$$

$$0.\boxed{3} \times 7.\boxed{0} = 0.\boxed{5} \times 4.\boxed{2}$$

## Warm-Up

Determine the value of each expression.

$400 \div 8$

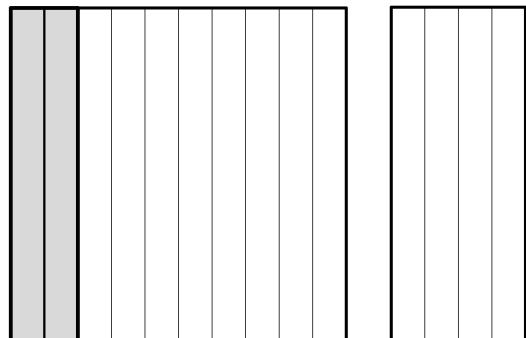
$80 \div 8$

$16 \div 8$

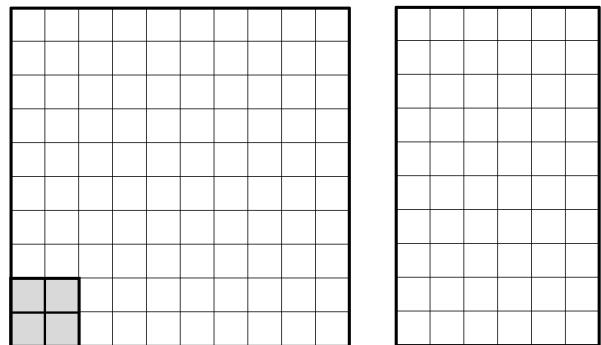
$496 \div 8$

## Practice

1. Determine the value of  $1.4 \div 0.2$ . Use the diagram if it helps you with your thinking.



2. Determine the value of  $1.6 \div 0.04$ . Use the diagram if it helps you with your thinking.



- 3.1 Select **all** of the expressions that have the same value as  $3.5 \div 0.05$ .

$35 \div 5$

$350 \div 5$

$35 \div 0.5$

$\frac{35}{100} \div \frac{5}{100}$

$\frac{35}{10} \div \frac{0.5}{10}$

- 3.2 Write another expression that has the same value as  $3.5 \div 0.05$ .

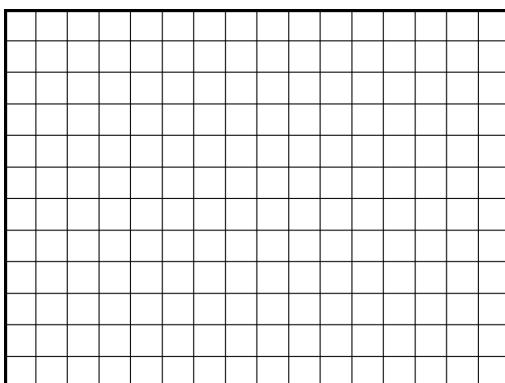
4. Xavier was multiplying  $1.5 \cdot 0.82$ . He knew that  $15 \cdot 82 = 1230$ .

What is  $1.5 \cdot 0.82$ ?

- A. 0.0123      B. 0.123      C. 1.23      D. 12.3

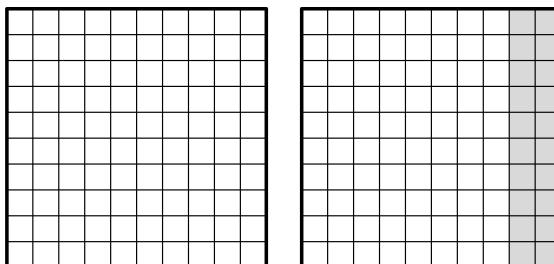
Explain or show your thinking.

5. On the grid, draw a quadrilateral that is not a rectangle that has an area of 18 square units. Show how you know the area is 18 square units.



## Explore

Using the digits 0–9, fill in each blank to create a true equation. Show your answer using the diagram.



$$1.8 \div 0.\square\square = \square\square$$

**Are you ready for more?** Create a true equation using the digits 0–9 without repeating.

## Reflect

1. Put a smiley face next to a question you were stuck on and then figured out.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

50, 10, 2, 62

**Practice**

1. 7

2. 40

3.1  $\checkmark 350 \div 5$        $\checkmark 35 \div 0.5$        $\checkmark \frac{35}{10} \div \frac{0.5}{10}$

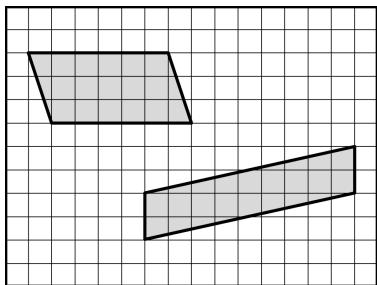
3.2 Responses vary.  $\frac{350}{100} \div \frac{5}{100}$

4. C. 1.23

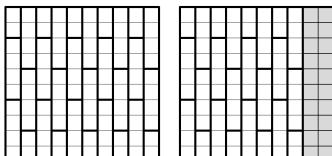
*Explanations vary.* The problem involves multiplying 15 tenths by 82 hundredths. That means that after we multiply 15 · 82 we must also multiply by  $\frac{1}{10}$  and  $\frac{1}{100}$ .

$$1230 \cdot \frac{1}{10} \cdot \frac{1}{100} = 1.23$$

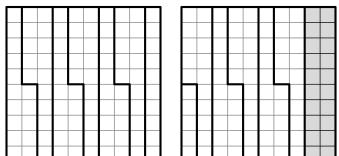
5. Responses vary.

**Explore**

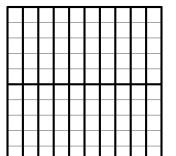
Responses vary.



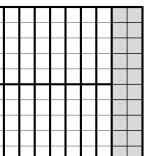
$$1.8 \div 0.\underline{0}\,\underline{4} = \underline{4}\,\underline{5}$$



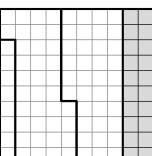
$$1.8 \div 0.\underline{1}\,\underline{5} = \underline{1}\,\underline{2}$$

**Are you ready more?**

$$1.8 \div 0.\underline{0}\,\underline{5} = \underline{3}\,\underline{6}$$



$$1.8 \div 0.\underline{3}\,\underline{6} = \underline{0}\,\underline{5}$$





## Warm-Up

Determine the value of each expression.

$80 \div 4$

$12 \div 4$

$1.2 \div 4$

$81.2 \div 4$

## Practice

Here is a long division calculation of  $4809 \div 3$  that is done incorrectly.

- 1.1 Explain how you know that  $4809 \div 3$  is not 163.

- 1.2 What is  $4809 \div 3$ ?

$$\begin{array}{r} 163 \\ 3 \overline{)4809} \\ 3 \\ \hline 18 \\ 18 \\ \hline 009 \end{array}$$

Mariam is using long division to calculate  $623 \div 7$ .

- 2.1 Mariam starts by dividing 62 by 7.

The first digit of the quotient is 8.

Write the number 8 where you think it belongs.

$$7 \overline{)6 \quad 2 \quad 3}$$

- 2.2 Finish using long division to calculate  $623 \div 7$ .

Use long division to calculate each quotient.

3.1

$$5 \overline{)4 \quad 6 \quad 5}$$

3.2

$$12 \overline{)9 \quad 2 \quad 4}$$

3.3

$$3 \overline{)1 \quad 1 \quad 0 \quad 7}$$

4. Select **all** of the expressions that have the same value as  $6.4 \div 0.16$ .

$64 \div 16$

$640 \div 16$

$\frac{64}{10} \div \frac{16}{100}$

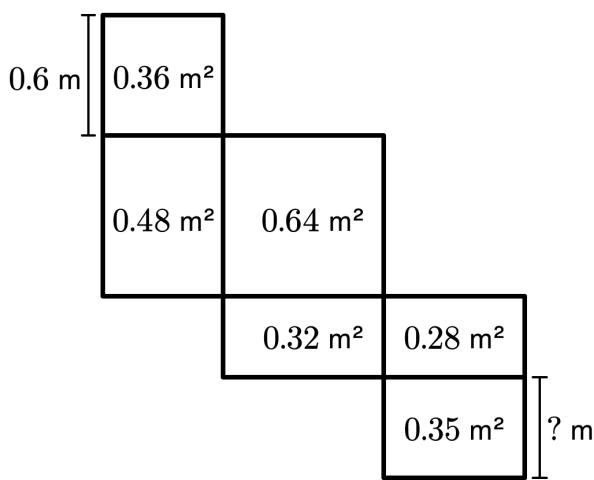
$\frac{64}{10} \div \frac{16}{10}$

5. The mass of one coin is 16.718 grams. The mass of a second coin is 27.22 grams. How much greater is the mass of the second coin than the first?

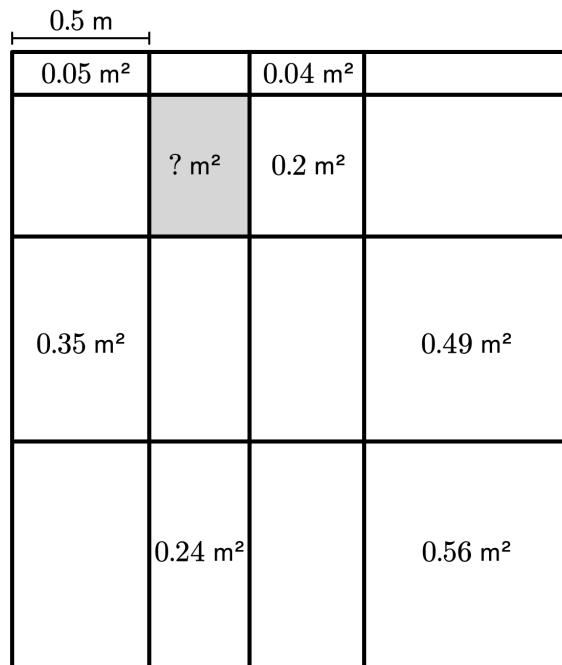
Show your reasoning.

## Explore

Determine the unknown length.



Determine the unknown area.



## Reflect

1. Circle a question you are still curious about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

20, 3, 0.3, 20.3

**Practice**

1.1 *Responses vary.* I noticed the error in the long division: there should be a zero between the 6 and the 3. Also, 163 cannot be the correct answer because  $3 \cdot 163$  is not close to 4809.

1.2 1603

2.1

$$\begin{array}{r} 8 \\ 7 \overline{)6 \ 2 \ 3} \end{array}$$

2.2

$$\begin{array}{r} 8 \ 9 \\ 7 \overline{)6 \ 2 \ 3} \\ -5 \ 6 \\ \hline 6 \ 3 \\ -6 \ 3 \\ \hline 0 \end{array}$$

3.4

$$\begin{array}{r} 9 \ 3 \\ 5 \overline{)4 \ 6 \ 5} \\ -4 \ 5 \\ \hline 1 \ 5 \\ -1 \ 5 \\ \hline 0 \end{array}$$

3.5

$$\begin{array}{r} 7 \ 7 \\ 12 \overline{)9 \ 2 \ 4} \\ -8 \ 4 \\ \hline 8 \ 4 \\ -8 \ 4 \\ \hline 0 \end{array}$$

3.6

$$\begin{array}{r} 3 \ 6 \ 9 \\ 3 \overline{)1 \ 1 \ 0 \ 7} \\ -9 \\ \hline 2 \ 0 \\ -1 \ 8 \\ \hline 2 \ 7 \\ -2 \ 7 \\ \hline 0 \end{array}$$

4. ✓  $640 \div 16$       ✓  $\frac{64}{10} \div \frac{16}{100}$

5. 10.502 grams because  $27.22 - 16.718 = 10.502$ .

**Explore**0.5 m, 0.15 m<sup>2</sup>



## Warm-Up

Determine the value of each expression.

$300 \div 3$

$60 \div 3$

$12 \div 3$

$372 \div 3$

## Practice

1. Here are two long division problems. Which one represents  $6 \div 10$ ?

A.

$$\begin{array}{r} 1\ 0 \\ 6 \overline{)1\ 0} \end{array}$$

B.

$$\begin{array}{r} 6 \\ 10 \overline{)6} \end{array}$$

Explain your thinking.

- 2.1 Select **all** the expressions that have the same value as  $4.5 \div 0.09$ .

$\frac{45}{100} \div \frac{9}{100}$

$45 \div 9$

$\frac{450}{100} \div \frac{9}{100}$

$450 \div 9$

- 2.2 What is the value of  $4.5 \div 0.09$ ?

Use long division to determine the value of each expression.

3.1  $99 \div 12$

3.2  $39.54 \div 3$

3.3  $199.8 \div 0.8$

4. Four students set up a lemonade stand. At the end of the day, their profit is \$17.52. How much money do they each have when the profit is split equally?

Show or explain your reasoning.

Determine the missing digits in the subtraction problems.

5.1

$$\begin{array}{r} 5 \\ - \boxed{\phantom{0}}.\boxed{\phantom{0}}\boxed{\phantom{0}} \\ \hline 4.32 \end{array}$$

5.2

$$\begin{array}{r} 1 \\ - \boxed{\phantom{0}}.\boxed{\phantom{0}}\boxed{\phantom{0}}\boxed{\phantom{0}} \\ \hline 0.015 \end{array}$$

5.3

$$\begin{array}{r} 9 \\ - \boxed{\phantom{0}}.\boxed{\phantom{0}}\boxed{\phantom{0}}\boxed{\phantom{0}} \\ \hline 0.863 \end{array}$$

## Explore

Using the digits 0–9, without repeating, fill in each blank to make a true equation.

$$\boxed{\phantom{0}} \div 0.\boxed{\phantom{0}} = \boxed{\phantom{0}} \div 0.\boxed{\phantom{0}}$$

## Reflect

1. Circle a question you want to talk to a classmate about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

100, 20, 4, 124

**Practice**

1. B. *Explanations vary.* I know that  $6 \div 10$  will be less than 1. From doing the first steps of long division, I can see that Problem A will be *greater* than 1, so A can't be correct.

2.1 ✓  $\frac{450}{100} \div \frac{9}{100}$

✓  $450 \div 9$

2.2 50

3.1

$$\begin{array}{r} 8 . 2 \quad 5 \\ 12 \overline{)9 \quad 9 . \quad 0 \quad 0} \\ -9 \quad 6 \quad \downarrow \\ \quad 3 \quad 0 \quad \downarrow \\ -2 \quad 4 \quad \downarrow \\ \quad 6 \quad 0 \\ -6 \quad 0 \\ \hline 0 \end{array}$$

3.2

$$\begin{array}{r} 1 \quad 3 . \quad 1 \quad 8 \\ 3 \overline{)3 \quad 9 . \quad 5 \quad 4} \\ -3 \quad \downarrow \\ 0 \quad 9 \quad \downarrow \\ -9 \quad \downarrow \\ 0 \quad 5 \quad \downarrow \\ -3 \quad \downarrow \\ 2 \quad 4 \\ -2 \quad 4 \\ \hline 0 \end{array}$$

3.3

$$\begin{array}{r} 199.8 \div 0.8 = 1998 \div 8 \\ 2 \quad 4 \quad 9 \quad . \quad 7 \quad 5 \\ 8 \overline{)1 \quad 9 \quad 9 \quad 8 \quad 0 \quad 0} \\ -1 \quad 6 \quad \downarrow \\ 3 \quad 9 \quad \downarrow \\ -3 \quad 2 \quad \downarrow \\ 7 \quad 8 \quad \downarrow \\ -7 \quad 2 \quad \downarrow \\ 6 \quad 0 \quad \downarrow \\ -5 \quad 6 \quad \downarrow \\ 4 \quad 0 \\ -4 \quad 0 \\ \hline 0 \end{array}$$

4. \$4.38. *Explanations vary.* Each person gets  $\$17.52 \div 4$ . Each person can be given \$4, and then \$1.52 remains. Each person can be given \$0.30, and then \$0.32 remains, so they each get \$0.08 more. That means each person gets a total of  $4 + 0.30 + 0.08$  or \$4.38.

5.1

$$\begin{array}{r} 5 \\ -0.68 \\ \hline 4.32 \end{array}$$

5.2

$$\begin{array}{r} 1 \\ -0.985 \\ \hline 0.015 \end{array}$$

5.3

$$\begin{array}{r} 9 \\ -8.137 \\ \hline 0.863 \end{array}$$

**Explore***Responses vary.*

$[4] \div 0.[2] = [6] \div 0.[3]$

$[3] \div 0.[1] = [6] \div 0.[2]$



## Warm-Up

Determine the value of each expression.

$10\% \text{ of } 43$

$1\% \text{ of } 43$

$4\% \text{ of } 43$

$14\% \text{ of } 43$

## Practice

Jada's family has a weekly income of \$1150.

- 1.1 Jada's family tries to spend no more than 9% of their weekly income on groceries. How much money is this?
  
- 1.2 Jada's family tries to put 12% of their weekly income into a savings account. How much money is this?
  
- 1.3 Jada's family recently had to spend \$184 on a car repair. What percent of their weekly income is this?  

A. 0.16%	B. 6.25%	C. 16%	D. 62.5%
----------	----------	--------	----------

Show or explain your reasoning.

2. Circle the expression that has the greater value.

$7\% \text{ of } 250$

$70\% \text{ of } 25$

They have the same value.

Show or explain your reasoning.

3. Oliver went to the store and purchased the items shown here. Beef is the most expensive item. Beef is what percent of the total?

Milk (1 gallon) -----	3.61
Beef (1 lb.) -----	7.10
Apples (1 lb.) -----	2.39
Bananas (1 lb.) -----	0.91
Oranges (1 lb.) -----	1.99
Potatoes (1 lb.) -----	1.10
<b>Total -----</b>	<b>\$17.75</b>

4. One ounce of a yogurt contains of 1.2 grams of sugar. How many grams of sugar are in 14.25ounces of yogurt?

- A. 1.71 grams      B. 11.875 grams      C. 15.45 grams      D. 17.1 grams

Determine the value of each expression. Show or explain your thinking.

5.1  $4.4 - 0.72$

5.2  $4 + 1.3 + 0.56$

5.3  $4.34 \div 0.7$

## Explore

Here is the average weekly household income of three states (as of 2021)<sup>1</sup> and the cost of a week's worth of food in each state's capital city.<sup>2</sup> Determine the missing values in the table.

	Arkansas	Oklahoma	Maryland
<b>Weekly income</b>	\$915	\$1 020	
<b>Cost of food for family of 3</b>	\$186.66		\$263.22
<b>Percentage of weekly income</b>		22.9%	16.4%

## Reflect

- Put a star next to a question you are still curious about.
- Use the space below to ask one question you have or to share something you are proud of.

<sup>1</sup> World Population Review, <https://worldpopulationreview.com/state-rankings/median-household-income-by-state>

<sup>2</sup> Numbeo.com, <https://www.numbeo.com/food-prices/>

**Warm-Up**

4. 3, 0. 43, 1. 72, 6. 02

**Practice**

1.1 \$103.50

1.2 \$138

1.3 C. *Explanations vary.* I know that 10% of \$1150 is \$115 and 20% is \$230. Since \$184 is between those two values, 16% is the only choice that makes sense.

2. They have the same value. *Explanations vary.*

70% of 25 is  $(0.7) \cdot 25$  or  $7 \cdot 25 \cdot \frac{1}{10}$ .

7% of 250 is  $(0.07) \cdot 250$  or  $7 \cdot 250 \cdot \frac{1}{100}$ . That can be rewritten further as  $7 \cdot 25 \cdot 10 \cdot \frac{1}{100}$  or  $7 \cdot 25 \cdot \frac{1}{10}$ .

3.  $40\% \cdot \frac{7.10}{17.75} = 0.4$ . As a percentage, this is 40%.

4. D. 17.1 grams

5.1 3.68

5.2 5.86

5.3 6.2

**Explore**

	Arkansas	Oklahoma	Maryland
<b>Weekly income</b>	\$915	\$1 020	\$1 605
<b>Cost of food for family of 3</b>	\$186.66	\$233.58	\$263.58
<b>Percentage of weekly income</b>	20.4%	22.9%	16.4%

**Unit 6.6, Lesson 1: Practice Problems**

Name \_\_\_\_\_

**Warm-Up**

Fill in each blank to create a true equation.

$7 + \underline{\quad} = 10$

$\underline{\quad} \cdot 5 = 45$

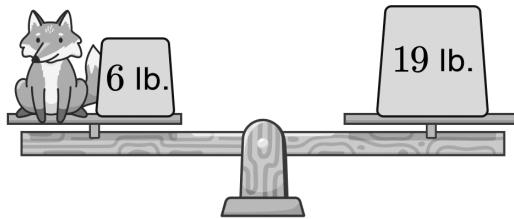
$23 - \underline{\quad} = 11$

$\underline{\quad} \div 4 = 8$

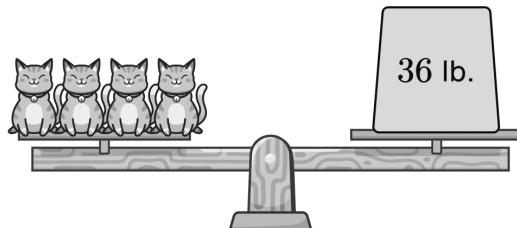
**Practice**

These scales are balanced.

- 1.1 Determine the weight of 1 fox.



- 1.2 Determine the weight of 1 cat.



2. Match each equation to the tape diagram that best represents it.

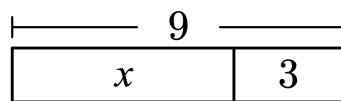
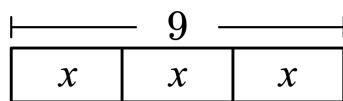
**A.**  $3 \cdot x = 9$

**B.**  $3 + x = 9$

**C.**  $x = 9 - 3$

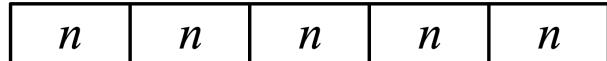
**D.**  $x = 9 \div 3$

**E.**  $x + x + x = 9$



Kwabena is trying to figure out the value of  $n$  in the equation  $5n = 35$ . He begins drawing a tape diagram but isn't sure how to complete it.

- 3.1 Complete Kwabena's tape diagram so it represents the equation
- $5 \cdot n = 35$
- .



- 3.2 Determine the value of
- $n$
- .

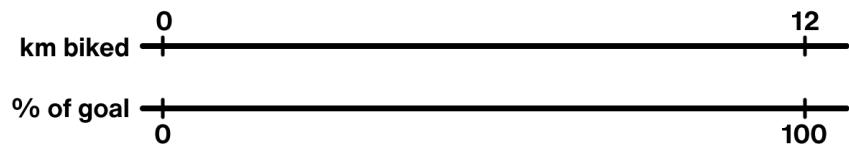
**Unit 6.6, Lesson 1: Practice Problems**

Calculate the price per pound for each item.

4.1 \$2.52 for 4.5 pounds of potatoes.

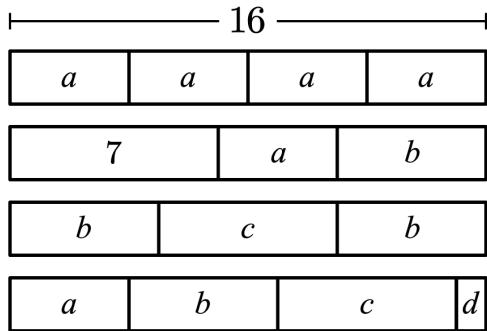
4.2 \$7.75 for 2.5 pounds of broccoli.

5. Adhira set a goal to bike 12 km in a week. After her ride on Tuesday, Adhira's app said she had completed 25% of her goal. How many kilometers has Adhira biked so far?  
Use the double number line if it helps you with your thinking.



## Explore

Determine the values of  $a$ ,  $b$ ,  $c$ , and  $d$ .



## Reflect

1. Star the problem you spent the most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$$7 + 3 = 10$$

$$9 \cdot 5 = 45$$

$$23 - 12 = 11$$

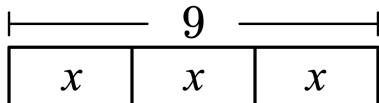
$$32 \div 4 = 8$$

## Practice

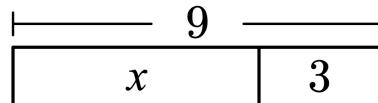
1.1 13 pounds

1.2 9 pounds

2.

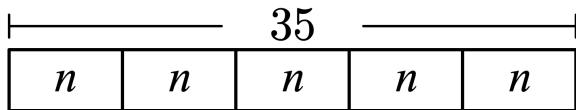


- A  
D  
E



- B  
C

3.1

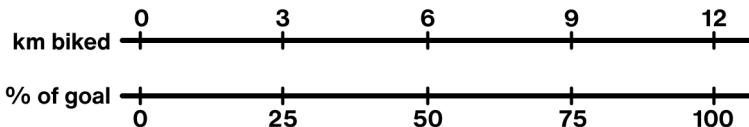


3.2  $n = 7$

4.1 \$0.56 per pound

4.2 \$3.10 per pound

5. 3 kilometers



## Explore

$a = 4$

$b = 5$

$c = 6$

$d = 1$



# Science Mom Lesson 46

## Unit 6.6, Lesson 2: Practice Problems

Name \_\_\_\_\_

### Warm-Up

Select **all** the true equations.

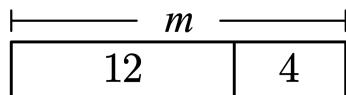
- $5 + 0 = 0$       $15 \cdot 0 = 0$       $1.4 + 2.7 = 4.1$       $\frac{2}{3} \cdot \frac{5}{9} = \frac{7}{12}$       $4 \frac{2}{3} = 5 - \frac{1}{3}$

### Practice

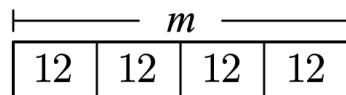
1. Match each equation to a tape diagram.

A. $12 - m = 4$	B. $12 = 4m$	C. $12 + 4 = m$	D. $m \div 4 = 12$
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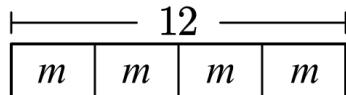
Equation: \_\_\_\_\_



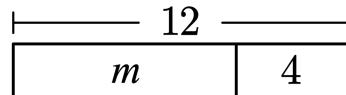
Equation: \_\_\_\_\_



Equation: \_\_\_\_\_

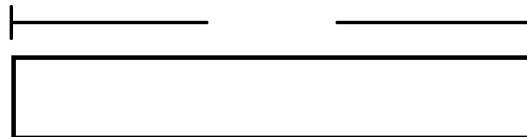


Equation: \_\_\_\_\_



Aaliyah filled a water bottle with 24 ounces of water before school. They drank 15 ounces at lunch. There are  $x$  ounces of water left.

- 2.1 Draw a tape diagram to represent the situation.



- 2.2 Select **all** of the equations that could represent this situation.

- $24 - 15 = x$       $24 + 15 = x$       $x + 15 = 24$       $15x = 24$       $24 \div 15 = x$

- 2.3 For one of the equations you selected above, determine the solution and explain its meaning.

Equation

Solution

Meaning of Solution

**Unit 6.6, Lesson 2: Practice Problems**

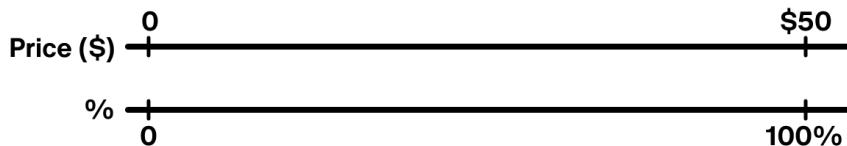
Fill in the blanks to make each equation true.

3.1  $2.83 - 1.6 = \underline{\hspace{2cm}}$

3.2  $\underline{\hspace{2cm}} + 2.1 = 7$

3.3  $\frac{3}{4} \cdot \underline{\hspace{2cm}} = 8$

4. Hailey paid \$40 for a jacket whose regular price was \$50. What percent of the regular price did Hailey pay? Use the double number line if it helps with your thinking.

**Explore**

Using the digits 0–9, without repeating, fill in each blank such that  $x$  is the same value in each equation.

$$\begin{aligned}x &= \square \cdot \square \\x &= \square + \square \\x + \square &= \square\end{aligned}$$

**Reflect**

1. Put a heart next to the problem you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

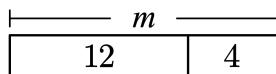
$\checkmark 15 \cdot 0 = 0$

$\checkmark 1.4 + 2.7 = 4.1$

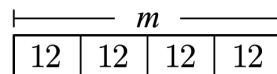
$\checkmark 4 \frac{2}{3} = 5 - \frac{1}{3}$

## Practice

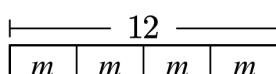
1. Equation: C



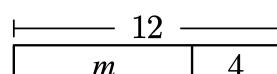
Equation: D



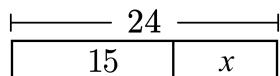
Equation: B



Equation: A



2.1



2.2  $\checkmark 24 - 15 = x$

$\checkmark x + 15 = 24$

2.3

## Equation

$24 - 15 = x$

or  $x + 15 = 24$

## Solution

$x = 9$

## Meaning of Solution

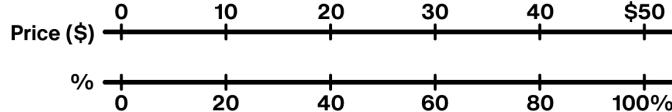
Aaliyah has 9 ounces of water left in their water bottle.

3.1 1.23

3.2 4.9

3.3  $\frac{32}{3}$  (or equivalent)

4. \$40 is 80% of the regular price



## Explore

Responses vary.

$x = [2] \cdot [4]$

$x = [3] + [5]$

$x + [1] = [9]$

## Warm-Up

Calculate the value of each expression.

$12 + 2.4$

$12 \cdot 2.4$

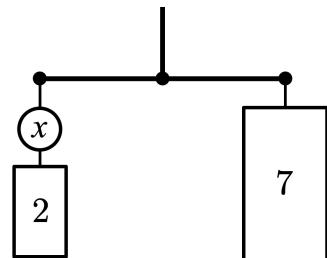
$12 - 2.4$

$12 \div 2.4$

## Practice

1. Anushka says that to balance this hanger, the value of  $x$  must be 7.  
Do you agree with her?

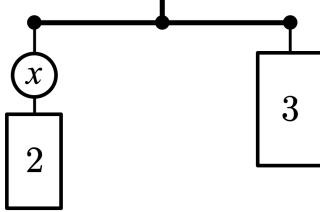
Show or explain your reasoning.



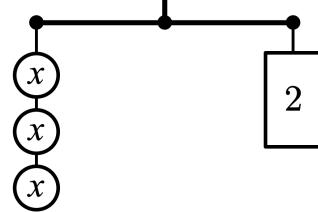
Match each hanger with the equation that it represents. You will have one equation left over.

A. $3 + x = 2$	B. $2 + x = 3$	C. $2x = 3$	D. $3x = 2$
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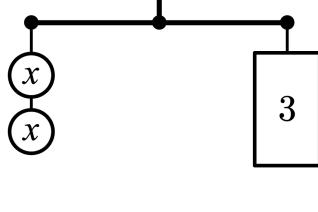
2.1



2.2



2.3

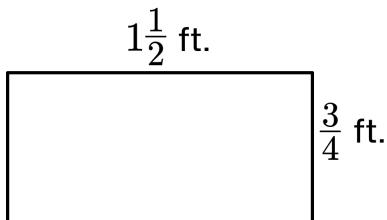


3. Pick two hangers from above and figure out the value of  $x$  that balances each hanger.

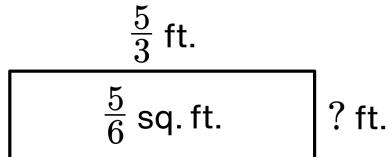


**Unit 6.6, Lesson 3: Practice Problems**

- 4.1 Calculate the area of this rectangle.



- 4.2 Calculate the height of this rectangle.



Precious set a goal to save \$20 to buy a new game. How much money will Precious have when she has saved:

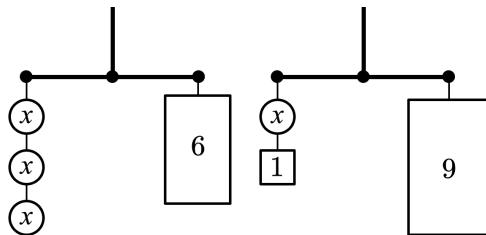
- 5.1 25% of her goal?

- 5.2 75% of her goal?

- 5.3 125% of her goal?

**Explore**

Add or remove shapes on **one** hanger so that the same value of  $x$  balances both hangers.

**Reflect**

1. Put a question mark next to a problem you would like to compare with a classmate.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

14. 4

28. 8

9. 6

5

## Practice

1. Responses vary. I disagree with Anushka. The hanger would not be balanced if the value of  $x$  was 7 because the left side of the hanger would equal 9, but the right side of the hanger equals 7.

2.1    **B.**  $2 + x = 3$

2.2    **D.**  $3x = 2$

2.3    **C.**  $2x = 3$

3. Equation choice varies. Students will select any two.

**B.**  $2 + x = 3$

$x = 1$

**D.**  $3x = 2$

$x = \frac{2}{3}$

**C.**  $2x = 3$

$x = \frac{3}{2}$

(or equivalent)

(or equivalent)

4.1 Area  $= \frac{9}{8}$  square ft. (or equivalent)

4.2 Height  $= \frac{1}{2}$  ft. (or equivalent)

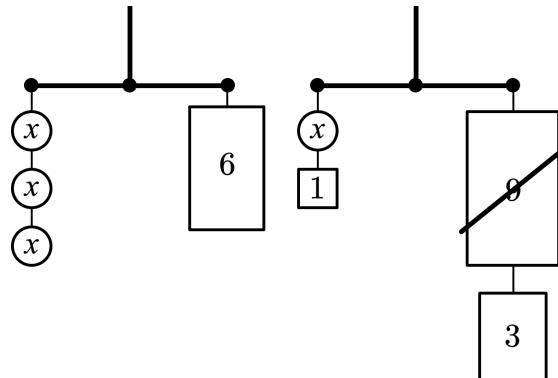
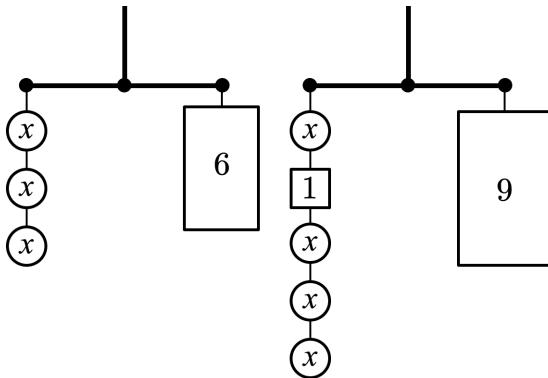
5.1 \$5

5.2 \$15

5.3 \$25

## Explore

Responses vary.



## Warm-Up

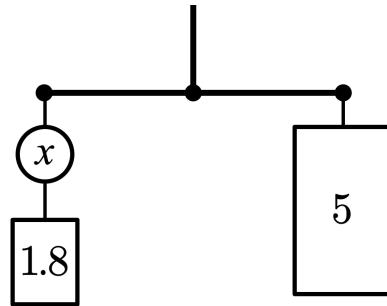
Select **all** the equations that have a solution of  $n = 11$ .

- $2n = 22$       $23 - n = 12$       $4n = 411$       $n \div 1 = 11$       $n - 7 = 3$

## Practice

- 1.1 Determine the value of  $x$  in the equation  $x + 1.8 = 5$ .

Use the hanger if it helps you with your thinking.



- 1.2 Vihaan says the solution to  $x + 1.8 = 5$  is  $x = 6.8$ .

Explain how you know that this is incorrect.

Solve each equation. Draw a hanger or a tape diagram if it helps you with your thinking.

2.1  $4m = 8$

2.2  $\frac{1}{2}a = \frac{5}{8}$

2.3  $10d = 32$

2.4  $w + 5.2 = 17$

2.5  $1.5x = 0.9$

2.6  $24.6 = 6.1 + c$



## Unit 6.6, Lesson 4: Practice Problems

Calculate each product.

$$3.1 \quad 212 \cdot 2$$

$$3.2 \quad 21.2 \cdot 0.2$$

$$3.3 \quad 21.2 \cdot 0.02$$

4. Kweku and Javier each used a different strategy to determine 25% of 60.

Which strategy is correct?

Explain your reasoning.

Kweku's Strategy

$$60 \times 25$$

Javier's Strategy

$$60 \div 4$$

## Explore

Using the digits 0–9, without repeating, fill in each blank so that the value of  $x$  is the same for each equation on the left and the same for each equation on the right.

$$x = \square$$

$$x + \square = \square$$

$$x = \square$$

$$x + \square = \square$$

## Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$\checkmark 2n = 22 \quad \checkmark 23 - n = 12 \quad \checkmark n \div 1 = 11$

**Practice**

1.1  $x = 3.2$

1.2 *Explanations vary.* I know that this is incorrect because for  $x + 1.8$  to balance with 5,  $x$  should be less than 5. If  $x = 6.8$ , the left side of the hanger would already be too heavy before adding 1.8.

2.1 $m = 2$	2.2 $a = \frac{5}{4}$
2.3 $d = 3.2$	2.4 $w = 11.8$
2.5 $x = 0.6$	2.6 $c = 18.5$

3.1 424

3.2 4.24

3.3 0.424

4. *Explanations vary.* Javier's strategy is correct because 25% is  $\frac{1}{4}$  of a whole. So to find 25% of a number, you can also divide it by 4.

**Explore**

Responses vary.

$x = \boxed{1}$

$x + \boxed{2} = \boxed{3}$

$x = \boxed{4}$

$x + \boxed{5} = \boxed{9}$



## Warm-Up

Select **all** the equations that have a solution of  $c = 1.5$ .

- $4c = 41.5$       $150 \div c = 100$       $13.5 - c = 10$       $6c = 9$       $0.2c = 0.3$

## Practice

- 1.1 Anika buys 5 notebooks that contain 60 pages each.

Select **all** the equations that represent the **total number of pages**,  $p$ .

- $p = 60 \div 5$       $5 + 60 = p$       $p = 5 \cdot 60$       $p \div 5 = 60$       $5p = 60$

- 1.2 Tiara buys a pack of paper with 200 pages. She splits the paper equally into 5 binders.

Select **all** the equations that represent the **number of pages in each binder**,  $b$ .

- $b = 200 \div 5$       $200 \div b = 5$       $b = 5 \cdot 200$       $b \div 5 = 200$       $5b = 200$

Complete the table by creating matching equations and situations.

Equation	Situation	Meaning of $x$
2.1 $\frac{1}{2} + x = 4$		
2.2	A plant in Zahra's garden grows 0.8 inches taller each week. After $x$ weeks, the plant has grown 6 inches.	



## Unit 6.6, Lesson 5: Practice Problems

Solve each equation.

$$3.1 \quad 6m = 33$$

$$3.2 \quad p + 7.04 = 11.8$$

$$3.3 \quad n + \frac{3}{5} = \frac{8}{10}$$

4. Compare the information given about Triangle C and Triangle D.

Which triangle has the greater area?

Show or explain your thinking.

### Triangle C

Base= 12 inches

Height= 8 inches

### Triangle D

Base= 15 inches

Height= 6.5 inches

## Explore

Using the digits 0–9, without repeating, fill in each blank such that the value of  $x$  is the same in each equation.

$$\square x = \square$$

$$x + \square = \square$$

$$x - \square = \square$$

## Reflect

1. Put a heart next to a question that you understand well.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$\checkmark 150 \div c = 100 \quad \checkmark 6c = 9 \quad \checkmark 0.2c = 0.3$

**Practice**

1.1  $\checkmark p = 5 \cdot 60$

$\checkmark p \div 5 = 60$

1.2  $\checkmark b = 200 \div 5$

$\checkmark 200 \div b = 5$

$\checkmark 5b = 200$

Equation	Situation	Meaning of $x$
2.1 $\frac{1}{2} + x = 4$	<i>Responses vary.</i> I ate $\frac{1}{2}$ of a cookie after dinner. I ate $x$ cookies before dinner. In total, I've eaten 4 cookies today.	<i>Responses vary.</i> $x$ represents the number of cookies eaten before dinner.
2.2 $0.8x = 6$	A plant in Zahra's garden grows 0.8-inches taller each week. After $x$ weeks, the plant has grown 6 inches.	$x$ represents the number of weeks it takes the plant to grow 6 inches.

3.1  $m = 5.5$

3.2  $p = 4.76$

3.3  $n = \frac{2}{10}$  (or equivalent)

## 4. Triangle D

*Explanations vary.* The area of Triangle C is 48 square inches and the area of Triangle D is 48.75 square inches.

**Explore**

*Responses vary.*

$[3]x = [9]$

$x + [4] = [7]$

$x - [2] = [1]$



## Warm-Up

Evaluate the expression  $3m + 5$  for all the values of  $m$ .

$$m = 7$$

$$m = 0.8$$

$$m = \frac{5}{6}$$

$$m = 2.4$$

## Practice

Oranges cost \$1.25 per pound. How much would it cost to buy:

1.1 2 pounds of oranges?

1.2 5 pounds of oranges?

1.3  $x$  pounds of oranges?

You need red and blue ribbon for a craft project. The instructions say that the red ribbon should be 7 inches longer than the blue ribbon. How long should the red ribbon be if the blue ribbon is:

2.1 10 inches?

2.2 27 inches?

2.3  $x$  inches?

3. 35 riders are on a bus, and  $n$  riders get off at the same stop. In this scenario, what does the expression  $35 - n$  represent?

**Unit 6.6, Lesson 6: Practice Problems**

The variable  $s$  represents the number of students in one class in your school.

4.1 What does  $\frac{1}{2}s$  represent?

4.2 What does  $s + 1$  represent?

5. LaShawn's class raised \$500 for a fundraiser. They used 10% of the money to cover the cost of materials, saved 20% for the next fundraising project, and donated the rest.

How much money did LaShawn's class **donate**?

A garbage bin can hold 50 gallons of waste. What percent of the bin would be filled if it had:

6.1 5 gallons of waste?

6.2 30 gallons of waste?

6.3 45 gallons of waste?

**Explore**

Select any number to represent  $a$  and use it to complete the puzzle on the right.

$3a$	$+$	$4$	$=$				
$-$			$+$				$-$
$a$	$4a$	$+$	$4a$	$-$		$=$	$5a$
$-$	$+$		$=$				$=$
$a$				$-$	$2a$	$=$	
$-$	$=$				$+$		
$a$	$+ 6a$	$-$		$=$	$4a$		
$=$	$+$			$=$			
		$a$	$a$	$+$		$=$	

**Reflect**

- Put a star next to one question you are still wondering about.
- Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

$$3(7) + 5 = 26$$

$$3(0.8) + 5 = 7.4$$

$$3\left(\frac{5}{6}\right) + 5 = \frac{15}{2}$$

$$3(2.4) + 5 = 12.2$$

**Practice**

1.1 \$2.50

1.2 \$6.25

1.3  $1.25 \cdot x$

2.1 17 inches

2.2 34 inches

2.3  $x + 7$  inches

3.  $35 - n$  represents the number of riders that are still on the bus after  $n$  riders get off at the same stop.

4.1  $\frac{1}{2}s$  represents the value of half the students in one class.

4.2  $s + 1$  represents all of the students in a class, plus 1 extra.

5. LaShawn's class donates \$350.

6.1 10%

6.2 60%

6.3 90%

**Explore**

*Responses vary.*

$$a = 2$$

3a	+	4	=	10			24
-			+				-
a	4a	+ 4a	- 6	=	5a		
-		+	=				=
a	6	18	- 2a	=	14		
-		=					
a	+ 6a	- 6	= 4a				
=		+					
0	a	a + 12	= 14				

## Warm-Up

Evaluate each expression for  $b = 5$ .

$$3.5b$$

$$6b + 1$$

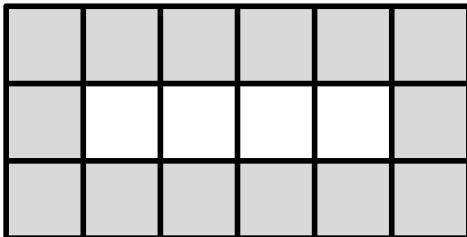
$$\frac{1}{4} + b$$

$$\frac{1}{2}b$$

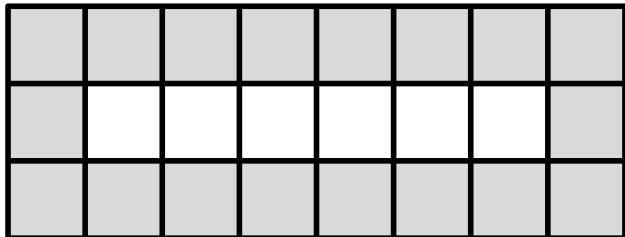
## Practice

For each rectangle, determine how many gray tiles are used to make the border.

1.1

**4-by-1 Rectangle**

1.2

**6-by-1 Rectangle**

- 1.3 Diego says  $2n + 6$  represents the number of gray tiles needed for the border of an  $n$ -by-1 rectangle, like the rectangles above. Explain why his strategy is correct.

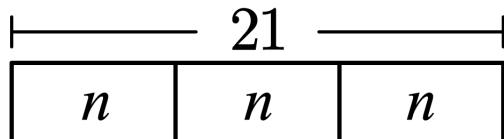
- 2.1 Select **all** the expressions that are equivalent to  $2n + 6$ .

$2 + 6n$       $2(n + 3)$       $n + 3$       $(n + 3) + (n + 3)$       $n + n + 6$

- 2.2 Choose an expression that is **not** equivalent. Explain how you know it is not equivalent.

**Unit 6.6, Lesson 7: Practice Problems**

- 3.1 Write an equation to represent the tape diagram.



- 3.2 Determine the value of  $n$ .

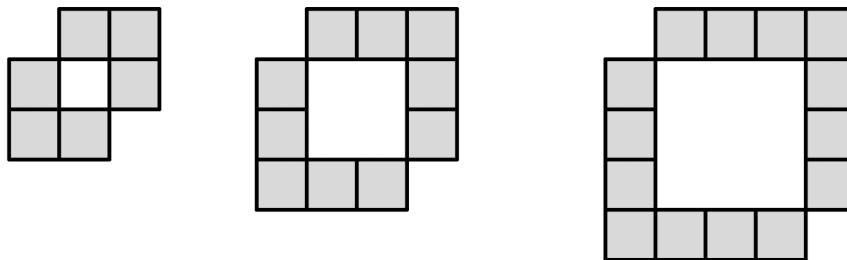
Write an equation to represent each scenario.

- 4.1 Aba's dog was  $5\frac{1}{2}$  inches tall when it was a puppy but is now 14 inches tall. Aba's dog grew  $n$ -inches.

- 4.2 Apples cost \$1.10 per pound. Darius bought  $x$  pounds of apples for a total cost of \$2.75.

## Explore

Write an expression that describes the number of gray tiles for any stage in the visual pattern below. Show your thinking.



Can you see the pattern in a different way that would produce a different expression? Show your thinking.

## Reflect

1. Put a question mark next to a question you were feeling stuck on.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

17. 5

31

$$5\frac{1}{4}$$

(or equivalent)

$$\frac{5}{2}$$

(or equivalent)

**Practice**

1.1 14 gray tiles

1.2 18 gray tiles

- 1.3 *Explanations vary.* Diego's strategy is correct because along the top and bottom of the  $n$ -by-1 rectangle, there are two strips of tiles that are  $n$ -units long, and there are always 3 extra tiles on the left and right side. I also know his strategy is correct because  $2n + 6$  works for the 4-by-1 and 6-by-1 rectangles.

2.1  $\checkmark 2(n + 3)$      $\checkmark (n + 3) + (n + 3)$      $\checkmark n + n + 6$

- 2.2 *Responses and explanations vary.*

- $2 + 6n$  is not equivalent to  $2n + 6$  because  $6n$  is not the same as  $2n$ .
- $n + 3$  is not equivalent to  $2n + 6$  because there is only a single  $n$  instead of 2.

- 3.1
- Responses vary.*

$3n = 21$

$21 \div n = 3$

$21 \div 3 = n$

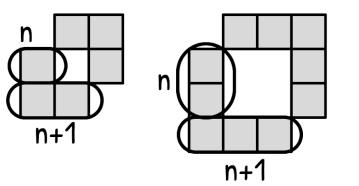
3.2  $n = 7$

4.1  $5\frac{1}{2} + n = 14$  (or equivalent)

4.2  $1.10x = 2.75$

**Explore***Responses and explanations vary.*

$$(n + (n + 1)) \cdot 2$$

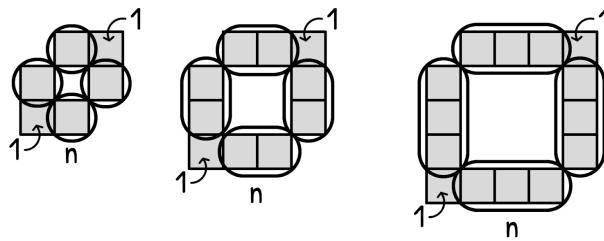


$n = 1$

$n = 2$

$n = 3$

$$4n + 2$$



$n = 1$

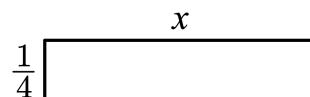
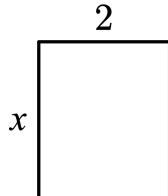
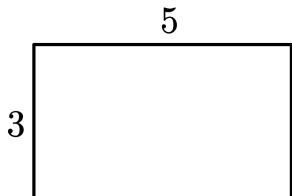
$n = 2$

$n = 3$



## Warm-Up

Write an expression to represent the area of each rectangle.



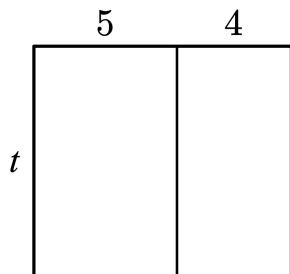
## Practice

1. Select **all** of the expressions that are equivalent to  $4b$ .

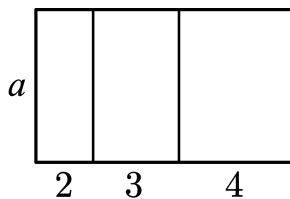
$b + b + b + b$         $b + 4$         $b \cdot b \cdot b \cdot b$         $2b + 2b$

2. Select **all** of the expressions that represent the area of the rectangle:

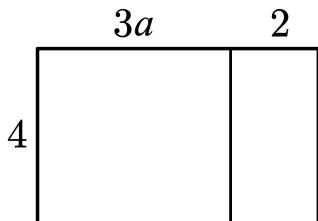
$t + 5 + 4$         $5t + 4t$         $9t$   
  $4 \cdot 5 \cdot t$         $(5 + 4)t$



3. Zola wrote the area of the rectangle as  $2a + 3a + 4a$ . Amir wrote the area as  $(2 + 3 + 4)a$ . Explain why they are both correct.



4. Write two equivalent expressions that could be used to represent the area of the rectangle.



Expression 1

Expression 2

**Unit 6.6, Lesson 8: Practice Problems**

Titus's aunt is 17 years older than him. How old will his aunt be when Titus is:

5.1 15 years old?

5.2 30 years old?

5.3  $x$  years old?

Solve each equation. Show your thinking. Use a diagram if it helps.

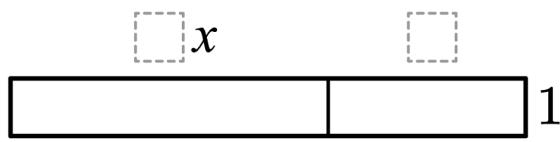
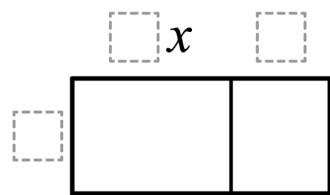
6.1  $10m = 25$

6.2  $13.65 = h + 4.88$

6.3  $k + \frac{1}{4} = 5\frac{1}{8}$

**Explore**

Using the digits 0–9, without repeating, fill in the blanks such that each rectangle has the same area.

**Reflect**

1. Put a smiley face next to a question you were stuck on and then figured out.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$3 \cdot 5$

$2 \cdot x$

$\frac{1}{4} \cdot x$

## Practice

1. ✓  $b + b + b + b$  ✓  $2b + 2b$

2. ✓  $5t + 4t$  ✓  $9t$  ✓  $(5 + 4)t$

3. Zola's expression and Amir's expression are equivalent, so they are both correct.  
Zola added the areas of each small rectangle and Amir added the lengths before multiplying by the width.

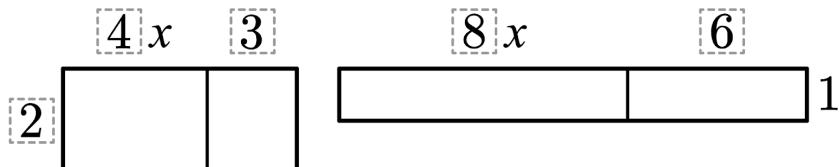
4.  $4(3a + 2)$   $12a + 8$

5.1 32 years old 5.2 47 years old 5.3  $x + 17$  years old

6.1  $m = 2.5$  6.2  $8.77 = h$  6.3  $k = \frac{39}{8}$  (or equivalent)

## Explore

Responses vary.





## Warm-Up

Determine the greatest common factor (GCF) for each pair of numbers.

6 and 8

10 and 50

14 and 21

## Practice

1. Select **all** of the expressions that are equivalent to  $4x + 8$ .

$4(x + 2)$

$(4 + 8)x$

$2(2x + 4)$

$2(2x + 6)$

Complete the table by writing expressions that represent the area of each rectangle.

	Area Model	Product of Two Factors	Sum of Two Terms
2.1			$8 + 2x$
2.2		$5(m + 3)$	
2.3			

3. Latifa and Joel are trying to rewrite  $8y + 24$  as a product of two factors. Are Latifa's and Joel's expressions both equivalent to  $8y + 24$ ?

Explain your thinking.

Latifa's Expression  
 $8(y+3)$

Joel's Expression  
 $2(4y + 12)$



## Unit 6.6, Lesson 9: Practice Problems

Complete the table by filling in the missing version of each expression. Draw a model if it helps with your thinking.

	Product of Two Factors	Sum or Difference of Two Terms
4.1		$4x - 8$
4.2	$(6 + 8)d$	
4.3		$10m + 7m$
4.4	$3(2b + 5)$	
4.5	$6(u - 2t)$	

Solve each equation.

$$5.1 \quad x + 5 = 11$$

$$5.2 \quad 0.6y = 1.8$$

$$5.3 \quad 5w = 17.5$$

## Explore

The area of a rectangle is  $30 + 12x$ . List at least three possibilities for the length and width of the rectangle.

## Reflect

1. Circle a question you are still curious about.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

6 and 8  
GCF: 2

10 and 50  
GCF: 10

14 and 21  
GCF: 7

## Practice

1. ✓  $4(x + 2)$       ✓  $2(2x + 4)$

	Product of Two Factors	Sum of Two Terms
2.1	$2(4 + x)$	$8 + 2x$
2.2	$5(m + 3)$	$5m + 15$
2.3	$3(2a + b)$	$6a + 3b$

3. Yes, both expressions are equivalent to  $8y + 24$ .

Latifa's expression is equivalent because 8 times  $y$  is  $8y$ , and 8 times 3 is 24.

Joel's expression is equivalent because 2 times  $4y$  is  $8y$ , and 2 times 12 is 24.

	Product of Two Factors	Sum of Two Terms
4.1	$4(x - 2)$	$4x - 8$
4.2	$(6 + 8)d$	$6d + 8d$
4.3	$(10 + 7)m$	$10m + 7m$
4.4	$3(2b + 5)$	$6b + 15$
4.5	$6(u - 2t)$	$6u - 12t$

5.1  $x = 6$

5.2  $y = 3$

5.3  $w = 3.5$

## Explore

Responses vary.

Length: 3, Width:  $10 + 4x$

Length: 2, Width:  $15 + 6x$

Length: 6, Width:  $5 + 2x$



## Warm-Up

Determine the value of each expression.

$3 + 3 + 3 + 3$

$3 \cdot 3 \cdot 3 \cdot 3$

$4(3)$

$3^4$

## Practice

1. Complete the table.

Expression With Exponent	Expression Without Exponent
$3^5$	$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$
	$2 \cdot 2 \cdot 2 \cdot 2$
$4^3$	
$5^1$	
	$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$
$(\frac{1}{3})^4$	

2. Select **all** the expressions that are equal to 16.

$8^2$

$2^4$

$2^8$

$4^2$

$16^1$

3. Here are four expressions. Circle two expressions that have the same value.

$6 + 6 + 6$

$6^3$

$3^6$

$3 \cdot 6$

Explain how you know they are equivalent.

**Unit 6.6, Lesson 10: Practice Problems**

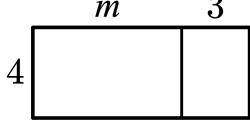
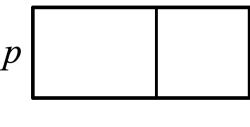
Solve each equation.

4.1  $a - 2.01 = 5.5$

4.2  $b + 2.01 = 5.5$

4.3  $10c = 13.71$

5. Write two expressions to represent the area of each rectangle.

Rectangle	Product	Sum
		
		

## Explore

What value of  $a$  makes both of these equations true? Explain how you know.

$$a^2 = 2^a \qquad a^4 = 4^a$$

## Reflect

1. Circle a question you want to talk to a classmate about.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

12

81

12

81

## Practice

1.

Expression With Exponent	Expression Without Exponent
$3^5$	$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$
$2^4$	$2 \cdot 2 \cdot 2 \cdot 2$
$4^3$	$4 \cdot 4 \cdot 4$
$5^1$	$5$
$\left(\frac{1}{2}\right)^5$	$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$
$\left(\frac{1}{3}\right)^4$	$\frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3}$

2.  $\checkmark 2^4$        $\checkmark 4^2$        $\checkmark 16^1$

3.  $6 + 6 + 6$      $3 \cdot 6$

*Explanations vary.* Both expressions have a value of 18.

4.1  $a = 7.51$

4.2  $b = 3.49$

4.3  $c = 1.371$

Product	Sum
$4(m + 3)$	$4m + 12$
$(4 + 3)p$	$4p + 3p$

## Explore

*Responses vary.*  $a = 4$  or  $a = 2$ *Explanations vary.* Since  $2 \cdot 2 = 4$ ,  $2 \cdot 2 \cdot 2 \cdot 2 = (2 \cdot 2) \cdot (2 \cdot 2) = 4 \cdot 4 = 16$ .

## Warm-Up

Determine the value of each expression.

$$3(5)$$

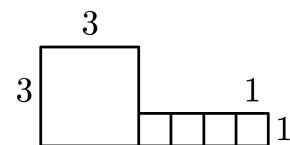
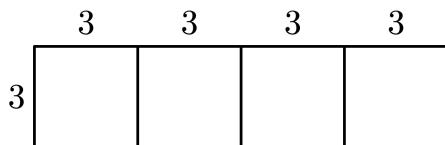
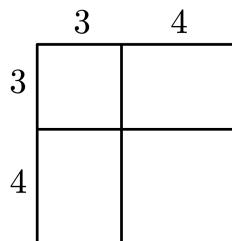
$$3(5) + 2$$

$$3(5 + 2)$$

$$3(2 + 5)$$

## Practice

Here are three different figures.



- 1.1 Match each figure with an expression that describes its area.

$$4 \cdot 3^2$$

Figure \_\_\_\_\_

$$3^2 + 4$$

Figure \_\_\_\_\_

$$(3 + 4)^2$$

Figure \_\_\_\_\_

- 1.2 Calculate the value of each of the expressions from above.

$$4 \cdot 3^2$$

$$3^2 + 4$$

$$(3 + 4)^2$$

2. Here are three more expressions. Calculate their values.  
Draw a picture if it helps you with your thinking.

$$5 + 4^2$$

$$(3 + 2)^3$$

$$2^2 \cdot 5$$

## Unit 6.6, Lesson 11: Practice Problems

Determine the value of each expression.

3.1  $7 + 2^3$

3.2  $9 \cdot 3^1$

3.3  $20 - 2^4$

3.4  $8 \cdot \left(\frac{1}{2}\right)^2$

4. Select **all** the expressions that are equal to  $3^4$ .

  $3 \cdot 3 \cdot 3 \cdot 3$  12  $3 + 3 + 3 + 3$   $9 \cdot 9$  81

A ticket at a movie theater costs \$9.50. One night, the theater sold \$13 433 in tickets.

- 5.1 **Estimate** the number of tickets sold.  
Show or explain your reasoning.

- 5.2 **Calculate** the exact number of tickets sold.  
Show or explain your reasoning.

## Explore

Using the digits 1–9, without repeating, fill in the blanks so that the values are in order from smallest to largest.

Smallest

4<sup>□</sup>, □<sup>4</sup>, □<sup>2</sup>, 3<sup>□</sup>, □<sup>3</sup>, 2<sup>□</sup>

Largest

## Reflect

- Put a heart next to the question you are most proud of.
- Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

15

17

21

21

## Practice

1.1  $4 \cdot 3^2$       Figure B  
 $3^2 + 4$       Figure C  
 $(3 + 4)^2$       Figure A

1.2  $4 \cdot 3^2 = 36$   
 $3^2 + 4 = 13$   
 $(3 + 4)^2 = 49$

2.  $5 + 4^2 = 21$   
 $(3 + 2)^3 = 125$   
 $2^2 \cdot 5 = 20$

- 3.1 15  
 3.2 27  
 3.3 4  
 3.4 2  
 4. ✓  $3 \cdot 3 \cdot 3 \cdot 3$   
 ✓  $9 \cdot 9$   
 ✓ 81

- 5.1 *Estimations and explanations vary.* I think they sold around 1 300 because \$9.50 is pretty close to \$10 and 13 433 is close to 13 000 and  $13\ 000 \div 10 = 1\ 300$ .  
 5.2 1 414 tickets  
*Explanations vary.* I used long division. Here are my calculations.

$$\begin{array}{r}
 & 1 & 4 & 1 & 4 \\
 95 & \overline{)1} & 3 & 4 & 3 & 3 & 0 \\
 & -9 & 5 & & & & \\
 & \hline
 & 3 & 9 & 3 & & & \\
 & -3 & 8 & 0 & & & \\
 & \hline
 & 1 & 3 & 3 & & & \\
 & -9 & 5 & & & & \\
 & \hline
 & 3 & 8 & 0 & & & \\
 & -3 & 8 & 0 & & & \\
 & \hline
 & 0 & 0 & 0 & & &
 \end{array}$$

## Explore

*Responses vary.*

Smallest

 $4^{[1]}, [2]^4, [5]^2, 3^{[4]}, [6]^3, 2^{[8]}$ 

Largest

**Warm-Up**

Determine the value of each expression.

$$4 \cdot 3 + 2$$

$$4(3 + 2)$$

$$3 + 2 \cdot 4$$

$$3(2 + 4)$$

**Practice**

- 1.1 Jalen built a tower out of 10 cubes.

Each cube is 5 inches on a side.

Which expression represents the volume of the tower?

- A.  $5(10)^3$     B.  $10(5)^3$     C.  $10 + 5^3$     D.  $5 + 10^3$

- 1.2 Calculate the volume of the tower.



Determine the value of each expression when  $x = 3$ .

2.1  $x^2$

2.2  $4x^2$

2.3  $2^x$

2.4  $4 + 2^x$

Determine the value of each expression when  $x = 2$ .

3.1  $x^4$

3.2  $4x^3$

3.3  $1 + 3x^3$

3.4  $\left(\frac{1}{3}\right)^x$



## Unit 6.6, Lesson 12: Practice Problems

For each pair of expressions, circle the expression with the greater value.

---

4.1	$2^3$	$3^2$	They have the same value.
-----	-------	-------	---------------------------

---

4.2	$1^{10}$	$10^1$	They have the same value.
-----	----------	--------	---------------------------

---

4.3	$3^4$	$9^2$	They have the same value.
-----	-------	-------	---------------------------

---

4.4	$\left(\frac{1}{2}\right)^3$	$\left(\frac{1}{3}\right)^2$	They have the same value.
-----	------------------------------	------------------------------	---------------------------

Some say that a restaurant should charge its customers about 3.5 times the cost of the ingredients. How much should a restaurant charge if the ingredients cost:

5.1 \$10?

5.2 \$5?

5.3  $d$  dollars?

5.4 If a restaurant charges \$15.75 for something, how much did the ingredients cost?

## Explore

Using the digits 0–9, without repeating, fill in the blanks to create equivalent expressions.

Show or explain how you know they are equivalent.

$$\begin{array}{c} \boxed{\phantom{0}} \cdot \boxed{\phantom{0}}^2 \\ (\boxed{\phantom{0}} + \boxed{\phantom{0}})^2 \end{array}$$

## Reflect

- Put a star next to a question that looked more difficult to solve than it really was.
- Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

14

20

11

18

## Practice

1.1 B.  $10(5)^3$

1.2 1250 cubic inches

2.1 9

2.2 36

2.3 8

2.4 12

3.1 16

3.2 32

3.3 25

3.4  $\frac{1}{9}$

4.1  $2^3$

$3^2$

They have the same value.

4.2  $1^{10}$

$10^1$

They have the same value.

4.3  $3^4$

$9^2$

They have the same value.

4.4  $\left(\frac{1}{2}\right)^3$

$\left(\frac{1}{3}\right)^2$

They have the same value.

5.1 \$35

5.2 \$17.50

5.3  $3.5d$

5.4 \$4.50

## Explore

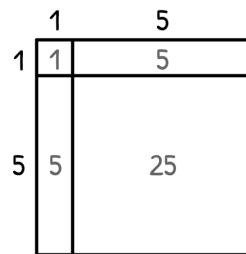
Responses vary.

$$\boxed{9} \cdot \boxed{2}^2$$

$$(\boxed{1} + \boxed{5})^2$$

$$2 \begin{array}{|c|c|c|c|c|c|c|c|c|} \hline & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\ \hline \end{array} ^2$$

$9 \cdot 2^2 = 9 \cdot 4 = 36$



$$(1+5)^2 = 1+5+5+25=36$$

## Warm-Up

Determine the value of each expression.

$$3^2$$

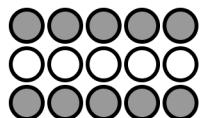
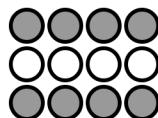
$$2^3$$

$$2^5$$

$$2^1$$

## Practice

1. Here is a pattern of circles. The *independent variable* is  $c$ , the number of circles along the bottom.



List 2–3 *dependent variables* you could count or measure, and assign each variable a letter.

$$c = 2$$

$$c = 4$$

$$c = 5$$

Karima wants to help a community kitchen figure out how much broth they need for their famous chicken soup. Each serving of soup uses 2 cups of broth.

$$s = \text{number of servings of soup}$$

$$b = \text{number of cups of broth}$$

- 2.1 Complete the table.

- 2.2 Which variable is the *independent variable*?

Explain your thinking.

- 2.3 Karima and her sister each wrote an equation to help them understand the relationship.

$$\text{Karima: } s = 2b$$

$$\text{Karima's sister: } b = 2s$$

Who do you agree with? Explain your reasoning.

$s$	$b$
1	
2	
5	
	16



## Unit 6.6, Lesson 13: Practice Problems

Determine the value of each expression when  $x = 4$ .

3.1  $(6 - x)^3$

3.2  $2(6 - x)^3$

3.3  $2^x - 6$

3.4  $\left(\frac{1}{x}\right)^3$

I have a coupon for \$4 off any item at a store. How much would I pay if I buy an item that costs:

4.1 \$10?

4.2 \$22?

4.3  $d$  dollars?

## Explore

Draw a pattern that represents the relationship shown in this table.

See Problem 1 for an example of a pattern.

$n$	$a$
1	5
2	10
3	15

What does  $n$  represent?

What does  $a$  represent?

## Reflect

1. Put a star next to the question you understood best.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

9

8

32

2

## Practice

1. Responses vary.

- $w$ = The number of white circles
- $b$ = The number of shaded circles
- $p$ = The perimeter of the rectangle made by the circles
- $t$ = The total number of circles

- 2.1 See the table on the right.

- 2.2  $s$  is the independent variable.

*Explanations vary.* The number of servings you want to make tells you how many cups of broth to make. Also, it is on the left side of the table.

- 2.3 Karima's sister:  $b = 2s$

*Explanations vary.* If you substitute one of the rows of the table, then  $10 = 2(5)$ .

- 3.1 8

- 3.2 16

- 3.3 10

- 3.4  $\frac{1}{64}$

- 4.1 \$6

- 4.2 \$18

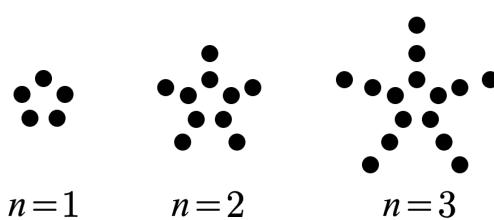
- 4.3  $d - 4$

## Explore

*Patterns vary.*

In this pattern,  $n$  represents the number of dots per arm and  $a$  represents the total number of dots.

$s$	$b$
1	2
2	4
5	10
8	16



**Warm-Up**

Determine the value of each expression.

$$3^3$$

$$2(3)^3$$

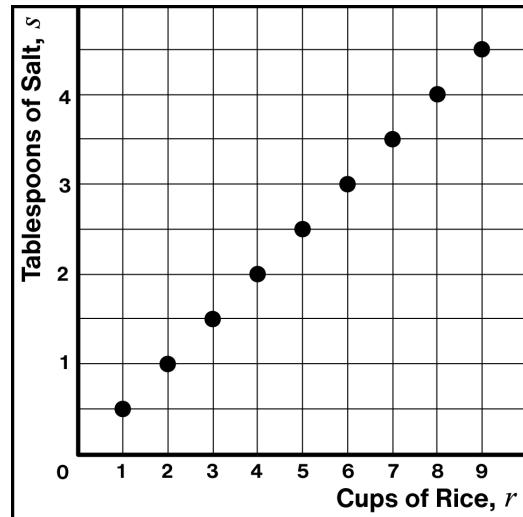
$$3^3 + 4$$

$$2 \cdot 3^3 + 4$$

**Practice**This graph shows the number of tablespoons of salt,  $s$ , needed to make  $r$  cups of rice.

- 1.1 Complete the table to reflect some of the values on the graph.

Cups of Rice, $r$	Tablespoons of Salt, $s$
1	$\frac{1}{2}$
4	
	3



- 1.2 What does the point (8, 4) mean in this situation?
- 

- 1.3 Which equation represents the relationship between the number of tablespoons of salt,  $s$ , and the number of cups of rice,  $r$ ?

A.  $r = \frac{1}{2}s$

B.  $s = 2r$

C.  $s = \frac{1}{2}r$

D.  $s = \frac{1}{2} + r$

Explain how you know your equation is correct.

## Unit 6.6, Lesson 14: Practice Problems

The graph represents the amount of time in hours that it takes a ship to travel various distances in miles.

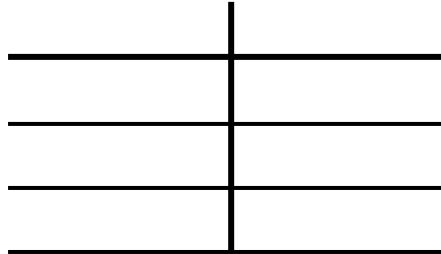
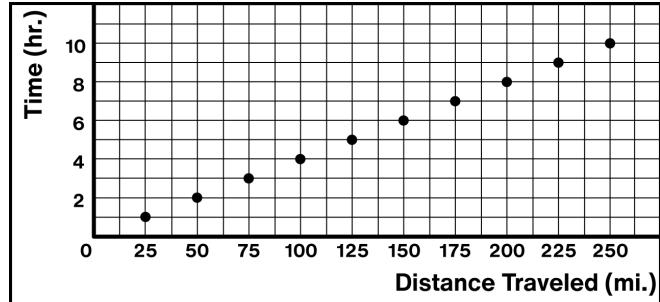
- 2.1 Circle one point on the graph and explain what it means in this situation.

- 2.2 What is the **independent** variable?

- 2.3 What is the **dependent** variable?

- 2.4 Complete the table using any three points on the graph.

Use the top row to label each column with a variable.

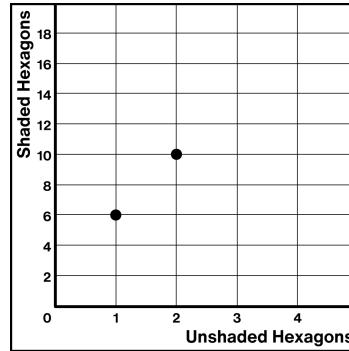
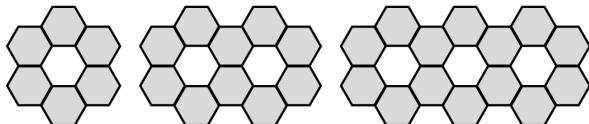


3. Select **all** of the expressions that are equivalent to  $10x - 30$ .

- $10(x - 3)$       $10(x - 30)$       $5(2x - 6)$       $30 - 10x$       $x(10 - 30)$

## Explore

Here is a pattern. Draw the next stage in the pattern and plot the missing points that represent the pattern.



## Reflect

- Circle one question you want to discuss with a classmate tomorrow.
- Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

27

54

31

58

## Practice

1.1

Cups of Rice, $r$	Tablespoons of Salt, $s$
1	$\frac{1}{2}$
4	2
6	3
8	4

*Responses in this row vary.*

- 1.2 The point  $(8, 4)$  means that to make 8 cups of rice, you will need 4 tablespoons of salt.

1.3  $C. s = \frac{1}{2}r$

*Explanations vary.* There is  $\frac{1}{2}$  tablespoon of salt for every cup of rice, so you multiply the number of cups of rice,  $r$ , by  $\frac{1}{2}$  to get the number of tablespoons of salt,  $s$ .

- 2.1 *Responses vary.*  $(150, 6)$  means that for the ship to travel 150 miles, it will take 6 hours.

- 2.2 The independent variable is distance traveled.

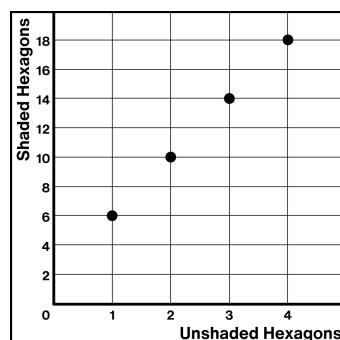
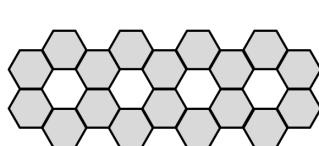
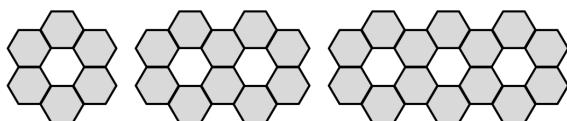
- 2.3 The dependent variable is the time.

3.  $\sqrt{10}(x - 3)$        $\sqrt{5}(2x - 6)$

- 2.4 *Values in the table and variables will depend on student choice.*

Distance Traveled, $d$	Time, $t$
25	1
50	2
75	3

## Explore



**Warm-Up**

Determine the value of each.

$$25\% \text{ of } 40$$

$$30\% \text{ of } 60$$

$$45\% \text{ of } 90$$

**Practice**

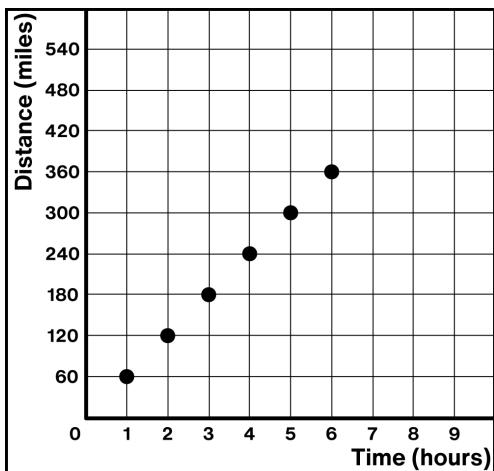
Melissa is selling cookies for \$1.50 each.

- 1.1 Write an equation that represents how much money Melissa earns,  $m$ , for selling a number of cookies,  $c$ .

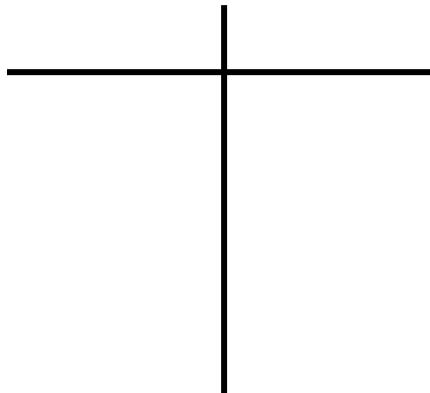
- 1.2 Complete the table that represents this situation.

$c$	$m$
2	
4	
	\$16.50
	\$22.50

This graph represents the distance a car drove,  $d$ , over time,  $t$ .



- 2.1 Create a table to represent the points on the graph.



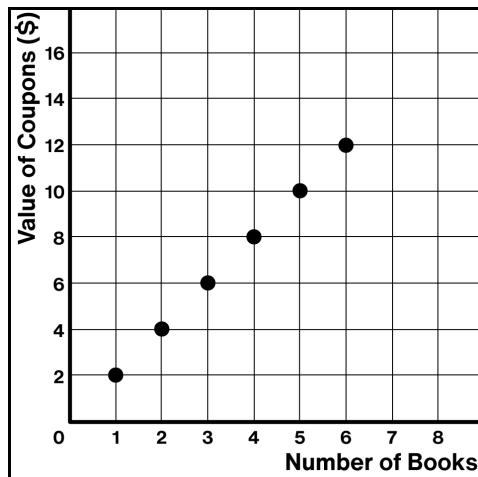
- 2.2 Nathan determined that the equation  $d = 60t$  represents this situation. Explain how the parts of his equation relate to the situation.

**Unit 6.6, Lesson 15: Practice Problems**

3. A bookstore gives out coupons for \$2 off each book. This graph represents the situation.

Circle one point on the graph.

Explain what that point means in this situation.



Bao sells lemonade for \$0.35 per cup.

- 4.1 If Bao earned \$9.80, how many cups of lemonade did he sell?

- 4.2 Bao bought 50 paper cups for \$0.05 each, how much did he spend to buy the paper cups?

## Explore

In your everyday life, what relationship representation do you see most often: equations, tables, or graphs? Explain your thinking and provide examples.

## Reflect

1. Circle a question you want to talk to a classmate about.
2. Use the space below to ask one question you have or to share something you are proud of.

**Warm-Up**

10                    18                    40.5

**Practice**

1.1  $m = 1.50c$

1.2	$c$	$m$
2	\$3.00	
4	\$6.00	
11		\$16.50
15		\$22.50

2.1	$t$	$d$
1	60	
2	120	
3	180	
4	240	
5	300	
6	360	

2.2 *Explanations vary.*  $d$  represents the distance that the car traveled and  $t$  represents how many hours the car traveled. 60 represents the speed of the car.3. *Responses vary depending on student selection.* The meaning of point (3, 6) is that if you buy 3 books, the coupons will come to a total of \$6.

4.1 28 cups of lemonade

4.2 \$2.50

**Explore***Responses vary.*



## Warm-Up

Select **all** the equations that have a solution of  $n = 3$ .

- $10n = 103$       $5n = 15$       $\frac{1}{4} + n = \frac{13}{4}$       $n \div 2 = 6$       $\frac{1}{3}n = 3$

## Practice

1. Match each equation to the table that it represents.

A. $p = n + 2$	B. $p = \frac{1}{2}n$	C. $p = 2n$
----------------	-----------------------	-------------

$n$	$p$
10	20
20	40
100	200

$n$	$p$
10	12
20	22
100	102

$n$	$p$
10	5
20	10
100	50

Riya's biking app says that she rides at a speed of 5 miles per hour.

- 2.1 At this speed, how far does Riya ride in 1 hour?

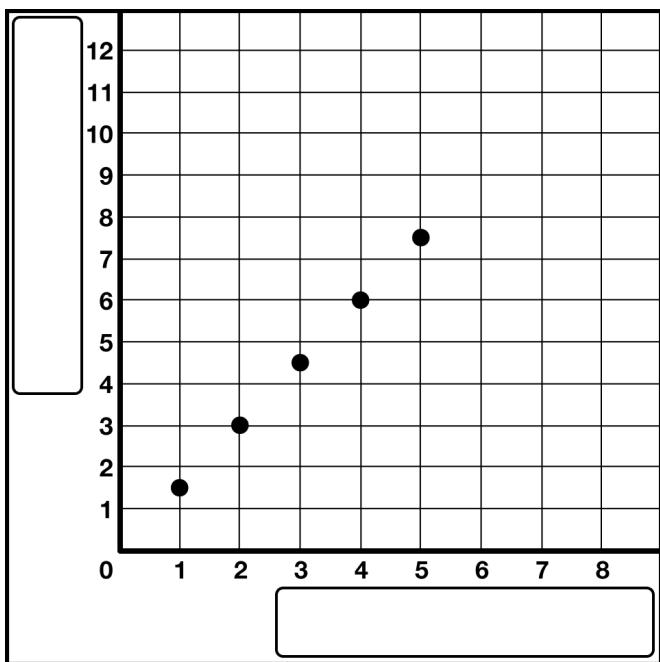
- 2.2 At this speed, how far does Riya ride in 3 hours?

- 2.3 Write an equation for the relationship between Riya's distance biked,  $d$ , and time,  $t$ .

- 2.4 Riya's speed last week could be represented by the equation  $d = 3t$ . What can you say about last week's speed compared to this week's speed? Explain your thinking.

## Unit 6.6, Lesson 16: Practice Problems

- 3.1 Write a situation that could be represented by the graph.  
Label the axes on the graph to match your situation.



- 3.2 Fill in the table using the points on the graph. Label each column with variables to match the graph.

1	1.5
2	
	4.5
4	

4. At a market, 3.1 pounds of peaches cost \$7.75. How much did the peaches cost per pound?  
Explain or show your reasoning.

## Explore

Using the digits 1–9, without repeating, fill in the blanks to make each inequality true.

$$\square \ 2 < 2 \ \square$$
$$\square \ 3 < 3 \ \square$$
$$\square \ 2 > 2 \ \square$$
$$\square \ 3 > 3 \ \square$$

## Reflect

- Star the problem you spent the most time on.
- Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$$\checkmark 5n = 15$$

$$\checkmark \frac{1}{4} + n = \frac{13}{4}$$

## Practice

1.

$n$	$p$
10	20
20	40
100	200

C.

$n$	$p$
10	12
20	22
100	102

A.

$n$	$p$
10	5
20	10
100	50

B.

2.1 5 miles

2.2 15 miles

2.3  $d = 5t$ 

2.4 Riya's speed last week was slower than her speed this week, because 3 and 5 represent her speed and 3 is less than 5.

3.1 *Situations vary.* Situations should present a multiplicative relationship of 1.5. Students should label the  $x$ -axis with their independent variable and the  $y$ -axis with their dependent variable.3.2 *Variables vary.* Students should identify the data and symbol in the first column as their independent variable and the data and symbol in the second column as their dependent variable.

4. \$2.50 per pound

I divided \$7.75 by 3.1 pounds to get \$2.50 per pound.

## Explore

Responses vary.

$$\boxed{1}^2 < 2^{\boxed{2}}$$

$$\boxed{9}^2 > 2^{\boxed{6}}$$

$$\boxed{3}^3 < 3^{\boxed{4}}$$

$$\boxed{8}^3 > 3^{\boxed{5}}$$

$x$	$y$
1	1.5
2	3
3	4.5
4	6
5	7.5



## Warm-Up

Determine the value of  $x$  that makes each equation true.

$$2 \cdot x = 7$$

$$60 \cdot x = 6$$

$$12 \cdot x = 48$$

$$x \cdot \frac{1}{20} = 1$$

$$x =$$

$$x =$$

$$x =$$

$$x =$$

## Practice

Complete each table so that the relationship is proportional.

1.1

$x$	$y$
30	3
120	
	10

1.2

$x$	$y$
1	1.5
3	
	12

1.3

$x$	$y$
15	45
1	
	0

1.4

$x$	$y$
0.2	1
1	
	20

Entrance to a state park costs \$6 per vehicle, plus \$2 per person.

2.1 Complete the table.

2.2 How might you determine the entrance cost for a bus with 50 people?

2.3 Is the relationship between the number of people and the total entrance cost a **proportional relationship**?

Explain how you know.

Number of People in Vehicle	Total Cost (dollars)
2	
3	12
4	
10	

**Unit 7.2, Lesson 2: Practice Problems**

A bakery uses 8 tablespoons of honey for every 10 cups of flour to make bread dough. Some days they bake bigger batches, and some days they bake smaller batches.

3.1 Complete the table.

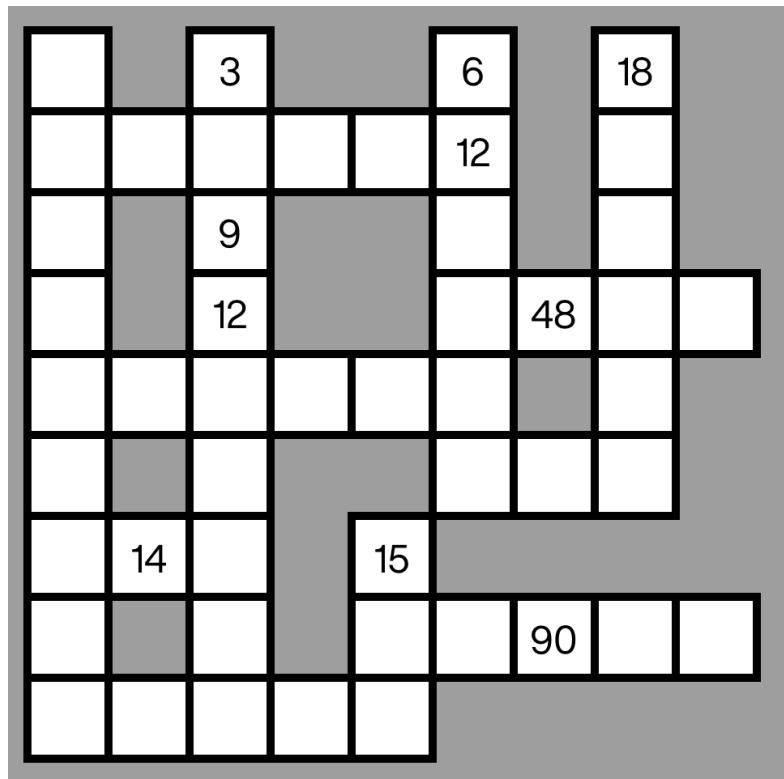
3.2 Explain how you completed the table.

Honey (tbsp.)	Flour (cups)
8	10
20	
13	
	12.5

## Explore

Each row and column contains a sequence of numbers that increase by a constant number (e.g., 4, 8, 12, 16, 20,... ).

Fill in the blank boxes.



## Reflect

1. Put a smiley face next to the question you spent most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$x = 3.5$

$x = \frac{1}{10}$

$x = 4$

$x = 20$

## Practice

1.1

$x$	$y$
30	3
120	12
100	10

1.2

$x$	$y$
1	1.5
3	4.5
8	12

1.3

$x$	$y$
15	45
1	3
0	0

1.4

$x$	$y$
0.2	1
1	5
4	20

2.1 See table.

2.2 Responses vary. For 50 people, multiply \$2 by the number of people, 50, and then add \$6. The entrance cost is \$106.

2.3 No. This relationship is not proportional.

Explanations vary. Considering the ratio of people in the vehicle to total entrance cost, these are not equivalent ratios.

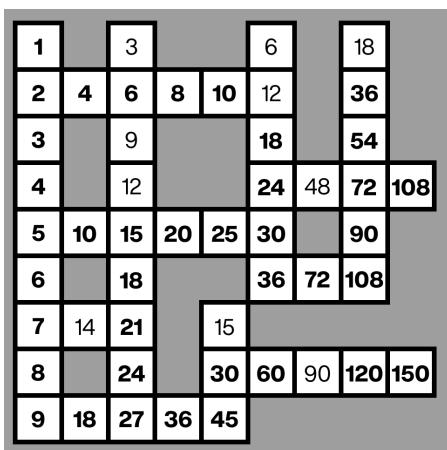
Number of People in Vehicle	Total Cost (dollars)
2	10
3	12
4	14
10	26

3.1 See table.

3.2 Explanations vary. I completed the table by multiplying the tablespoons of honey by 1.25 or dividing the cups of flour by 1.25.

Honey (tbsp.)	Flour (cups)
8	10
20	25
13	16.25
10	12.5

## Explore



## Warm-Up

Circle **all** of the ratios that are equivalent to  $4 : 7$ .

$8 : 15$

$16 : 28$

$7 : 4$

$20 : 35$

## Practice

When Deven makes chocolate milk, he mixes 2 cups of milk with 3 tablespoons of chocolate syrup. Here is a table that shows how to make batches of different sizes.

- 1.1 Are cups of milk and tablespoons of chocolate syrup in a proportional relationship?  
Explain how you know.

Milk (cups)	Chocolate Syrup (tbsp.)
2	3
8	12
1	$\frac{3}{2}$
10	15

- 1.2 What is the scale factor from the first row to the second row in the table?

- 1.3 What is a constant of proportionality for this relationship?

Where can you see this constant of proportionality in the table?

When you mix two colors of paint in equivalent ratios, the resulting color is always the same.

- 2.1 Complete the table so that each row makes the same shade of purple. In the last row, make up a new pair of numbers.

Explain how you know they will make the same shade of purple.

- 2.2 What is the constant of proportionality for this relationship?

What does it represent?

Blue (cups)	Red (cups)
2	6
1	



## Unit 7.2, Lesson 3: Practice Problems

### Explore

Complete the table below such that  $a$  and  $b$  represent a proportional relationship.

$a$	$b$
0	
1	
	10
$\frac{1}{2}$	
2	

What is the constant of proportionality in this table?

Here is the same table from above. Use a different constant of proportionality to complete this table.

$a$	$b$
0	
1	
	10
$\frac{1}{2}$	
2	

What is the constant of proportionality in this table?

### Reflect

1. Circle the question that you are least confident about on this practice worksheet.
2. Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

8 : 15

16 : 28

7 : 4

20 : 35

## Practice

1.1 Yes.

*Explanations vary.* I know that this is a proportional relationship because there are 1.5 tablespoons of chocolate syrup for every cup of milk.

1.2 4

1.3 1.5

*Responses vary.* In the table, I can multiply each amount of milk by the constant of proportionality to get the number of tablespoons of chocolate syrup.

2.1 See table.

*Responses vary.* The numbers in the last row will make the same shade of purple because they are in an equivalent ratio to the original.

2.2 3

*Responses vary.* The constant of proportionality represents the number of cups of red paint for each cup of blue paint.

Blue (cups)	Red (cups)
2	6
1	3
* 5	* 15

\* *Responses vary.*

## Explore

*Responses vary.*



## Warm-Up

Find each quotient.

$$640 \div 100$$

$$640 \div 50$$

$$640 \div 25$$

$$64 \div 25$$

## Practice

Each table represents a proportional relationship. For each table, find the constant of proportionality and write an equation that represents the relationship.

1.1

$s$	$P$
2	8
3	12
5	20
10	40

1.2

$d$	$C$
2	6.28
3	9.42
5	15.7
10	31.4

Constant of proportionality:

Equation:  $P =$

Constant of proportionality:

Equation:  $C =$

A plane flew at a constant speed between Denver and Chicago. It took the plane 1.5 hours to fly 915 miles.

2.1 Complete the table.

2.2 How far does the plane fly in one hour?

2.3 How far would the plane fly in  $t$  hours at this speed?

2.4 If  $d$  represents the distance that the plane flies at this speed for  $t$  hours, write an equation that relates  $d$  and  $t$ .

2.5 How far would the plane fly in 10 hours at this speed?  
Explain or show your reasoning.

Time (hours)	Distance (miles)
1	
1.5	915
2	
2.5	
$t$	

**Unit 7.2, Lesson 4: Practice Problems**

Nathan is planning to ride his bike for 24 minutes.

- 3.1 If he rides at a rate of 3 miles per hour, how far will he travel?
- 3.2 If he rides at a rate of 5 miles per hour, how far will he travel?
- 3.3 Write an equation that Nathan can use to find  $d$ , the distance he will travel in 24 minutes, if his rate in miles per hour is represented by  $r$ .

## Explore

Here are eight columns. Pair up the columns such that each pair creates a table that represents a proportional relationship. Fill in any blanks.

$a$
0
1
2
4

$b$
9
27
45
90

$c$
4
8
12
16

$d$
1
2
6
8

$e$
1
2
4
5

$f$
0
1
3
10

$g$
7
14
21
28

$h$

Use the table below to show your solution and the constant of proportionality for each pair.

Pair	Constant of Proportionality

## Reflect

- Circle the question you are most proud of completing.
- Use the space below to ask one question you have or to share something you are proud of.

## Warm-Up

$$640 \div 100$$

6.4

$$640 \div 50$$

12.8

$$640 \div 25$$

25.6

$$64 \div 25$$

2.56

## Practice

1.1 Constant of proportionality: 4

Equation:  $P = 4s$

1.2 Constant of proportionality: 3.14

Equation:  $C = 3.14d$

2.1 See table.

2.2 610 miles

2.3  $610t$  miles

2.4  $d = 610t$

2.5 6100 miles

Explanations vary.

Time (hours)	Distance (miles)
1	610
1.5	915
2	1220
2.5	1525
$t$	$610t$

3.1 1.2 miles

3.2 2 miles

3.3  $d = 0.4r$

## Explore

$a$	$g$
0	0
1	7
2	14
3	21
4	28

$e$	$c$
1	4
2	8
3	12
4	16
5	20

$f$	$b$
0	0
1	9
3	27
5	45
10	90

$d$	$h$
1	$2^*$
2	$4^*$
$4^*$	$8^*$
6	$12^*$
8	$16^*$

Pair		Constant of Proportionality
$a$	$g$	7
$e$	$c$	4
$f$	$b$	9
$d$	$h$	$2^*$

\*Responses vary.