

Additional Practice

1.01

- 1.** Which shape has a greater area?

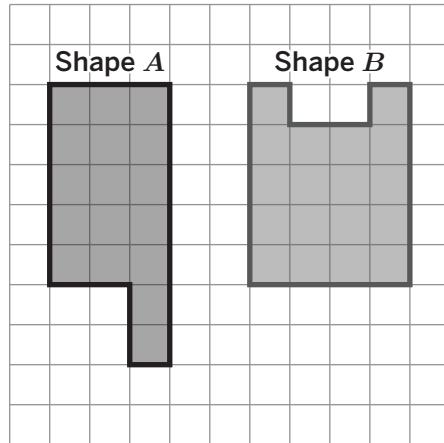
Show or explain your thinking.

A. Shape A

B. Shape B

C. Shape C

Methods vary. Shape A has an area of 17 square units. Shape B has an area of 18 square units.

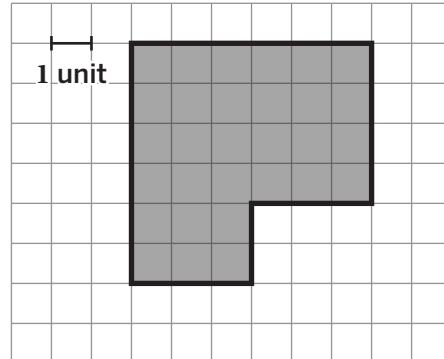


Problems 2–4. Here is a new shape.

- 2.** Determine the area of the shape.

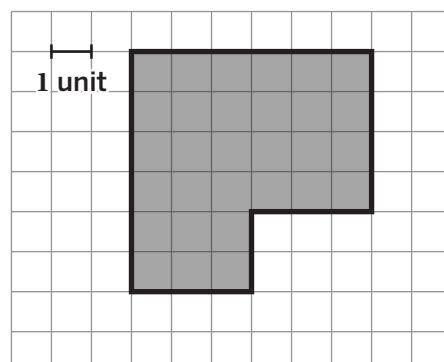
Show or explain your thinking.

Methods vary. The area of this shape is equal to 30 square units.



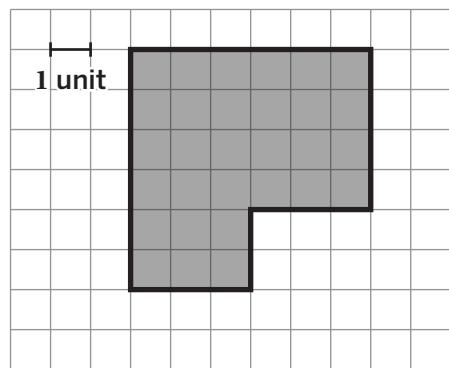
- 3.** Show or describe another way to determine the area of this shape.

See student answers.

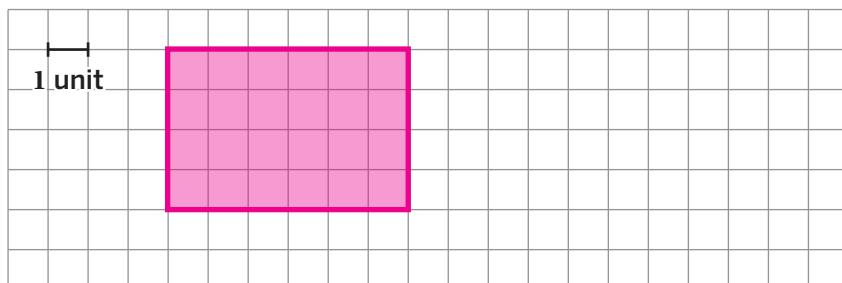
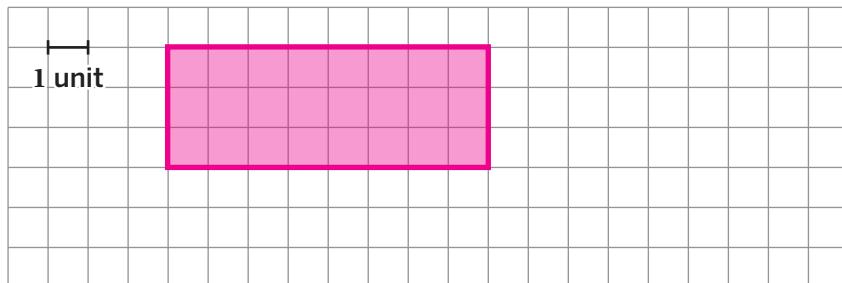
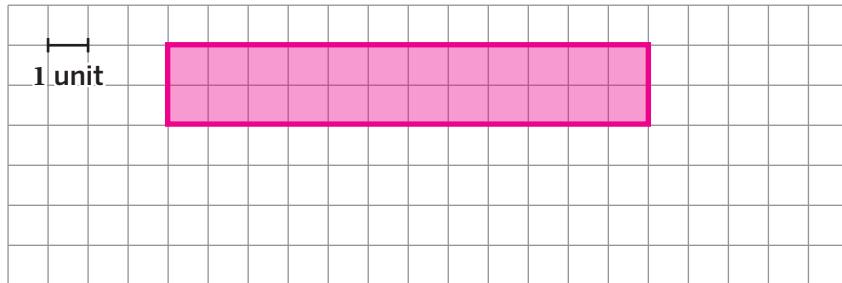


4. Show or describe how you would change this shape so it has an area of 20 square units.

See student answers.



5. Draw *three* different quadrilaterals, each with an area of 24 square units. Each square in this grid has an area of 1 square unit. **Sample responses shown.**



Additional Practice | Answer Key

Unit 1 | Lesson 1

Name: Date: Period:

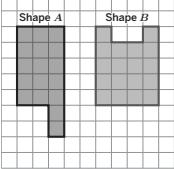
Additional Practice

1.01

1. Which shape has a greater area? Show or explain your thinking.

A. Shape A
B. Shape B
C. Shape C

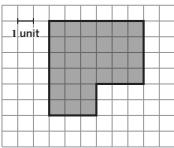
Methods vary. Shape A has an area of 17 square units. Shape B has an area of 18 square units.



Problems 2–4. Here is a new shape.

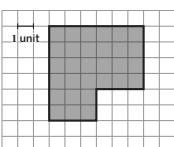
2. Determine the area of the shape. Show or explain your thinking.

Methods vary. The area of this shape is equal to 30 square units.



3. Show or describe another way to determine the area of this shape.

See student answers.



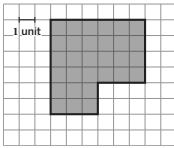
Unit 1 Lesson 1

1

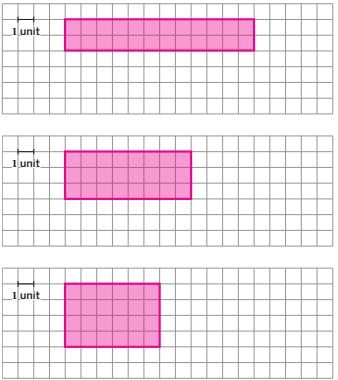
© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: Date: Period:

4. Show or describe how you would change this shape so it has an area of 20 square units.
See student answers.



5. Draw three different quadrilaterals, each with an area of 24 square units. Each square in this grid has an area of 1 square unit. Sample responses shown.



Unit 1 Lesson 1

2

Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.G.A.1
2	1	6.G.A.1
3	2	6.G.A.1
4	2	6.G.A.1
5	2	6.G.A.1

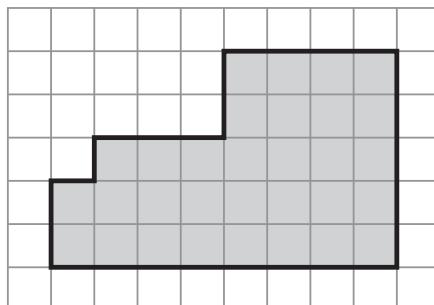
Notes:

Additional Practice

1.02

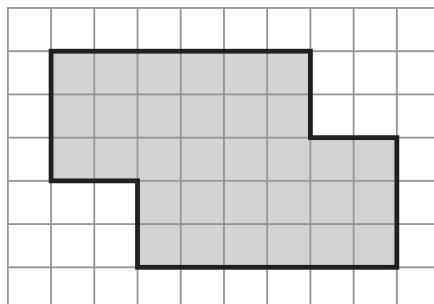
1. Determine the total area of the shaded region in each figure.

a



31 square units

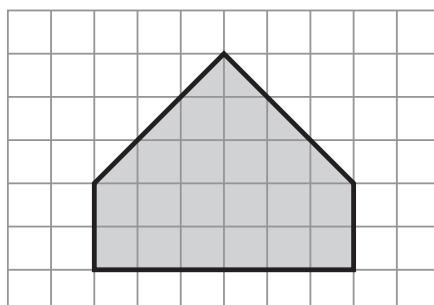
b



32 square units

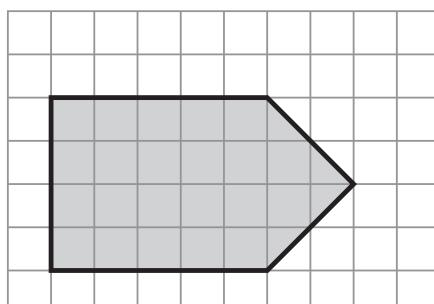
2. Determine the total area of the shaded region in each figure.

a



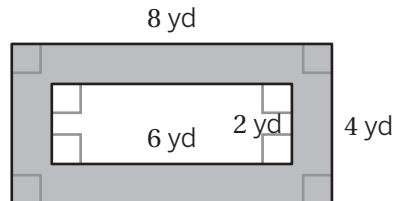
21 square units

b

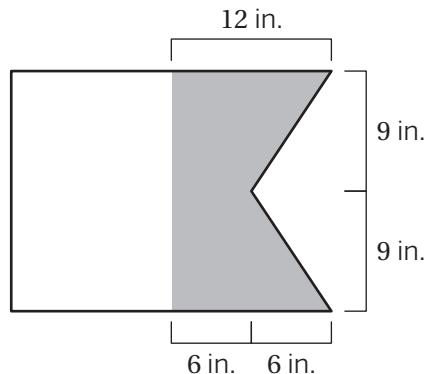


24 square units

- 3.** Determine the total area of the shaded region.
Show your thinking.

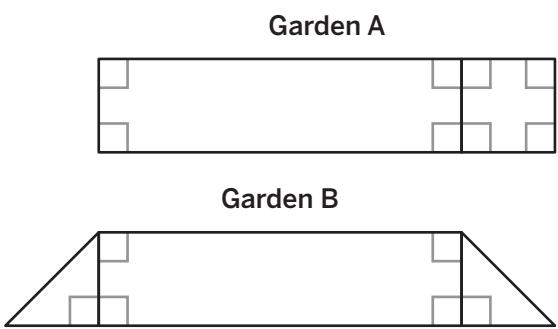
20 yd²

- 4.** A maritime flag representing the letter A is shown.
What is the area of the shaded part of the flag?
Show your thinking.

162 in²

- 5.** Two gardens have very different shapes.
Clare said that both gardens have the same area. Do you agree with Clare?
Explain your thinking.

I agree; Sample response: The two triangles from Garden B form the same-sized square as Garden A. So, the area of the two gardens is the same.



- 6.** Clare calculated the area of this figure.
Her work is shown. Is Clare correct? Explain your thinking.

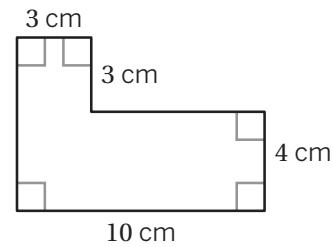
Clare's work:

$$(10 \times 4) - (3 \times 3)$$

$$= 40 - 9$$

$$= 31 \text{ cm}^2$$

No; Sample response: Clare should have added the areas of each rectangle; $40 + 9 = 49 \text{ cm}^2$.



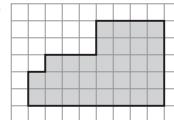
Additional Practice | Answer Key

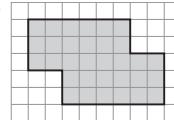
Unit 1 | Lesson 2

Name: _____ Date: _____ Period: _____

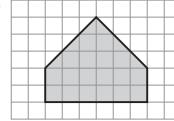
Additional Practice 1.02

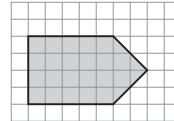
1. Determine the total area of the shaded region in each figure.

a  31 square units

b  32 square units

2. Determine the total area of the shaded region in each figure.

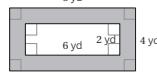
a  21 square units

b  24 square units

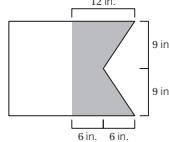
Unit 1 Lesson 2 3 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

3. Determine the total area of the shaded region. Show your thinking.
20 yd^2

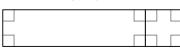


4. A maritime flag representing the letter A is shown. What is the area of the shaded part of the flag? Show your thinking.
162 in^2



5. Two gardens have very different shapes. Clare said that both gardens have the same area. Do you agree with Clare? Explain your thinking.

I agree: Sample response: The two triangles from Garden B form the same-sized square as Garden A. So, the area of the two gardens is the same.

Garden A 

Garden B 

6. Clare calculated the area of this figure. Her work is shown. Is Clare correct? Explain your thinking.

Clare's work:
 $(10 \times 4) - (3 \times 3)$
 $= 40 - 9$
 $= 31 \text{ cm}^2$

No; Sample response: Clare should have added the areas of each rectangle: $40 + 9 = 49 \text{ cm}^2$.

3 cm 3 cm
10 cm

Unit 1 Lesson 2 4 Additional Practice

Practice Problem Analysis

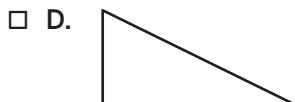
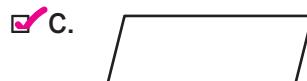
Problem	DOK	Standard(s)
1	1	6.G.A.1
2	1	6.G.A.1
3	2	6.G.A.1
4	2	6.G.A.1
5	2	6.G.A.1
6	3	6.G.A.1

Notes:

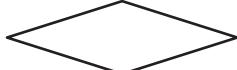
Additional Practice

1.03

- 1.** Select *all* of the polygons that are parallelograms.



- 2.** Determine whether each figure is a parallelogram. Write yes or no. Explain your thinking.

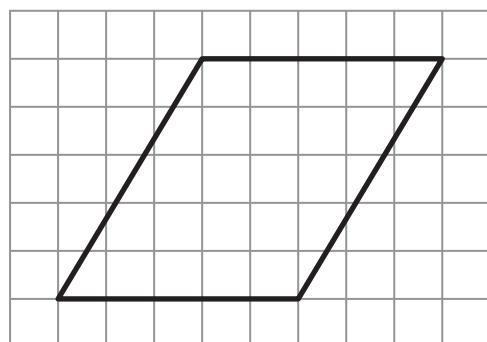
Figure	Parallelogram? (yes/no)	Explanation
a 		No; Sample response: This quadrilateral does not have two pairs of parallel sides, so it is not a parallelogram.
b 		Yes; Sample response: This quadrilateral is a rectangle. A rectangle is a parallelogram because it has two pairs of parallel sides, and each pair of opposite sides has the same length.
c 		Yes; Sample response: This quadrilateral has two pairs of opposite sides that have the same length, and each pair of opposite angles have the same measure.
d 		No; Sample response: This polygon has 5 sides, and parallelograms must have four sides.

- 3.** Determine which statements about parallelograms are true. Select *all* that apply.

- A. A parallelogram can be rearranged to form a rectangle.
- B. A parallelogram has one pair of parallel sides.
- C. A parallelogram can have more than four sides.
- D. Each pair of opposite sides have the same length.
- E. A square is a parallelogram.

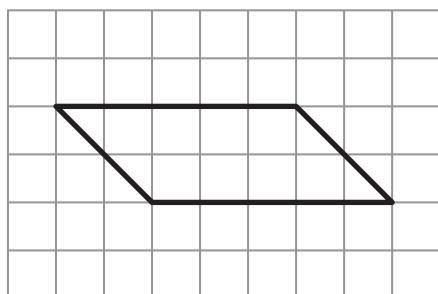
- 4.** Decompose and rearrange this parallelogram to form a rectangle. What is the area of the parallelogram? Show your thinking.

25 square units



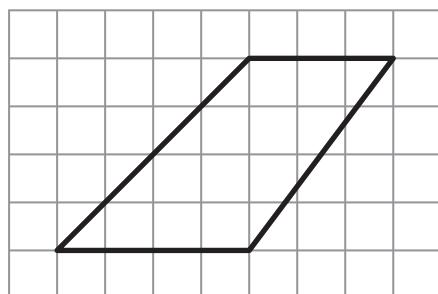
- 5.** Decompose and rearrange each parallelogram to form a rectangle. Determine the area of each parallelogram. Show your thinking.

a



10 square units

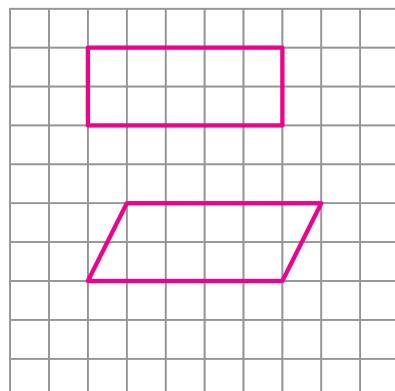
b



16 square units

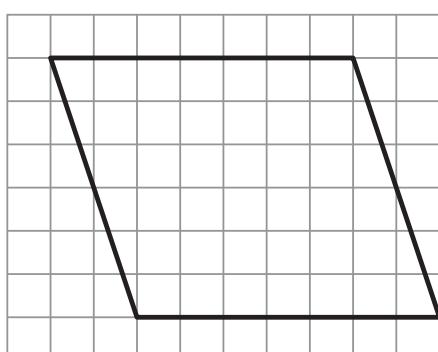
- 6.** Draw a rectangle on the grid that has an area of 10 square units. Then decompose and rearrange the pieces of your rectangle to draw a parallelogram on the grid that has the same area. Show your thinking.

Sample response shown.



- 7.** Han says he can determine the area of this parallelogram by cutting part of the left side and moving it to the right side to form a rectangle, and that the area of this parallelogram is 36 square units. Do you agree with Han? Explain your thinking.

No; Sample response: The area of this parallelogram is 42 square units, not 36 square units, because $7 \times 6 = 42$. Han is correct that he can cut part of the left side and move it to the right side to form a rectangle.



Additional Practice | Answer Key

Unit 1 | Lesson 3

Name: _____ Date: _____ Period: _____

Additional Practice

1.03

1. Select all of the polygons that are parallelograms.

A. 

B. 

C. 

D. 

E. 

F. 

2. Determine whether each figure is a parallelogram. Write yes or no. Explain your thinking.

Figure	Parallelogram? (yes/no)	Explanation
a. 		No; Sample response: This quadrilateral does not have two pairs of parallel sides, so it is not a parallelogram.
b. 		Yes; Sample response: This quadrilateral is a rectangle. A rectangle is a parallelogram because it has two pairs of parallel sides, and each pair of opposite sides has the same length.
c. 		Yes; Sample response: This quadrilateral has two pairs of opposite sides that have the same length, and each pair of opposite angles have the same measure.
d. 		No; Sample response: This polygon has 5 sides, and parallelograms must have four sides.

3. Determine which statements about parallelograms are true. Select all that apply.

A. A parallelogram can be rearranged to form a rectangle.

B. A parallelogram has one pair of parallel sides.

C. A parallelogram can have more than four sides.

D. Each pair of opposite sides have the same length.

E. A square is a parallelogram.

Unit 1 Lesson 3 5 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

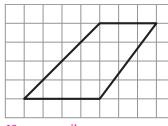
Name: _____ Date: _____ Period: _____

4. Decompose and rearrange this parallelogram to form a rectangle. What is the area of the parallelogram? Show your thinking.
25 square units

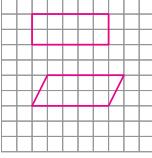


5. Decompose and rearrange each parallelogram to form a rectangle. Determine the area of each parallelogram. Show your thinking.

a. 
10 square units

b. 
16 square units

6. Draw a rectangle on the grid that has an area of 10 square units. Then decompose and rearrange the pieces of your rectangle to draw a parallelogram on the grid that has the same area. Show your thinking.
Sample response shown.



7. Han says he can determine the area of this parallelogram by cutting part of the left side and moving it to the right side to form a rectangle, and that the area of this parallelogram is 36 square units. Do you agree with Han? Explain your thinking.
No; Sample response: The area of this parallelogram is 42 square units, not 36 square units, because $7 \times 6 = 42$. Han is correct that he can cut part of the left side and move it to the right side to form a rectangle.



Unit 1 Lesson 3 6 Additional Practice

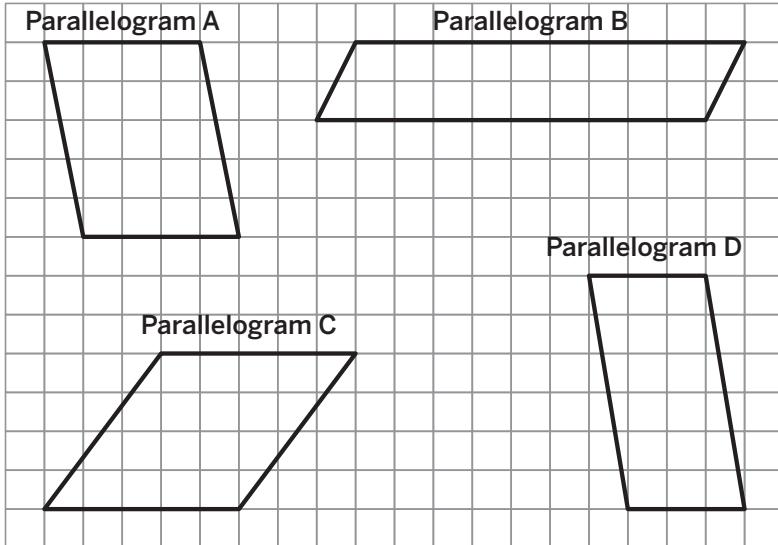
Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	5.G.B
2	2	5.G.B
3	1	5.G.B
4	2	6.G.A.1
5	2	6.G.A.1
6	2	6.G.A.1
7	3	6.G.A.1

Notes:

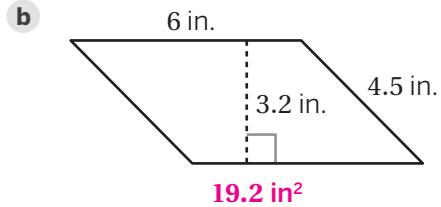
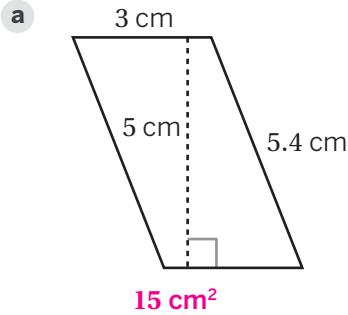
Additional Practice**1.05**

- 1.** Three of these parallelograms have the same area. Which parallelogram has a *different* area than the others?
- A. Parallelogram A
 B. Parallelogram B
 C. Parallelogram C
D. Parallelogram D



- 2.** The base lengths b and corresponding heights h of four different parallelograms are listed. Which base-height pair represents the parallelogram with the greatest area?
- A. $b = 8, h = 3.2$
 B. $b = 5.6, h = 4$
 C. $b = 10, h = 2.6$
D. $b = 7.4, h = 4$

- 3.** Determine the area of each parallelogram. Show your thinking.



- 4.** The base lengths b and corresponding heights h are listed for two different parallelograms. Determine the area of each parallelogram. Show your thinking.

a $b = 12.5 \text{ in.}, h = 9 \text{ in.}$

112.5 in²

b $b = 6 \text{ cm}, h = 5.5 \text{ cm}$

33 cm²

- 5.** The base lengths b and corresponding areas A of four different parallelograms are listed. Determine the height of each parallelogram. Show your thinking.

a) $b = 12, A = 84$

$h = 7$

b) $b = 6, A = 54$

$h = 9$

c) $b = 5.5, A = 33$

$h = 6$

d) $b = 8.2, A = 28.7$

$h = 3.5$

- 6.** The heights h and corresponding areas A of four different parallelograms are listed. Determine the length of the base of each parallelogram. Show your thinking.

a) $h = 4, A = 16$

$b = 4$

b) $h = 7, A = 35$

$h = 5$

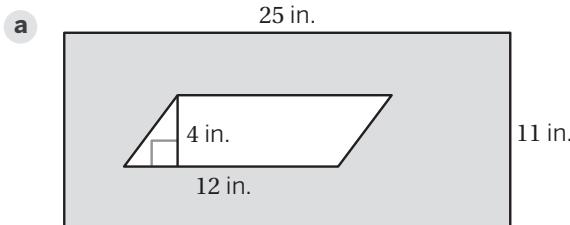
c) $h = 2.5, A = 10$

$b = 4$

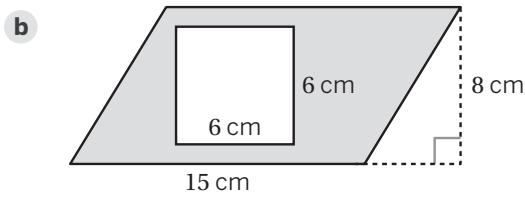
d) $h = 8, A = 28$

$b = 3.5$

- 7.** Determine the area of the shaded region in each figure. Show your thinking.



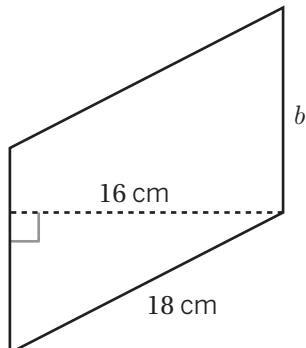
227 in^2



84 cm^2

- 8.** The parallelogram shown has an area of 144 cm^2 . Mai claims the length of the base b is 8 cm. Do you agree with Mai? Explain your thinking.

No; Sample response: Mai did not divide the area of the parallelogram by the height, 16 cm. Because $144 \div 16 = 9$, the length of the base b is 9 cm.



Additional Practice | Answer Key

Unit 1 | Lesson 5

Name: _____ Date: _____ Period: _____

Additional Practice 1.05

1. Three of these parallelograms have the same area. Which parallelogram has a different area than the others?

A. Parallelogram A
B. Parallelogram B
C. Parallelogram C
D. Parallelogram D

2. The base lengths b and corresponding heights h of four different parallelograms are listed. Which base-height pair represents the parallelogram with the greatest area?

A. $b = 8, h = 3.2$
B. $b = 5.6, h = 4$
C. $b = 10, h = 2.6$
D. $b = 7.4, h = 4$

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

a.
b.
15 cm² **19.2 in²**

4. The base lengths b and corresponding heights h are listed for two different parallelograms. Determine the area of each parallelogram. Show your thinking.

a. $b = 12.5 \text{ in.}, h = 9 \text{ in.}$
112.5 in²
b. $b = 6 \text{ cm}, h = 5.5 \text{ cm}$
33 cm²

Unit 1 Lesson 5 9 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. The base lengths b and corresponding areas A of four different parallelograms are listed. Determine the height of each parallelogram. Show your thinking.

a. $b = 12, A = 84$
 $h = 7$
b. $b = 6, A = 54$
 $h = 9$
c. $b = 5.5, A = 33$
 $h = 6$
d. $b = 8.2, A = 28.7$
 $h = 3.5$

6. The heights h and corresponding areas A of four different parallelograms are listed. Determine the length of the base of each parallelogram. Show your thinking.

a. $h = 4, A = 16$
 $b = 4$
b. $h = 7, A = 35$
 $h = 5$
c. $h = 2.5, A = 10$
 $b = 4$
d. $h = 8, A = 28$
 $b = 3.5$

7. Determine the area of the shaded region in each figure. Show your thinking.

a.
227 in²
b.
84 cm²

8. The parallelogram shown has an area of 144 cm^2 . Mai claims the length of the base b is 8 cm. Do you agree with Mai? Explain your thinking.

No. Sample response: Mai did not divide the area of the parallelogram by the height, 16 cm. Because $144 \div 16 = 9$, the length of the base b is 9 cm.

Unit 1 Lesson 5 10 Additional Practice

Practice Problem Analysis

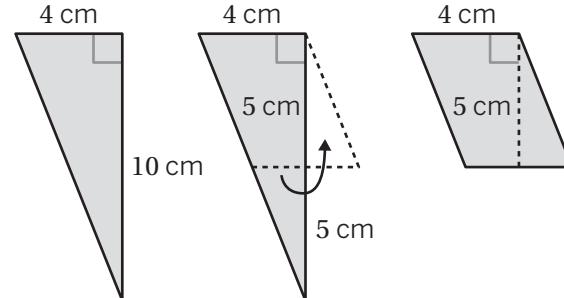
Problem	DOK	Standard(s)
1	2	6.G.A.1
2	2	6.G.A.1
3	2	6.G.A.1
4	2	6.G.A.1
5	2	6.G.A.1
6	2	6.G.A.1
7	2	6.G.A.1
8	3	6.G.A.1

Notes:

Additional Practice**1.06**

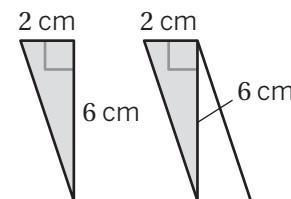
- 1.** To determine the area of this triangle, Jada drew a line through the midpoints of the two longer sides of the triangle, which decomposed the triangle into a trapezoid and a smaller triangle. She then rearranged the two shapes to form a parallelogram. Explain how Jada could use her parallelogram to determine the area of the triangle.

20 cm²; Sample response: The area of the parallelogram is $4 \cdot 5 = 20 \text{ cm}^2$. The triangle is composed of the same pieces, so its area is also 20 cm^2 .

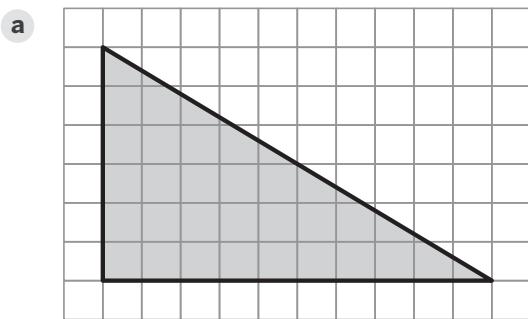


- 2.** To determine the area of this triangle, Lin used two identical copies of a triangle to compose a different parallelogram. Explain how Lin could use her parallelogram to determine the area of the triangle.

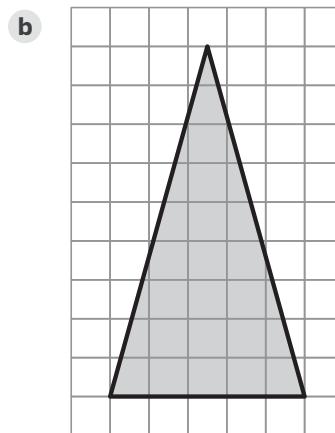
6 cm²; Sample response: The area of the parallelogram is $2 \cdot 6 = 12 \text{ cm}^2$. The triangle's area is exactly half the area of the parallelogram. So, the area of the triangle is $\frac{1}{2} \cdot 12 = 6 \text{ cm}^2$.



- 3.** Determine the area of each triangle. Show your thinking.



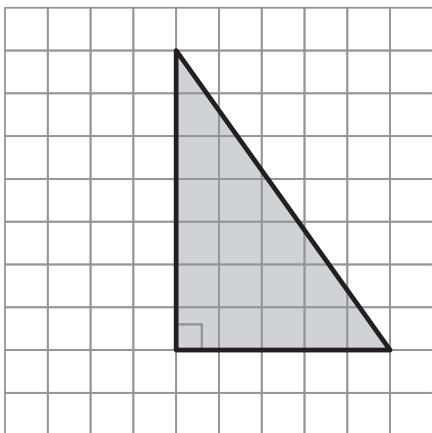
30 square units



22.5 square units

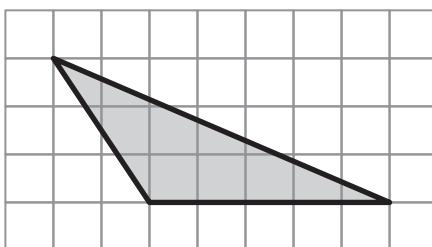
For Problems 4–6, three different triangles are shown on grids. For each triangle, determine the area using one of the strategies from the lesson. Then show or explain your thinking for each triangle.

4.



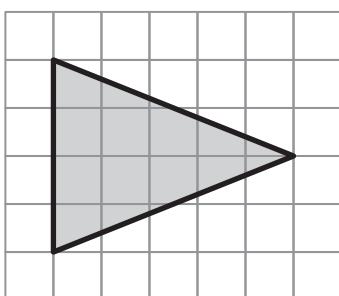
17.5 square units; Sample response: I composed a parallelogram using two identical copies of the triangle. The area of the parallelogram is $5 \cdot 7 = 35$ square units. Each triangle is half the area of the parallelogram, so $35 \div 2 = 17.5$ square units.

5.



7.5 square units; Sample response: I composed a parallelogram using two identical copies of the triangle. $b \cdot h = 5 \cdot 3 = 15$ square units. Each triangle is half the area of the parallelogram. Because half of 15 is 7.5, the area of the triangle is 7.5 square units.

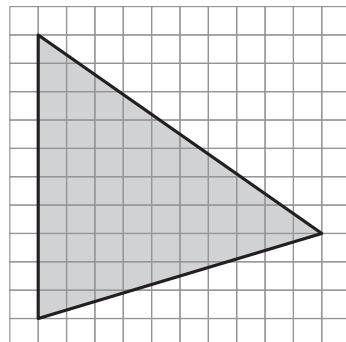
6.



10 square units; Sample response: I decomposed the triangle by taking the part of the triangle from its three rightmost columns and placing it underneath the triangle on the left side to compose a parallelogram. The area of the parallelogram is 10 square units, which has the same area of the triangle. So, the area of the triangle is 10 square units.

7. Shawn says the area of this triangle is 100 square units. Do you agree with Shawn? Explain your thinking.

No; Sample response: Shawn found the area of a parallelogram, but should have divided by 2 to find the area of the triangle. The area is $100 \div 2 = 50$ square units.



Name: _____ Date: _____ Period: _____

Additional Practice

1.06

1. To determine the area of this triangle, Jada drew a line through the midpoints of the two longer sides of the triangle, which decomposed the triangle into a trapezoid and a smaller triangle. She then rearranged the two shapes to form a parallelogram. Explain how Jada could use her parallelogram to determine the area of the triangle.

20 cm^2 ; Sample response: The area of the parallelogram is $4 \times 5 = 20 \text{ cm}^2$. The triangle is composed of the same pieces, so its area is also 20 cm^2 .

2. To determine the area of this triangle, Lin used two identical copies of a triangle to compose a different parallelogram. Explain how Lin could use her parallelogram to determine the area of the triangle.

6 cm^2 ; Sample response: The area of the parallelogram is $2 \times 6 = 12 \text{ cm}^2$. The triangle's area is exactly half the area of the parallelogram. So, the area of the triangle is $\frac{1}{2} \times 12 = 6 \text{ cm}^2$.

3. Determine the area of each triangle. Show your thinking.

a. 30 square units

b. 22.5 square units

Unit 1 Lesson 6 11 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

For Problems 4–6, three different triangles are shown on grids. For each triangle, determine the area using one of the strategies from the lesson. Then show or explain your thinking for each triangle.

4. 17.5 square units; Sample response: I composed a parallelogram using two identical copies of the triangle. The area of the parallelogram is $5 \times 7 = 35$ square units. Each triangle is half the area of the parallelogram, so $35 \div 2 = 17.5$ square units.

5. 7.5 square units; Sample response: I composed a parallelogram using two identical copies of the triangle. $5 + 1 = 5 \times 3 = 15$ square units. Each triangle is half the area of the parallelogram. Because half of 15 is 7.5, the area of the triangle is 7.5 square units.

6. 10 square units; Sample response: I decomposed the triangle by taking the part of the triangle from its three rightmost columns and placing it underneath the triangle on the left side to compose a parallelogram. The area of the parallelogram is 10 square units, which has the same area of the triangle. So, the area of the triangle is 10 square units.

7. Shawn says the area of this triangle is 100 square units. Do you agree with Shawn? Explain your thinking.

No; Sample response: Shawn found the area of a parallelogram, but should have divided by 2 to find the area of the triangle. The area is $100 \div 2 = 50$ square units.

Unit 1 Lesson 6 12 Additional Practice

Practice Problem Analysis

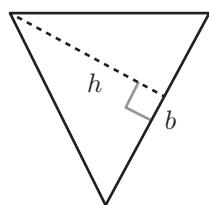
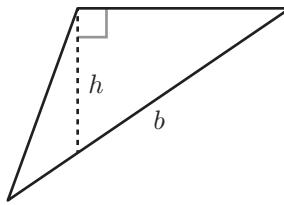
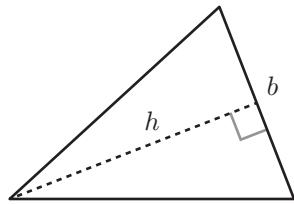
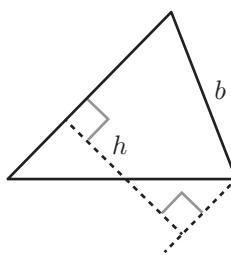
Problem	DOK	Standard(s)
1	2	6.G.A
2	2	6.G.A
3	2	6.G.A
4	2	6.G.A
5	2	6.G.A
6	2	6.G.A
7	2	6.G.A

Notes:

Additional Practice**1.07**

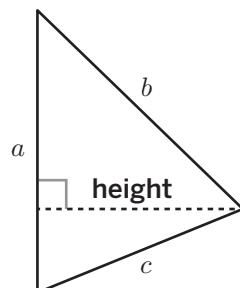
- 1.** Determine which statements are true about the base and height of a triangle. Select *all* that apply.
- A. Any side of a triangle can be a base.
 - B. The height must be drawn inside the triangle.
 - C. A height that corresponds to the base of a triangle is always perpendicular to the base.
 - D. A height that corresponds to the base of a triangle is always drawn at a right angle to the base.
 - E. For a chosen base, there is more than one possible height that can be drawn.

- 2.** Which triangles have a correct height labeled for the given base? Select *all* that apply.

 A. Triangle A B. Triangle B C. Triangle C D. Triangle D

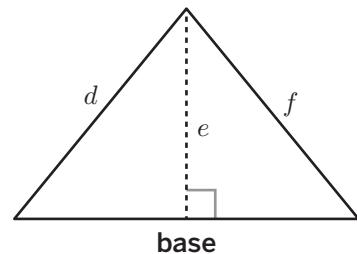
- 3.** Which is a corresponding base for the indicated height of the triangle?

- A. Side a
- B. Side b
- C. Side c



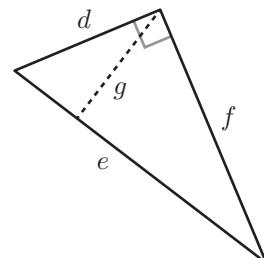
4. Which is a corresponding height that corresponds to the given base of the triangle?

- A. Side d
- B.** Side e
- C. Side f



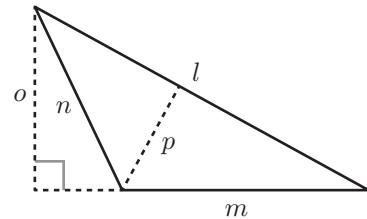
5. Name a corresponding height for each indicated base.

- a Side d **Side f is a corresponding height.**
- b Side e **Side g is a corresponding height.**
- c Side f **Side d is a corresponding height.**



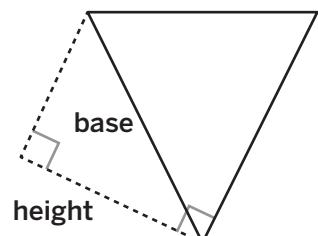
6. Name a corresponding height for each indicated base.

- a Side l **Side p is a corresponding height.**
- b Side m **Side o is a corresponding height.**



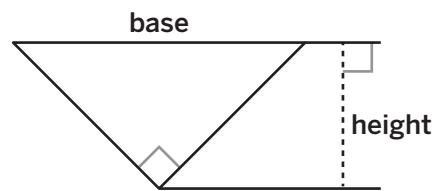
7. Tyler identified and labeled a base of the triangle and a corresponding height, as shown. Did Tyler correctly label the base and corresponding height? Explain your thinking.

No; Sample response: Tyler did not correctly draw a corresponding height to the base that he identified. The height needs to be drawn perpendicular to the identified base.



8. Elena identified and labeled a base of the triangle and a corresponding height, as shown. Did Elena correctly label the base and corresponding height? Explain your thinking.

Yes; Sample response: Elena correctly labeled a base and its corresponding height because the height is drawn perpendicular to the base.



Additional Practice | Answer Key

Unit 1 | Lesson 7

Name: _____ Date: _____ Period: _____

Additional Practice

1.07

1. Determine which statements are true about the base and height of a triangle. Select all that apply.

A. Any side of a triangle can be a base.
 B. The height must be drawn inside the triangle.
 C. A height that corresponds to the base of a triangle is always perpendicular to the base.
 D. A height that corresponds to the base of a triangle is always drawn at a right angle to the base.
 E. For a chosen base, there is more than one possible height that can be drawn.

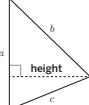
2. Which triangles have a correct height labeled for the given base? Select all that apply.

A. Triangle A B. Triangle B

 C. Triangle C D. Triangle D



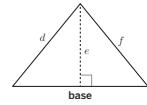
3. Which is a corresponding base for the indicated height of the triangle?

A. Side a
 B. Side b
 C. Side c


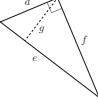
Unit 1 Lesson 7 13 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

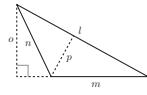
4. Which is a corresponding height that corresponds to the given base of the triangle?

A. Side d
 B. Side e
 C. Side f


5. Name a corresponding height for each indicated base.

a. Side d **Side f is a corresponding height.**
 b. Side e **Side g is a corresponding height.**
 c. Side f **Side d is a corresponding height.**


6. Name a corresponding height for each indicated base.

a. Side l **Side p is a corresponding height.**
 b. Side m **Side o is a corresponding height.**


7. Tyler identified and labeled a base of the triangle and a corresponding height, as shown. Did Tyler correctly label the base and corresponding height? Explain your thinking.
No: Sample response: Tyler did not correctly draw a corresponding height to the base that he identified. The height needs to be drawn perpendicular to the identified base.

8. Elena identified and labeled a base of the triangle and a corresponding height, as shown. Did Elena correctly label the base and corresponding height? Explain your thinking.
Yes: Sample response: Elena correctly labeled a base and its corresponding height because the height is drawn perpendicular to the base.

Unit 1 Lesson 7 14 Additional Practice

Practice Problem Analysis

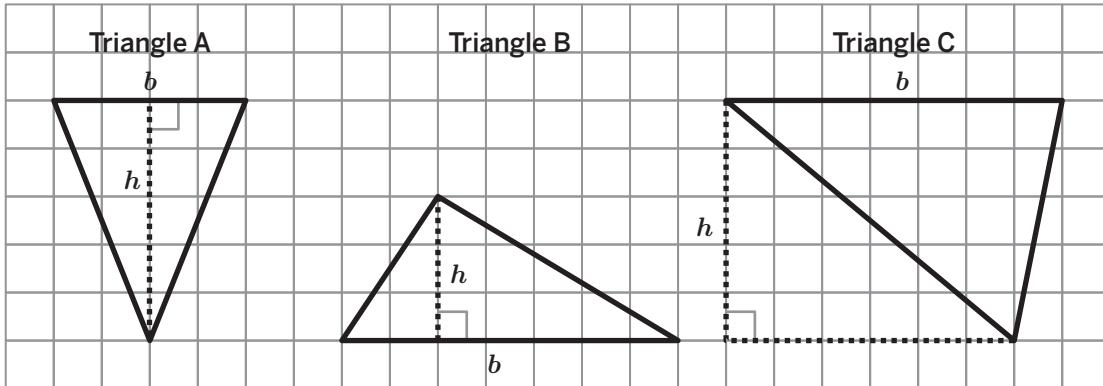
Problem	DOK	Standard(s)
1	1	6.G.A.1
2	2	6.G.A.1
3	2	6.G.A.1
4	2	6.G.A.1
5	2	6.G.A.1
6	2	6.G.A.1
7	3	6.G.A.1
8	3	6.G.A.1

Notes:

Additional Practice

1.08

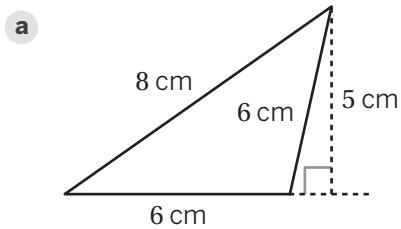
- 1.** For each triangle, a base b and its corresponding height h are labeled.



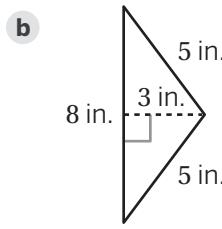
Complete the table for Triangles A, B, and C.

	Base (units)	Height (units)	Area (square units)
Triangle A	4	5	10
Triangle B	7	3	10.5
Triangle C	7	5	17.5
Any triangle	b	h	$\frac{1}{2} \cdot b \cdot h$

- 2.** Determine the area of each triangle. Show your thinking.



$$15 \text{ cm}^2$$



$$12 \text{ in}^2$$

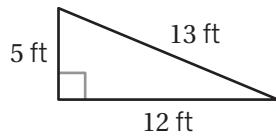
3. Complete the table by determining the area for each triangle, given the base and height.

	Base (units)	Height (units)	Area (square units)
Triangle A	8	6	24
Triangle B	16	5	40
Triangle C	3	3	4.5
Triangle D	10.5	5	26.25

4. Determine the area of the triangle. Show your thinking.

30 ft²; Sample response: The area of a triangle is $\frac{1}{2} \cdot b \cdot h$.

I substituted 12 for the base and 5 for the height, and the product is 60. Half of the product is 30, so the area is 30 ft².



5. A triangle has a base with a length of 24.8 cm and a height of 16 cm. Determine the area.

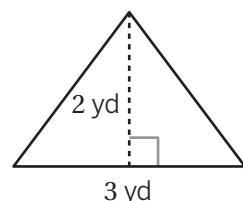
198.4 cm²

6. A triangle has a base with a length of 7 in. and a height of 12 in. Determine its area.

42 in²

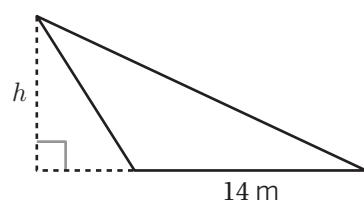
7. A herb garden in Bard's backyard is shaped like a triangle, with the dimensions shown. Determine the area of the herb garden.

3 yd²



8. A triangle has a base that is 14 m long and an area of 70 m². What is the height of this triangle? Explain your thinking.

10 m; Sample response: If the area of the triangle is 70 m², then I can use the area formula and substitute 70 for A and substitute 14 for the base, and solve for h : $70 = \frac{1}{2} \cdot 14 \cdot h$; the height of the triangle is 10 m.



Additional Practice | Answer Key

Unit 1 | Lesson 8

Name: _____ Date: _____ Period: _____

Additional Practice

1.08

1. For each triangle, a base b and its corresponding height h are labeled.

Complete the table for Triangles A, B, and C.

	Base (units)	Height (units)	Area (square units)
Triangle A	4	5	10
Triangle B	7	3	10.5
Triangle C	7	5	17.5
Any triangle	b	h	$\frac{1}{2} \cdot b \cdot h$

2. Determine the area of each triangle. Show your thinking.

a. 15 cm^2

b. 12 in^2

Unit 1 Lesson 8 15 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

3. Complete the table by determining the area for each triangle, given the base and height.

	Base (units)	Height (units)	Area (square units)
Triangle A	8	6	24
Triangle B	16	5	40
Triangle C	3	3	4.5
Triangle D	10.5	5	26.25

4. Determine the area of the triangle. Show your thinking.
 30 ft^2 ; Sample response: The area of a triangle is $\frac{1}{2} \cdot b \cdot h$. I substituted 12 for the base and 5 for the height, and the product is 60. Half of the product is 30, so the area is 30 ft^2 .

5. A triangle has a base with a length of 24.8 cm and a height of 16 cm. Determine the area.
 198.4 cm^2

6. A triangle has a base with a length of 7 in. and a height of 12 in. Determine its area.
 42 in^2

7. A herb garden in Bard's backyard is shaped like a triangle, with the dimensions shown. Determine the area of the herb garden.
 3 yd^2

8. A triangle has a base that is 14 m long and an area of 70 m^2 . What is the height of this triangle? Explain your thinking.
 10 m ; Sample response: If the area of the triangle is 70 m^2 , then I can use the area formula and substitute 70 for A and substitute 14 for the base, and solve for h : $70 = \frac{1}{2} \cdot 14 \cdot h$; the height of the triangle is 10 m.

Unit 1 Lesson 8 16 Additional Practice

Practice Problem Analysis

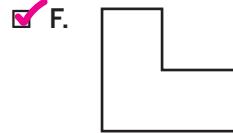
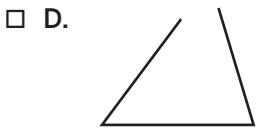
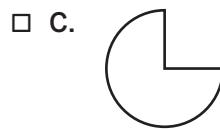
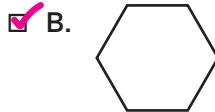
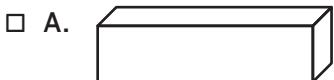
Problem	DOK	Standard(s)
1	2	6.G.A.1
2	2	6.G.A.1
3	2	6.G.A.1
4	2	6.G.A.1
5	2	6.G.A.1
6	2	6.G.A.1
7	2	6.G.A.1
8	3	6.G.A.1

Notes:

Additional Practice

1.09

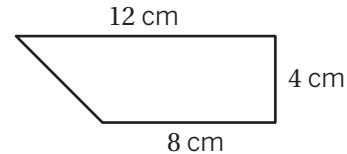
- 1.** Select all the polygons.



- 2.** Decompose this polygon to determine its area.
Explain your thinking.

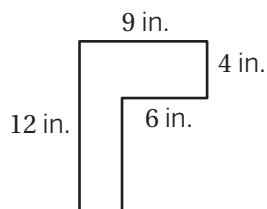
40 cm²; Sample response: I partitioned this trapezoid into a right triangle and a rectangle. The area of the triangle is $\frac{1}{2} \cdot 4 \cdot 4 = 8$, and the area of the rectangle is $8 \cdot 4 = 32$.

Then I combined the areas, $8 + 32 = 40 \text{ cm}^2$.



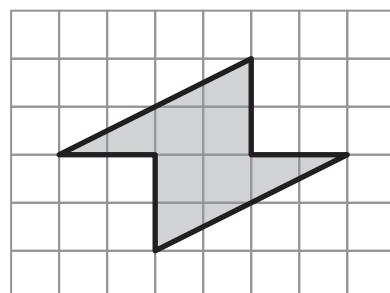
- 3.** Decompose this polygon to determine its area.
Explain your thinking.

60 in²; Sample response: I partitioned the polygon into two rectangles. The first rectangle has a length of 9 and a width of 4, with an area of 36. The second rectangle has a length of 8 and a width of 3, with an area of 24. Then I combined the areas, $36 + 24 = 60 \text{ in}^2$.



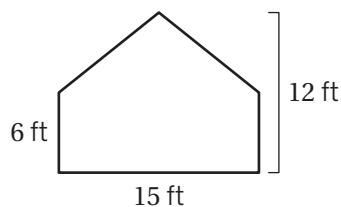
- 4.** Decompose this polygon to determine its area.
Explain your thinking.

8 square units; Sample response: I decomposed this shape into two triangles. Each triangle has a base length of 4 units and a height of 2 units. I used the area formula to find the area of each triangle, then I multiplied by two because there are two triangles. $\frac{1}{2} \cdot 4 \cdot 2 = 4$; $2 \cdot 4 = 8$ square units



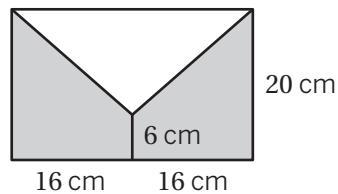
5. Decompose this polygon to determine its area.
Explain your thinking.

135 ft²; Sample response: I decomposed the polygon into a triangle and a rectangle. The base length of the triangle is 15 and its height is 6. I found the area of the triangle using $\frac{1}{2} \cdot 15 \cdot 6 = 45 \text{ ft}^2$. The area of the rectangle is $15 \cdot 6 = 90 \text{ ft}^2$. The total area is 135 ft^2 .



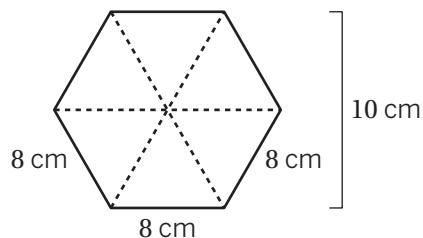
6. Determine the area of the shaded region.
Explain your thinking.

416 cm²; Sample response: First, I found the area of the rectangle: $32 \cdot 20 = 640$. Next, I found the area of the triangle: $\frac{1}{2} \cdot 32 \cdot 14 = 224$. Finally, I subtracted the area of the triangle from the area of the rectangle to find the area of the shaded region: $640 - 224 = 416 \text{ cm}^2$.



7. The hexagon has a side length of 8 cm. Diego determines the area of the hexagon as 20 cm^2 . Is Diego correct? Explain your thinking.

No; Sample response: Diego found the area of one of the triangles. He needs to multiply the area of one of the triangles by 6 to find the total area: $20 \cdot 6 = 120 \text{ cm}^2$.



Additional Practice | Answer Key

Unit 1 | Lesson 9

Name: _____ Date: _____ Period: _____

Additional Practice

1.09

1. Select all the polygons.

A. 

B. 

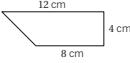
C. 

D. 

E. 

F. 

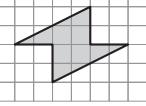
2. Decompose this polygon to determine its area.
Explain your thinking.
 40 cm^2 ; Sample response: I partitioned this trapezoid into a right triangle and a rectangle. The area of the triangle is $\frac{1}{2} \cdot 4 \cdot 4 = 8$, and the area of the rectangle is $8 \cdot 4 = 32$. Then I combined the areas, $8 + 32 = 40 \text{ cm}^2$.



3. Decompose this polygon to determine its area.
Explain your thinking.
 60 in^2 ; Sample response: I partitioned the polygon into two rectangles. The first rectangle has a length of 9 and a width of 4, with an area of 36. The second rectangle has a length of 8 and a width of 3, with an area of 24. Then I combined the areas, $36 + 24 = 60 \text{ in}^2$.



4. Decompose this polygon to determine its area.
Explain your thinking.
 8 square units ; Sample response: I decomposed this shape into two triangles. Each triangle has a base length of 4 units and a height of 2 units. I used the area formula to find the area of each triangle, then I multiplied by two because there are two triangles. $\frac{1}{2} \cdot 4 \cdot 2 = 4; 2 \cdot 4 = 8 \text{ square units}$



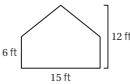
© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 1 Lesson 9

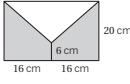
17

Name: _____ Date: _____ Period: _____

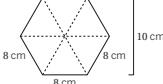
5. Decompose this polygon to determine its area.
Explain your thinking.
 135 ft^2 ; Sample response: I decomposed the polygon into a triangle and a rectangle. The base length of the triangle is 15 and its height is 6. I found the area of the triangle using $\frac{1}{2} \cdot 15 \cdot 6 = 45 \text{ ft}^2$. The area of the rectangle is $15 \cdot 6 = 90 \text{ ft}^2$. The total area is 135 ft^2 .



6. Determine the area of the shaded region.
Explain your thinking.
 416 cm^2 ; Sample response: First, I found the area of the rectangle: $32 \cdot 20 = 640$. Next, I found the area of the triangle: $\frac{1}{2} \cdot 32 \cdot 14 = 224$. Finally, I subtracted the area of the triangle from the area of the rectangle to find the area of the shaded region: $640 - 224 = 416 \text{ cm}^2$.



7. The hexagon has a side length of 8 cm. Diego determines the area of the hexagon as 20 cm^2 . Is Diego correct? Explain your thinking.
No; Sample response: Diego found the area of one of the triangles. He needs to multiply the area of one of the triangles by 6 to find the total area: $20 \cdot 6 = 120 \text{ cm}^2$.



Unit 1 Lesson 9

18

Additional Practice

Unit 1 Lesson 9

18

Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.G.A.1
2	2	6.G.A.1
3	2	6.G.A.1
4	2	6.G.A.1
5	2	6.G.A.1
6	2	6.G.A.1
7	3	6.G.A.1

Unit 1 Lesson 9

18

Additional Practice

Notes:

Additional Practice

1.12

Problems 1–3. Compare the units for surface area and volume.

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

- | | |
|--|--|
| <input checked="" type="checkbox"/> A. Square inches | <input type="checkbox"/> B. Meters |
| <input type="checkbox"/> C. Centimeters | <input type="checkbox"/> D. Cubic feet |
| <input checked="" type="checkbox"/> E. Square meters | <input type="checkbox"/> F. Cubic inches |

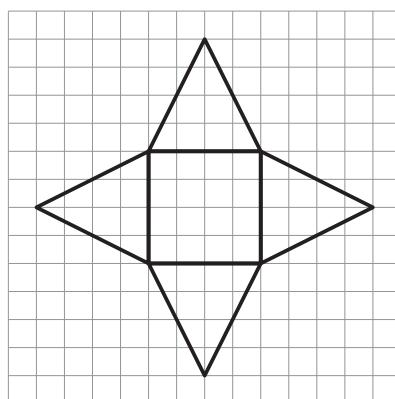
2. Select *all* the units that can be used to describe volume.

- | | |
|---|---|
| <input type="checkbox"/> A. Square inches | <input type="checkbox"/> B. Meters |
| <input type="checkbox"/> C. Centimeters | <input checked="" type="checkbox"/> D. Cubic feet |
| <input type="checkbox"/> E. Square meters | <input checked="" type="checkbox"/> F. Cubic inches |

3. Compare your answers. What is the difference between the units you selected for surface area versus volume?

Explanations vary. Surface area is measured in square units, like square inches or square meters. Whereas, volume is measured in cubic units, like cubic feet or cubic inches.

4. Here is a net.

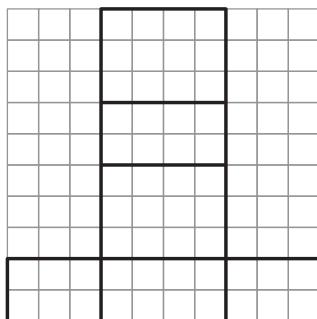


Determine the surface area of this polyhedron (in square units). Show or explain your thinking.

Explanations vary. The square measured 16 square units. Each triangle measures 8 square units. Since there are 4 triangles, all of the triangles measure 32 square inches. So, the surface area of this polyhedron is $32 + 16$ square inches, or 48 square inches.

5. Refer to the net shown. Which expressions would be used to determine the surface area, in square units, of the rectangular prism that would be formed by the net? Select all that apply.

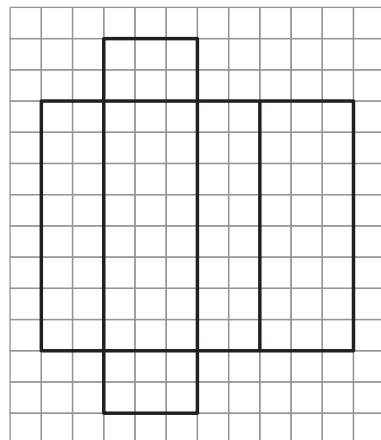
- A. $4 \cdot 3$ B. $2 \cdot 6$
 C. $4 \cdot 5$ D. $4 \cdot 2$
 E. $3 \cdot 5$ F. $3 \cdot 2$



6. Refer to the net shown. Determine the surface area, in square units, of the rectangular prism that would be formed by this net. Show or explain your thinking.

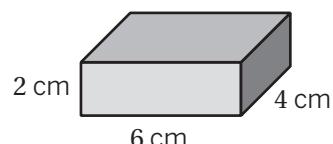
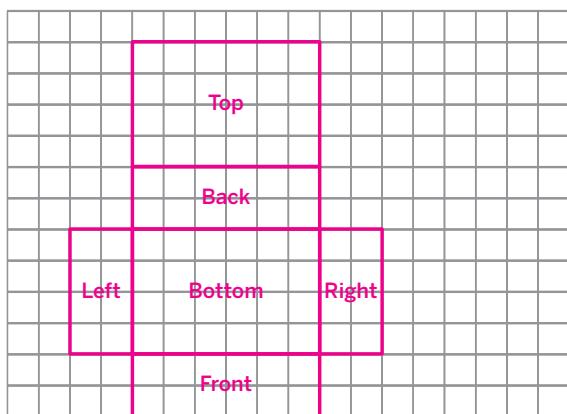
92 square units; Sample response:

$$2 \cdot (3 \cdot 8) + 2 \cdot (2 \cdot 8) + 2 \cdot (2 \cdot 3) = 92 \text{ square units}$$



7. Refer to the rectangular prism shown.

- a Use the grid to draw a net for the prism. The length of one grid square is 1 cm. Label the top, bottom, left, right, front and back faces.



- b Determine the surface area of the prism.

88 square units

Additional Practice | Answer Key

Unit 1 | Lesson 12

Name: _____ Date: _____ Period: _____

Additional Practice

1.12

Problems 1–3. Compare the units for surface area and volume.

1. Select all the units that can be used to describe surface area.

A. Square inches B. Meters
 C. Centimeters D. Cubic feet
 E. Square meters F. Cubic inches

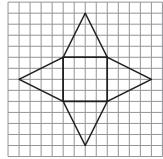
2. Select all the units that can be used to describe volume.

A. Square inches B. Meters
 C. Centimeters D. Cubic feet
 E. Square meters F. Cubic inches

3. Compare your answers. What is the difference between the units you selected for surface area versus volume?

Explanations vary. Surface area is measured in square units, like square inches or square meters. Whereas, volume is measured in cubic units, like cubic feet or cubic inches.

4. Here is a net.



Determine the surface area of this polyhedron (in square units). Show or explain your thinking.

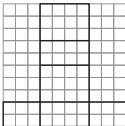
Explanations vary. The square measured 16 square units. Each triangle measures 8 square units. Since there are 4 triangles, all of the triangles measure 32 square inches. So, the surface area of this polyhedron is $32 + 16$ square inches, or 48 square inches.

Unit 1 Lesson 12 23 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

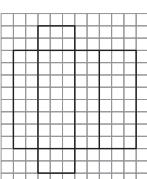
Name: _____ Date: _____ Period: _____

5. Refer to the net shown. Which expressions would be used to determine the surface area, in square units, of the rectangular prism that would be formed by the net? Select all that apply.

A. $4 \cdot 3$ B. $2 \cdot 6$
 C. $4 \cdot 5$ D. $4 \cdot 2$
 E. $3 \cdot 5$ F. $3 \cdot 2$

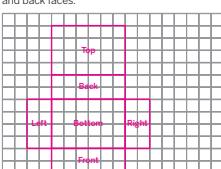


6. Refer to the net shown. Determine the surface area, in square units, of the rectangular prism that would be formed by this net. Show or explain your thinking.
92 square units; Sample response:
 $2 \cdot (3 \cdot 8) + 2 \cdot (2 \cdot 8) + 2 \cdot (2 \cdot 3) = 92$ square units



7. Refer to the rectangular prism shown.

a. Use the grid to draw a net for the prism. The length of one grid square is 1 cm. Label the top, bottom, left, right, front and back faces.



b. Determine the surface area of the prism.
88 square units

Unit 1 Lesson 12 24 Additional Practice

Practice Problem Analysis

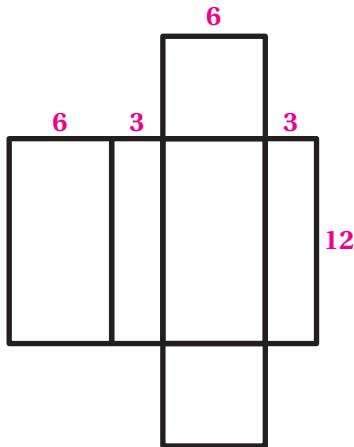
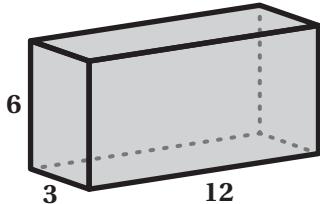
Problem	DOK	Standard(s)
1	1	6.G.A.4
2	1	6.G.A.4
3	1	6.G.A.4
4	2	6.G.A.4
5	2	6.G.A.4
6	2	6.G.A.4
7	2	6.G.A.4

Notes:

Additional Practice

1.13

Problems 1–2. Here is a rectangular prism and its matching net.



1. Use the rectangular prism to label all the lengths in this net.

See responses in image.

2. Use the net to calculate the surface area in square units. Show or explain your thinking.

252 square units. Explanations vary. I can split the net into a large 12-by-18 rectangle and two 6-by-3 rectangles, which gives a total surface area of 252 square units.

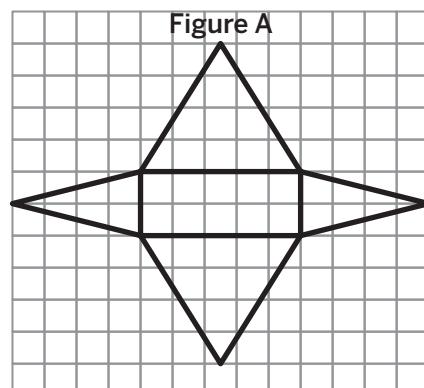
3. The net for Figure A is shown.

- a Name the type of polyhedron that the net would form when assembled.

Rectangular pyramid

- b Determine the surface area of the polyhedron.

38 square units



4. The net for Figure B is shown.

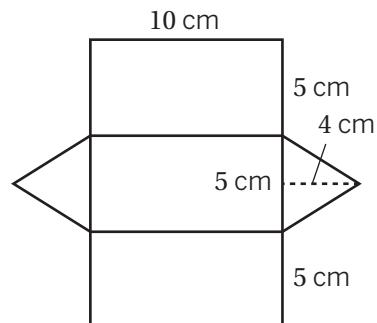
a Name the type of polyhedron that the net would form when assembled.

Triangular prism

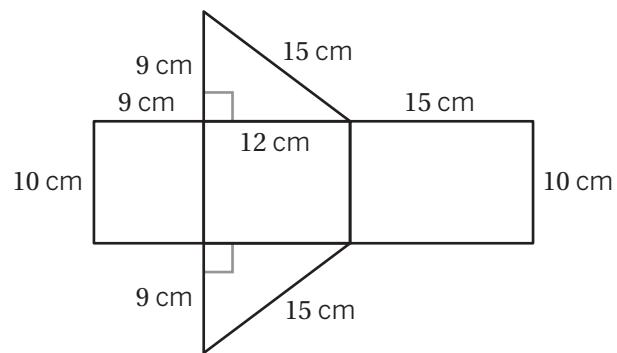
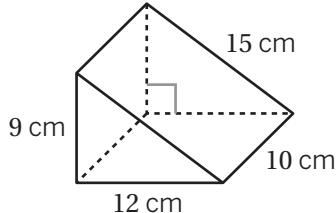
b Determine the surface area of the polyhedron.

170 cm²

Figure B



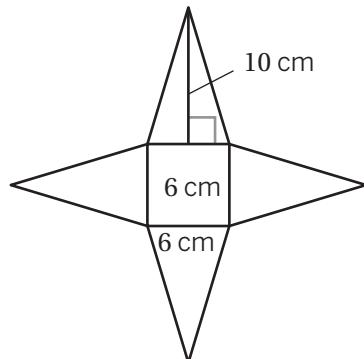
5. The net of this triangular prism is shown. Determine the surface area of this figure.



468 cm²

6. Bard claims the surface area of this square pyramid is 192 cm². Is Bard correct? Explain your thinking.

No; Sample response: Bard mistook this pyramid for a prism and calculated the surface area with two bases. The surface area of this square pyramid is $(6 \cdot 6) + 4 \cdot \left(\frac{1}{2} \cdot 6 \cdot 10\right) = 156 \text{ cm}^2$.



Name: _____ Date: _____ Period: _____

Additional Practice

1.13

Problems 1–2. Here is a rectangular prism and its matching net.

1. Use the rectangular prism to label all the lengths in this net.
See responses in image.

2. Use the net to calculate the surface area in square units. Show or explain your thinking.
252 square units. Explanations vary. I can split the net into a large 12-by-18 rectangle and two 6-by-3 rectangles, which gives a total surface area of 252 square units.

3. The net for Figure A is shown.

- Name the type of polyhedron that the net would form when assembled.
Rectangular pyramid
- Determine the surface area of the polyhedron.
38 square units

Figure A

Unit 1 Lesson 13 **25** © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

4. The net for Figure B is shown.

- Name the type of polyhedron that the net would form when assembled.
Triangular prism
- Determine the surface area of the polyhedron.
170 cm²

Figure B

5. The net of this triangular prism is shown. Determine the surface area of this figure.

468 cm²

6. Bard claims the surface area of this square pyramid is 192 cm². Is Bard correct? Explain your thinking.
No. Sample response: Bard mistook this pyramid for a prism and calculated the surface area with two bases. The surface area of this square pyramid is $(6 \cdot 6) + 4 \cdot (\frac{1}{2} \cdot 6 \cdot 10) = 156 \text{ cm}^2$.

Unit 1 Lesson 13 **26** Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.G.A.4
2	1	6.G.A.4
3	2	6.G.A.4
4	2	6.G.A.4
5	2	6.G.A.4
6	3	6.G.A.4

Notes:

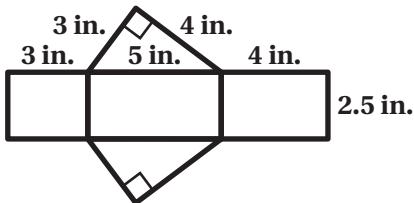
Additional Practice

1.14

- 1.** Can the faces of a square prism be rectangles? Explain your thinking.

Explanations vary. In a square prism, the base and top need to be squares. However, the four faces are rectangles.

Problems 2–3. Here is a net



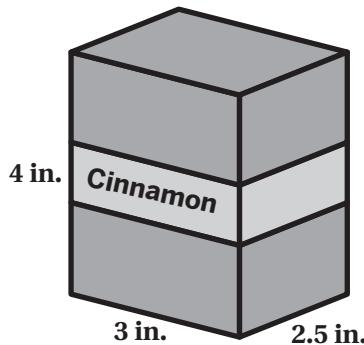
- 2.** What three-dimensional figure can you create from this net?

Triangular prism

- 3.** What is the surface area of this figure?

42 square inches

Problems 4–5. This container of cinnamon measures 3 inches by 2.5 inches by 4 inches.



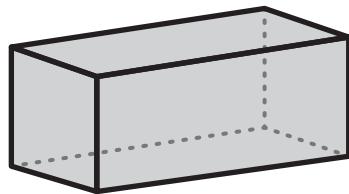
- 4.** Estimate how much plastic the container uses. Explain your thinking.

To find how much plastic the container uses, I can add together the area of each side. The front and back each have an area of 12 square inches. The two sides each have an area of 10 square inches. The top and bottom each have an area of 7.5 square inches. So, the whole container has a surface area of 59 square inches.

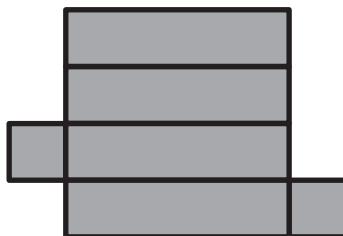
5. Estimate how much cinnamon the container can hold. Explain your thinking.

If I multiply the length, side, and width of the container together, I can determine how much cinnamon the container holds. I estimate the container can hold 30 cubed inches of cinnamon.

Problems 6–7. An artist created a new marble sculpture for a park in town. The sculpture measures 5 meters tall, 10.5 meters long, and 5 meters wide.



6. Draw the net of this sculpture.



7. Determine the surface area of the marble sculpture.

260 square meters

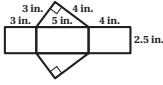
Name: _____ Date: _____ Period: _____

Additional Practice

1.14

1. Can the faces of a square prism be rectangles? Explain your thinking.
Explanations vary. In a square prism, the base and top need to be squares. However, the four faces are rectangles.

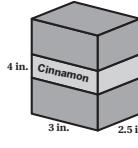
Problems 2–3. Here is a net.



2. What three-dimensional figure can you create from this net?
Triangular prism

3. What is the surface area of this figure?
42 square inches

Problems 4–5. This container of cinnamon measures 3 inches by 2.5 inches by 4 inches.



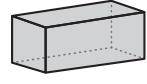
4. Estimate how much plastic the container uses. Explain your thinking.
To find how much plastic the container uses, I can add together the area of each side. The front and back each have an area of 12 square inches. The two sides each have an area of 10 square inches. The top and bottom each have an area of 7.5 square inches. So, the whole container has a surface area of 59 square inches.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Estimate how much cinnamon the container can hold. Explain your thinking.
If I multiply the length, side, and width of the container together, I can determine how much cinnamon the container holds. I estimate the container can hold 30 cubed inches of cinnamon.

Problems 6–7. An artist created a new marble sculpture for a park in town. The sculpture measures 5 meters tall, 10.5 meters long, and 5 meters wide.



6. Draw the net of this sculpture.



7. Determine the surface area of the marble sculpture.
260 square meters

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.G.A.4
2	1	6.G.A.4
3	1	6.G.A.4, 6.G.A.1
4	2	6.G.A.4
5	2	6.G.A.4
6	1	6.G.A.4
7	1	6.G.A.4

Notes:

Additional Practice**2.02**

- 1.** Use a ratio relationship to describe each diagram.

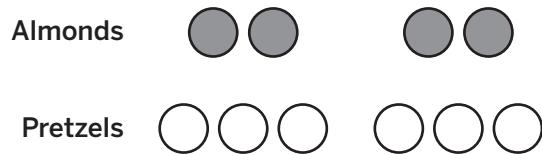


There are 3 triangles for every 2 circles.



The ratio of diamonds to squares is 4 to 1

- 2.** The diagram represents the number of almonds to pretzels in a snack mix. Select all the statements that correctly describe the relationship between almonds and pretzels.



- A. The ratio of almonds to pretzels is 3 to 2.
- B. For every 2 pretzels, there are 3 almonds.
- C. The ratio of almonds to pretzels is 2 : 3.
- D. For every 3 almonds, there are 2 pretzels.
- E. For every 6 pretzels, there are 2 almonds.
- F. The ratio of almonds to pretzels is 4 : 6.

- 3.** The diagram represents a recipe for banana bread, which says to combine 4 bananas with 2 eggs and 1 cup of sugar.



b The ratio of eggs to sugar is

..... 2 : 1

Eggs  

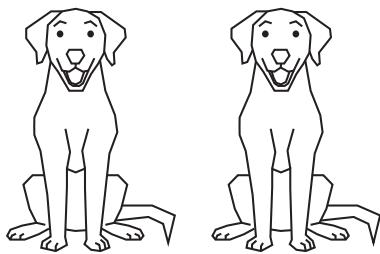


b The ratio of sugar to bananas is 4 to 1

c There are 2 bananas for every 1 egg.

Refer to the picture of the 2 dogs for Problems 4–5.

- 4.** Which diagram represents the ratio relationship among the number of eyes, tails, and feet?



- | | |
|---|--|
| A. Eyes <input type="checkbox"/> <input type="checkbox"/>
Tails <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Feet <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | B. Eyes <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Tails <input type="checkbox"/> <input type="checkbox"/>
Feet <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| C. Eyes <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Tails <input type="checkbox"/> <input type="checkbox"/>
Feet <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | D. Eyes <input type="checkbox"/> <input type="checkbox"/>
Tails <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Feet <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

- 5.** Complete each statement.

- a** The ratio of eyes to tails is 4 : 2.
- b** The ratio of feet to tails is 4 to 1.
- c** There are 2 eyes for every tail.
- d** There are 4 feet for every tail.

- 6.** The diagram represents the number of percussion players and woodwind players in a school band.

Percussion



Woodwind



Clare says the ratio of woodwind players to percussion players is $2 : 6$. Andre says the ratio of woodwind players to percussion players is $1 : 3$. Who is correct? Explain your thinking.

Neither; Sample response: Clare is incorrect because she reversed the ratio of woodwind players to percussion players. The ratio is $12 : 4$ or $6 : 2$. Andre also reversed the ratio; the ratio of woodwind players to percussion players is also $3 : 1$.

- 7.** The diagram represents the number of cups of water and tablespoons of loose tea to make iced tea. Mai says the ratio of water to tea is $4 : 2$. What is another ratio that Mai could write for the ratio of water to tea? Explain your thinking.

Water (cups)

Tea (tbsp)

2 : 1 (or equivalent); Sample response: If the ratio of water to tea is $4 : 2$, that also means for every 2 cups of water, 1 tbsp of tea is used.

Additional Practice | Answer Key

Unit 2 | Lesson 2

Name: _____ Date: _____ Period: _____

Additional Practice 2.02

1. Use a ratio relationship to describe each diagram.

a. Triangles 

Circles 

There are 3 triangles for every 2 circles.

b. Squares 

Diamonds 

The ratio of diamonds to squares is 4 to 1.

2. The diagram represents the number of almonds to pretzels in a snack mix. Select all the statements that correctly describe the relationship between almonds and pretzels.

A. The ratio of almonds to pretzels is 3 to 2.

B. For every 2 pretzels, there are 3 almonds.

C. The ratio of almonds to pretzels is 2 : 3.

D. For every 3 almonds, there are 2 pretzels.

E. For every 6 pretzels, there are 2 almonds.

F. The ratio of almonds to pretzels is 4 : 6.

3. The diagram represents a recipe for banana bread, which says to combine 4 bananas with 2 eggs and 1 cup of sugar.

Bananas 

Eggs 

b. The ratio of eggs to sugar is 2 to 1.

Sugar (cups) 

c. The ratio of sugar to bananas is 4 to 1.

d. There are 2 bananas for every 1 egg.

Unit 2 Lesson 2 31 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Refer to the picture of the 2 dogs for Problems 4–5.

4. Which diagram represents the ratio relationship among the number of eyes, tails, and feet?

A. Eyes  Tails  Feet 

B. Eyes  Tails  Feet 

C. Eyes  Tails  Feet 

D. Eyes  Tails  Feet 

5. Complete each statement.

a. The ratio of eyes to tails is 4 to 2.

b. The ratio of feet to tails is 4 to 1.

c. There are 2 eyes for every tail.

d. There are 4 feet for every tail.

6. The diagram represents the number of percussion players and woodwind players in a school band.

Percussion  Woodwind 

Clare says the ratio of woodwind players to percussion players is 2 : 6. Andre says the ratio of woodwind players to percussion players is 1 : 3. Who is correct? Explain your thinking.

Neither. Sample response: Clare is incorrect because she reversed the ratio of woodwind players to percussion players. The ratio is 12 : 4 or 6 : 2. Andre also reversed the ratio; the ratio of woodwind players to percussion players is also 3 : 1.

7. The diagram represents the number of cups of water and tablespoons of loose tea to make iced tea. Mai says the ratio of water to tea is 4 : 2. What is another ratio that Mai could write for the ratio of water to tea? Explain your thinking.

2 : 1 (or equivalent); Sample response: If the ratio of water to tea is 4 : 2, that also means for every 2 cups of water, 1 tbsp of tea is used.

Unit 2 Lesson 2 32 Additional Practice

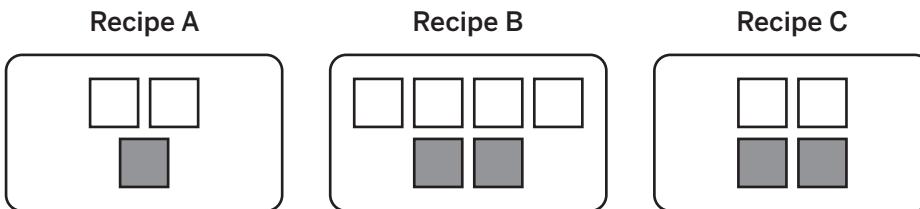
Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.1
2	2	6.RP.A.1
3	2	6.RP.A.1
4	2	6.RP.A.1
5	2	6.RP.A.1
6	3	6.RP.A.1
7	2	6.RP.A.1

Notes:

Additional Practice**2.03**

The diagrams represent three possible recipes for green dye using blue and yellow food coloring. Use these diagrams for Problems 1–4.

**Key:**

 = 1 drop blue food coloring  = 1 drop yellow food coloring

- 1.** Use the diagrams to complete each pair of statements.

- a** Recipe A uses **2** drop(s) of blue food coloring and **1** drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe A is **2 : 1**.

- b** Recipe B uses **4** drop(s) of blue food coloring and **2** drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe B is **4 : 2**.

- c** Recipe C uses **2** drop(s) of blue food coloring and **2** drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe C is **2 : 2**.

- 2.** Which statement is *true* about the ratios of the recipes?

- A. The quantities in Recipe A are double that of Recipe B.
- B. The quantities in Recipe B are double that of Recipe C.
- C. The quantities in Recipe C are double that of Recipe A.
- D.** The quantities in Recipe B are double that of Recipe A.

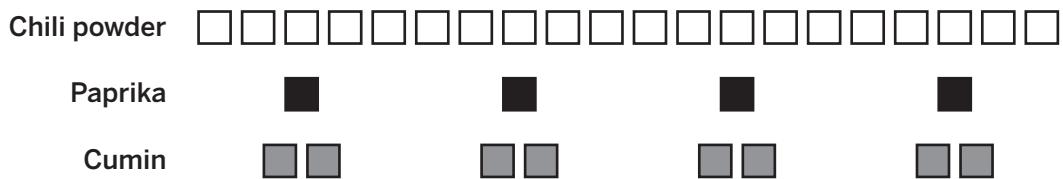
- 3.** To darken green paint, you can add more drops of blue. Which Recipe has the lightest shade of green paint? Explain your thinking.

Recipe C; Sample response: Recipe C will give the lightest shade of green because the ratio of blue to yellow is 1 : 1 while the other two Recipes both have a ratio of 2 drops of blue for every 1 drop of yellow. Recipe C has the least amount of blue.

- 4.** What could be added to Recipe B so that the color will be the same as Recipe C?

2 drops of yellow food coloring

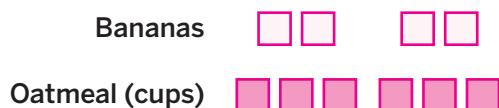
5. A recipe for 1 batch of taco seasoning says, "Mix 5 parts chili powder, one part paprika, and two parts cumin." How many batches are represented by the diagram? Explain your thinking.



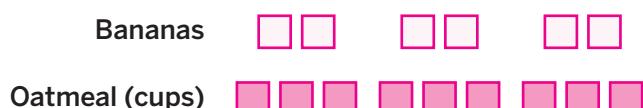
4 batches; Sample response: When I group them, I can see that there are 4 groups of 5 for the chili powder, 4 groups of 1 for the paprika, and 4 groups of 2 for the cumin.

6. Kiran makes banana oatmeal pancakes by mixing 2 mashed bananas with 3 cups of oatmeal (along with some other ingredients).

- a Draw a diagram that clearly represents doubling the recipe for banana oatmeal pancakes.



- b Draw a diagram that clearly represents tripling the recipe for banana oatmeal pancakes.



7. In a recipe for sparkling orange juice, the ratio of cups of orange juice to cups of sparkling water is 2 : 1.

- a Write the ratio of cups of orange juice to cups of sparkling water that represents a double batch. Show your thinking.

4 : 2; Students' explanations may vary.

- b Write the ratio of cups of orange juice to cups of sparkling water that represents a quadruple batch. Show your thinking.

8 : 4; Students' explanations may vary.

8. When Elena makes one batch of hummingbird food, she mixes 4 cups of water with 1 cup of sugar, which is enough for one hummingbird feeder.

- a If Elena has 5 hummingbird feeders in her yard, what is the ratio of cups of water to cups of sugar that she would use? Show your thinking.

20 : 5; Students' explanations may vary.

- b Elena says that if she has 3 hummingbird feeders in her yard, she would need 2 cups of sugar and 8 cups of water. Is Elena correct? Write yes or no. Explain your thinking.

No; Sample response: If Elena has three hummingbird feeders in her yard, she needs to multiply both the cups of sugar and water from the original recipe by 3, which means that she will need 3 cups of sugar and 12 cups of water.

Additional Practice | Answer Key

Unit 2 | Lesson 3

Name: Date: Period:

Additional Practice

2.03

The diagrams represent three possible recipes for green dye using blue and yellow food coloring. Use these diagrams for Problems 1–4.

Recipe A

Recipe B

Recipe C

Key:

□ = 1 drop blue food coloring ■ = 1 drop yellow food coloring

1. Use the diagrams to complete each pair of statements.

a) Recipe A uses 2 drop(s) of blue food coloring and 1 drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe A is **2 : 1**

b) Recipe B uses 4 drop(s) of blue food coloring and 2 drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe B is **4 : 2**

c) Recipe C uses 2 drop(s) of blue food coloring and 3 drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe C is **2 : 2**

2. Which statement is *true* about the ratios of the recipes?

A. The quantities in Recipe A are double that of Recipe B.

B. The quantities in Recipe B are double that of Recipe C.

C. The quantities in Recipe C are double that of Recipe A.

D. The quantities in Recipe B are double that of Recipe A.

3. To darken green paint, you can add more drops of blue. Which Recipe has the lightest shade of green paint? Explain your thinking.

Recipe C; Sample response: Recipe C will give the lightest shade of green because the ratio of blue to yellow is 1 : 1 while the other two Recipes both have a ratio of 2 drops of blue for every 1 drop of yellow. Recipe C has the least amount of blue.

4. What could be added to Recipe B so that the color will be the same as Recipe C?

2 drops of yellow food coloring

Unit 2 Lesson 3

33

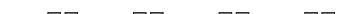
© Amplify Education, Inc. and its licensors. Amplify Mathematics™
is a trademark of Amplify Education, Inc. All rights reserved.

Name: Date: Period:

5. A recipe for 1 batch of taco seasoning says, "Mix 5 parts chili powder, one part paprika, and two parts cumin." How many batches are represented by the diagram? Explain your thinking.

Chili powder 

Paprika 

Cumin 

4 batches; Sample response: When I group them, I can see that there are 4 groups of 5 for the chili powder, 4 groups of 1 for the paprika, and 4 groups of 2 for the cumin.

6. Kiran makes banana oatmeal pancakes by mixing 2 mashed bananas with 3 cups of oatmeal (along with some other ingredients).

a) Draw a diagram that clearly represents doubling the recipe for banana oatmeal pancakes.

 Bananas 

 Oatmeal (cups) 

b) Draw a diagram that clearly represents tripling the recipe for banana oatmeal pancakes.

 Bananas 

 Oatmeal (cups) 

7. In a recipe for sparkling orange juice, the ratio of cups of orange juice to cups of sparkling water is 2 : 1.

a) Write the ratio of cups of orange juice to cups of sparkling water that represents a double batch. Show your thinking.
4 : 2; Students' explanations may vary.

b) Write the ratio of cups of orange juice to cups of sparkling water that represents a quadruple batch. Show your thinking.
8 : 4; Students' explanations may vary.

8. When Elena makes one batch of hummingbird food, she mixes 4 cups of water with 1 cup of sugar, which is enough for one hummingbird feeder.

a) If Elena has 5 hummingbird feeders in her yard, what is the ratio of cups of water to cups of sugar that she would use? Show your thinking.
20 : 5; Students' explanations may vary.

b) Elena says that if she has 3 hummingbird feeders in her yard, she would need 2 cups of sugar and 8 cups of water. Is Elena correct? Write yes or no. Explain your thinking.
No; Sample response: If Elena has three hummingbird feeders in her yard, she needs to multiply both the cups of sugar and water from the original recipe by 3, which means that she will need 3 cups of sugar and 12 cups of water.

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.1
2	2	6.RP.A.1
3	2	6.RP.A.1
4	2	6.RP.A.1
5	2	6.RP.A.1
6	2	6.RP.A.1
7	2	6.RP.A.1
8	3	6.RP.A.1

Notes:

Additional Practice**2.04**

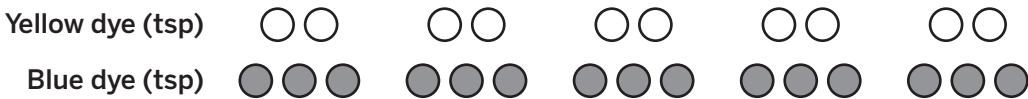
- 1.** The diagram shows a mixture of black paint and white paint needed for 3 batches of a particular gray paint.



What is the ratio of black paint to white paint, for 1 batch? Explain your thinking.

5 : 3; Students' explanations may vary.

- 2.** The diagram shows a mixture of yellow dye and blue dye needed for 5 batches of a particular green dye.



What is the ratio of blue dye to yellow dye, for 1 batch? Explain your thinking.

3 : 2; Students' explanations may vary.

- 3.** Bard makes pink paint by mixing 16 tbsp of white paint and 4 tbsp of red paint. Which of these mixtures produce the same pink paint as Bard's mixture, but in a smaller amount? Select *all* that apply.

- A. Mix 15 tbsp of white paint and 3 tbsp of red paint.
- B. For every tbsp of red paint, mix 4 tbsp of white paint.
- C. Mix tbsp of red paint and white paint in the ratio 4 : 1.
- D. For every 2 tbsp of red paint, mix 8 tbsp of white paint.
- E. Mix 8 tbsp of white paint with 4 tbsp of red paint.

- 4.** Lin makes sparkling lemonade by mixing 12 cups of lemonade and 16 cups of sparkling water.

- a** What is the ratio of sparkling water to lemonade? Explain your answer.

16 : 12; Students' explanations may vary.

- b** If Lin uses 6 cups of lemonade, how many cups of sparkling water should she use so the taste remains the same? Explain your answer.

8 cups; Students' explanations may vary.

- c** If Lin uses 4 cups of sparkling water, how many cups of lemonade should she use so the taste remains the same? Explain your answer.

3 cups; Students' explanations may vary.

5. To make 1 batch of pale yellow paint, Diego mixes 3 cups of yellow paint with 1 gallon of white paint. How could Diego make a mixture that is a darker tint of yellow than the pale yellow? Select *all* that apply.

- A. Add more white paint to the mixture.
- B. Mix 5 cups of yellow paint with 1 gallon of white paint.
- C. Mix 2 gallons of white paint with 3 cups of yellow paint.
- D. Add more yellow paint to the mixture.
- E. Mix 3 cups of yellow paint with one-half gallon of white paint.

6. When dyeing yarn, it is recommended that you use 750 ml of water for every 25 g of yarn fibers. Complete the table with the possible ratios for dyeing yarn.

Water (ml)	Yarn fibers (g)
750	25
150	5
30	1

7. To make a large batch of pancake mix, the directions say to use 40 cups of water and 28 cups of pancake mix.

- a) Diego only needs half the amount of pancake mix. What ratio would represent half of the recipe? Explain your thinking.

20 cups of water to 14 cups of mix or 20 : 14; Students' explanations may vary.

- b) Lin wants to use 8 cups of water and 7 cups of pancake mix. Is her ratio equivalent to the ratio in the directions? Explain your thinking.

No; Students' explanations may vary.

8. Orange paint can be made by mixing 35 tsp of red paint and 14 tsp of yellow paint. Kiran and Priya each attempted to make a smaller amount of the same orange paint color. Diagrams that represent their color mixtures are shown.

Kiran

Red (tsp) □□□□□□□□□□

Yellow (tsp) □□

Priya

Red (tsp) □□□□□□□□□□□□□

Yellow (tsp) □□□□□□

Does either person's color mixture make the same orange color as the original orange paint? Write yes or no. Explain your thinking.

Yes; Sample response: Priya's orange mixture is the same as the original paint color because the ratio of 15 : 6 is the same as 35 : 14.

Additional Practice | Answer Key

Unit 2 | Lesson 4

Name: _____ Date: _____ Period: _____

Additional Practice 2.04

1. The diagram shows a mixture of black paint and white paint needed for 3 batches of a particular gray paint.

Black paint (tsp)  **White paint (tsp)** 

What is the ratio of black paint to white paint, for 1 batch? Explain your thinking.
5 : 3; Students' explanations may vary.

2. The diagram shows a mixture of yellow dye and blue dye needed for 5 batches of a particular green dye.

Yellow dye (tsp)  **Blue dye (tsp)** 

What is the ratio of blue dye to yellow dye, for 1 batch? Explain your thinking.
3 : 2; Students' explanations may vary.

3. Bard makes pink paint by mixing 16 tbsp of white paint and 4 tbsp of red paint. Which of these mixtures produce the same pink paint as Bard's mixture, but in a smaller amount? Select all that apply.

A. Mix 15 tbsp of white paint and 3 tbsp of red paint.
 B. For every tbsp of red paint, mix 4 tbsp of white paint.
 C. Mix 15 tbsp of red paint and white paint in the ratio 4 : 1.
 D. For every 2 tbsp of red paint, mix 8 tbsp of white paint.
 E. Mix 8 tbsp of white paint with 4 tbsp of red paint.

4. Lin makes sparkling lemonade by mixing 12 cups of lemonade and 16 cups of sparkling water.

a. What is the ratio of sparkling water to lemonade? Explain your answer.
16 : 12; Students' explanations may vary.

b. If Lin uses 6 cups of lemonade, how many cups of sparkling water should she use so the taste remains the same? Explain your answer.
8 cups; Students' explanations may vary.

c. If Lin uses 4 cups of sparkling water, how many cups of lemonade should she use so the taste remains the same? Explain your answer.
3 cups; Students' explanations may vary.

Unit 2 Lesson 4 35 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. To make 1 batch of pale yellow paint, Diego mixes 3 cups of yellow paint with 1 gallon of white paint. How could Diego make a mixture that is a darker tint of yellow than the pale yellow? Select all that apply.

A. Add more white paint to the mixture.
 B. Mix 5 cups of yellow paint with 1 gallon of white paint.
 C. Mix 2 gallons of white paint with 3 cups of yellow paint.
 D. Add more yellow paint to the mixture.
 E. Mix 3 cups of yellow paint with one-half gallon of white paint.

6. When dyeing yarn, it is recommended that you use 750 ml of water for every 25 g of yarn fibers. Complete the table with the possible ratios for dyeing yarn.

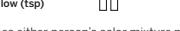
Water (ml)	Yarn fibers (g)
750	25
150	5
30	1

7. To make a large batch of pancake mix, the directions say to use 40 cups of water and 28 cups of pancake mix.

a. Diego only needs half the amount of pancake mix. What ratio would represent half of the recipe? Explain your thinking.
20 cups of water to 14 cups of mix or 20 : 14; Students' explanations may vary.

b. Lin wants to use 8 cups of water and 7 cups of pancake mix. Is her ratio equivalent to the ratio in the directions? Explain your thinking.
No; Students' explanations may vary.

8. Orange paint can be made by mixing 35 tsp of red paint and 14 tsp of yellow paint. Kiran and Priya each attempted to make a smaller amount of the same orange paint color. Diagrams that represent their color mixtures are shown.

Kiran	Priya
Red (tsp) 	Red (tsp) 
Yellow (tsp) 	Yellow (tsp) 

Does either person's color mixture make the same orange color as the original orange paint? Write yes or no. Explain your thinking.
Yes; Sample response: Priya's orange mixture is the same as the original paint color because the ratio of 15 : 6 is the same as 35 : 14.

Unit 2 Lesson 4 36 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.RP.A.1
2	2	6.RP.A.1
3	2	6.RP.A.1
4	2	6.RP.A.1
5	2	6.RP.A.1
6	2	6.RP.A.1
7	2	6.RP.A.1
8	3	6.RP.A.1

Notes:

Additional Practice**2.04**

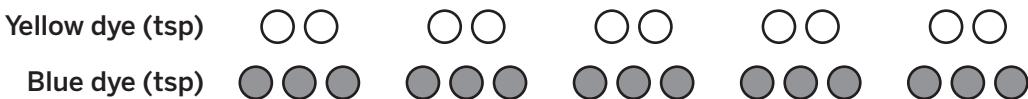
- 1.** The diagram shows a mixture of black paint and white paint needed for 3 batches of a particular gray paint.



What is the ratio of black paint to white paint, for 1 batch? Explain your thinking.

5 : 3; Students' explanations may vary.

- 2.** The diagram shows a mixture of yellow dye and blue dye needed for 5 batches of a particular green dye.



What is the ratio of blue dye to yellow dye, for 1 batch? Explain your thinking.

3 : 2; Students' explanations may vary.

- 3.** Bard makes pink paint by mixing 16 tbsp of white paint and 4 tbsp of red paint. Which of these mixtures produce the same pink paint as Bard's mixture, but in a smaller amount? Select *all* that apply.

- A. Mix 15 tbsp of white paint and 3 tbsp of red paint.
- B. For every tbsp of red paint, mix 4 tbsp of white paint.
- C. Mix tbsp of red paint and white paint in the ratio 4 : 1.
- D. For every 2 tbsp of red paint, mix 8 tbsp of white paint.
- E. Mix 8 tbsp of white paint with 4 tbsp of red paint.

- 4.** Lin makes sparkling lemonade by mixing 12 cups of lemonade and 16 cups of sparkling water.

- a** What is the ratio of sparkling water to lemonade? Explain your answer.

16 : 12; Students' explanations may vary.

- b** If Lin uses 6 cups of lemonade, how many cups of sparkling water should she use so the taste remains the same? Explain your answer.

8 cups; Students' explanations may vary.

- c** If Lin uses 4 cups of sparkling water, how many cups of lemonade should she use so the taste remains the same? Explain your answer.

3 cups; Students' explanations may vary.

5. To make 1 batch of pale yellow paint, Diego mixes 3 cups of yellow paint with 1 gallon of white paint. How could Diego make a mixture that is a darker tint of yellow than the pale yellow? Select *all* that apply.

- A. Add more white paint to the mixture.
- B. Mix 5 cups of yellow paint with 1 gallon of white paint.
- C. Mix 2 gallons of white paint with 3 cups of yellow paint.
- D. Add more yellow paint to the mixture.
- E. Mix 3 cups of yellow paint with one-half gallon of white paint.

6. When dyeing yarn, it is recommended that you use 750 ml of water for every 25 g of yarn fibers. Complete the table with the possible ratios for dyeing yarn.

Water (ml)	Yarn fibers (g)
750	25
150	5
30	1

7. To make a large batch of pancake mix, the directions say to use 40 cups of water and 28 cups of pancake mix.

- a) Diego only needs half the amount of pancake mix. What ratio would represent half of the recipe? Explain your thinking.

20 cups of water to 14 cups of mix or 20 : 14; Students' explanations may vary.

- b) Lin wants to use 8 cups of water and 7 cups of pancake mix. Is her ratio equivalent to the ratio in the directions? Explain your thinking.

No; Students' explanations may vary.

8. Orange paint can be made by mixing 35 tsp of red paint and 14 tsp of yellow paint. Kiran and Priya each attempted to make a smaller amount of the same orange paint color. Diagrams that represent their color mixtures are shown.

Kiran

Red (tsp) □□□□□□□□□□

Yellow (tsp) □□

Priya

Red (tsp) □□□□□□□□□□□□□

Yellow (tsp) □□□□□□

Does either person's color mixture make the same orange color as the original orange paint? Write yes or no. Explain your thinking.

Yes; Sample response: Priya's orange mixture is the same as the original paint color because the ratio of 15 : 6 is the same as 35 : 14.

Additional Practice | Answer Key

Unit 2 | Lesson 4

Name: _____ Date: _____ Period: _____

Additional Practice 2.04

1. The diagram shows a mixture of black paint and white paint needed for 3 batches of a particular gray paint.

Black paint (tsp)  **White paint (tsp)** 

What is the ratio of black paint to white paint, for 1 batch? Explain your thinking.
5 : 3; Students' explanations may vary.

2. The diagram shows a mixture of yellow dye and blue dye needed for 5 batches of a particular green dye.

Yellow dye (tsp)  **Blue dye (tsp)** 

What is the ratio of blue dye to yellow dye, for 1 batch? Explain your thinking.
3 : 2; Students' explanations may vary.

3. Bard makes pink paint by mixing 16 tbsp of white paint and 4 tbsp of red paint. Which of these mixtures produce the same pink paint as Bard's mixture, but in a smaller amount? Select all that apply.

A. Mix 15 tbsp of white paint and 3 tbsp of red paint.
 B. For every tbsp of red paint, mix 4 tbsp of white paint.
 C. Mix 15 tbsp of red paint and white paint in the ratio 4 : 1.
 D. For every 2 tbsp of red paint, mix 8 tbsp of white paint.
 E. Mix 8 tbsp of white paint with 4 tbsp of red paint.

4. Lin makes sparkling lemonade by mixing 12 cups of lemonade and 16 cups of sparkling water.

a. What is the ratio of sparkling water to lemonade? Explain your answer.
16 : 12; Students' explanations may vary.

b. If Lin uses 6 cups of lemonade, how many cups of sparkling water should she use so the taste remains the same? Explain your answer.
8 cups; Students' explanations may vary.

c. If Lin uses 4 cups of sparkling water, how many cups of lemonade should she use so the taste remains the same? Explain your answer.
3 cups; Students' explanations may vary.

Unit 2 Lesson 4 35 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. To make 1 batch of pale yellow paint, Diego mixes 3 cups of yellow paint with 1 gallon of white paint. How could Diego make a mixture that is a darker tint of yellow than the pale yellow? Select all that apply.

A. Add more white paint to the mixture.
 B. Mix 5 cups of yellow paint with 1 gallon of white paint.
 C. Mix 2 gallons of white paint with 3 cups of yellow paint.
 D. Add more yellow paint to the mixture.
 E. Mix 3 cups of yellow paint with one-half gallon of white paint.

6. When dyeing yarn, it is recommended that you use 750 ml of water for every 25 g of yarn fibers. Complete the table with the possible ratios for dyeing yarn.

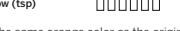
Water (ml)	Yarn fibers (g)
750	25
150	5
30	1

7. To make a large batch of pancake mix, the directions say to use 40 cups of water and 28 cups of pancake mix.

a. Diego only needs half the amount of pancake mix. What ratio would represent half of the recipe? Explain your thinking.
20 cups of water to 14 cups of mix or 20 : 14; Students' explanations may vary.

b. Lin wants to use 8 cups of water and 7 cups of pancake mix. Is her ratio equivalent to the ratio in the directions? Explain your thinking.
No; Students' explanations may vary.

8. Orange paint can be made by mixing 35 tsp of red paint and 14 tsp of yellow paint. Kiran and Priya each attempted to make a smaller amount of the same orange paint color. Diagrams that represent their color mixtures are shown.

Kiran	Priya
Red (tsp) 	Red (tsp) 
Yellow (tsp) 	Yellow (tsp) 

Does either person's color mixture make the same orange color as the original orange paint? Write yes or no. Explain your thinking.
Yes; Sample response: Priya's orange mixture is the same as the original paint color because the ratio of 15 : 6 is the same as 35 : 14.

Unit 2 Lesson 4 36 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.RP.A.1
2	2	6.RP.A.1
3	2	6.RP.A.1
4	2	6.RP.A.1
5	2	6.RP.A.1
6	2	6.RP.A.1
7	2	6.RP.A.1
8	3	6.RP.A.1

Notes:

Additional Practice**2.08**

- 1.** Determine *all* the factors of each number.

a 16 **1, 2, 4, 8, 16**

b 25 **1, 5, 25**

c 100 **1, 2, 4, 5, 10, 20, 25, 50, 100**

d 37 **1, 37**

- 2.** For the numbers 20 and 24, determine each of the following.

a The factors of 20.

1, 2, 4, 5, 10, 20

b The factors of 24.

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

c The common factors of 20 and 24.

1, 2, 4

d The GCF of 20 and 24.

4

- 3.** For the numbers 18 and 27, determine each of the following.

a The factors of 18.

1, 2, 3, 6, 9, 18

b The factors of 27.

1, 3, 9, 27

c The common factors of 18 and 27.

1, 3, 9

d The GCF of 18 and 27.

9

- 4.** Determine the GCF for each pair of numbers. Explain your thinking.

a 33 and 15 **3; Students' explanations may vary.**

b 8 and 32 **8; Students' explanations may vary.**

c 45 and 54 **9; Students' explanations may vary.**

d 35 and 21 **7; Students' explanations may vary.**

5. Refer to the numbers 42 and 96.

- a How many common factors do 42 and 96 have? Explain your thinking.

4; Students' explanations may vary.

- b What is the GCF of 42 and 96? Explain your thinking.

6; Students' explanations may vary.

6. A teacher is making gift bags. Each bag is to be filled with pencils and erasers. The teacher has 40 pencils and 60 erasers to use. Each bag will have the same number of each item, with no items left over. What are some possibilities of pencils and erasers in the gift bags? Select *all* that apply.

A. 10 bags with 4 pencils and 6 erasers

B. 4 bags with 6 pencils and 4 erasers

C. 20 bags with 2 pencils and 6 erasers

D. 2 bags with 20 pencils and 30 erasers

E. 5 bags with 8 pencils and 12 erasers

7. A middle school band has 72 sixth grade students and 54 seventh grade students. The band director wants to make groups of performers, with the same combination of sixth grade and seventh grade students in each group. She wants to form as many groups as possible.

- a What is the greatest number of groups that could be formed? Explain your thinking.

18; Sample response: The greatest common factor of 72 and 54 is 18.

- b Using your answer from Problem 7a, how many sixth graders would be in each group?

4

- c Using your answer from Problem 7a, how many seventh graders would be in each group?

3

8. Jada, Shawn, and Noah were all asked to determine the greatest common factor of 16, 72, and 80. Their responses are shown.

- Jada says that the greatest common factor is 16.
- Shawn says that the greatest common factor is 8.
- Noah says that the greatest common factor is 9.

Who is correct? Explain your thinking.

Shawn; Sample response: Shawn is correct that the greatest common factor of 16, 72, and 80 is 8. The number 16 is a common factor of 16 and 80, but not of 72. The number 9 is a common factor of 72 and 80, but not of 16.

Additional Practice | Answer Key

Unit 2 | Lesson 8

Name: _____	Date: _____	Period: _____
Additional Practice 2.08		
<p>1. Determine all the factors of each number.</p> <p>a 16 1, 2, 4, 8, 16</p> <p>b 25 1, 5, 25</p> <p>c 100 1, 2, 4, 5, 10, 20, 25, 50, 100</p> <p>d 37 1, 37</p> <p>2. For the numbers 20 and 24, determine each of the following.</p> <p>a The factors of 20. 1, 2, 4, 5, 10, 20</p> <p>b The factors of 24. 1, 2, 3, 4, 6, 8, 12, 24</p> <p>c The common factors of 20 and 24. 1, 2, 4</p> <p>d The GCF of 20 and 24. 4</p> <p>3. For the numbers 18 and 27, determine each of the following.</p> <p>a The factors of 18. 1, 2, 3, 6, 9, 18</p> <p>b The factors of 27. 1, 3, 9, 27</p> <p>c The common factors of 18 and 27. 1, 3, 9</p> <p>d The GCF of 18 and 27. 9</p> <p>4. Determine the GCF for each pair of numbers. Explain your thinking.</p> <p>a 33 and 15 3; Students' explanations may vary.</p> <p>b 8 and 32 8; Students' explanations may vary.</p> <p>c 45 and 54 9; Students' explanations may vary.</p> <p>d 35 and 21 7; Students' explanations may vary.</p>		

Unit 2 Lesson 8

43

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____	Date: _____	Period: _____
<p>5. Refer to the numbers 42 and 96.</p> <p>a How many common factors do 42 and 96 have? Explain your thinking. 4; Students' explanations may vary.</p> <p>b What is the GCF of 42 and 96? Explain your thinking. 6; Students' explanations may vary.</p> <p>6. A teacher is making gift bags. Each bag is to be filled with pencils and erasers. The teacher has 40 pencils and 60 erasers to use. Each bag will have the same number of each item, with no items left over. What are some possibilities of pencils and erasers in the gift bags? Select all that apply.</p> <p><input checked="" type="checkbox"/> A. 10 bags with 4 pencils and 6 erasers</p> <p><input type="checkbox"/> B. 4 bags with 6 pencils and 4 erasers</p> <p><input type="checkbox"/> C. 20 bags with 2 pencils and 6 erasers</p> <p><input checked="" type="checkbox"/> D. 2 bags with 20 pencils and 30 erasers</p> <p><input checked="" type="checkbox"/> E. 5 bags with 8 pencils and 12 erasers</p> <p>7. A middle school band has 72 sixth grade students and 54 seventh grade students. The band director wants to make groups of performers, with the same combination of sixth grade and seventh grade students in each group. She wants to form as many groups as possible.</p> <p>a What is the greatest number of groups that could be formed? Explain your thinking. 18; Sample response: The greatest common factor of 72 and 54 is 18.</p> <p>b Using your answer from Problem 7a, how many sixth graders would be in each group? 4</p> <p>c Using your answer from Problem 7a, how many seventh graders would be in each group? 3</p> <p>8. Jada, Shawn, and Noah were all asked to determine the greatest common factor of 16, 72, and 80. Their responses are shown.</p> <ul style="list-style-type: none"> Jada says that the greatest common factor is 16. Shawn says that the greatest common factor is 8. Noah says that the greatest common factor is 9. <p>Who is correct? Explain your thinking. Shawn; Sample response: Shawn is correct that the greatest common factor of 16, 72, and 80 is 8. The number 16 is a common factor of 16 and 80, but not of 72. The number 9 is a common factor of 72 and 80, but not of 16.</p>		

Unit 2 Lesson 8

44

Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.NS.B.4
2	2	6.NS.B.4
3	2	6.NS.B.4
4	2	6.NS.B.4
5	2	6.NS.B.4
6	2	6.NS.B.4
7	3	6.NS.B.4
8	3	6.NS.B.4

Notes:

Additional Practice**2.09**

- There are 3 possible mixtures of a pink paint.
 - Mixture A is made with 18 tsp of white paint and 12 tsp of red paint.
 - Mixture B is made with 6 tsp of white paint and 5 tsp of red paint.
 - Mixture C is made with 12 tsp of white paint and 10 tsp of red paint.

Which mixture is the *lightest* tint of pink paint? Explain your thinking.

Mixture A; Sample response: Mixtures B and C are equivalent ratios, so their color is the same. I made equivalent ratios to compare Mixture A with Mixture B. When they both have 18 tsp of white paint, Mixture A has 12 tsp of red paint and Mixture B has 15 tsp of red paint. The mixture with less red paint makes a lighter pink.

- Priya has 2 white marbles and 4 blue marbles. Lin has 4 white marbles and 16 blue marbles. Who has the greater ratio of white marbles to blue marbles? Explain your thinking.
 - Priya
 - Lin
 - They have the same ratio of white to blue marbles.

Students' explanations may vary.

- Kiran shops at a bulk store where he can purchase dry goods by the ounce.

- Determine the price per ounce for each item that Kiran buys.

Item	Price (\$)	Number of ounces	Price per ounce (\$)
Banana chips	9	36	0.25
Macadamia nuts	16	8	2
Dried mango	8	8	1
Cinnamon pecans	18	24	0.75
Pistachios	3.75	5	0.75

- Which item has the least price per ounce? Explaining your thinking.

Banana chips; Students' explanations may vary.

4. Noah's team won 10 games and lost 5 games. Tyler's team won 12 games and lost 4 games. Whose team had the greater ratios of wins to losses? Explain your thinking.

- A. Noah's team
- B. Tyler's team
- C. Both teams have the same ratio of wins to losses.

Students' explanations may vary.

5. Movie tickets cost different amounts depending on the day and time of the show.

- Bard paid \$39 for 6 tickets.
- Andre paid \$21.75 for 3 tickets.
- Mai paid \$31.25 for 5 tickets.

Who paid the lowest price per ticket? Explain your thinking.

- A. Bard
- B. Andre
- C. Mai

Students' explanations may vary.

6. Diego swam 200 meters in 58 seconds. Han swam 300 meters in 87 seconds. Both swam at a constant speed. Who swam at a faster constant speed? Explain your thinking.

- A. Diego
- B. Han
- C. They swam at the same speed.

Students' explanations may vary.

7. Clare ran 3 miles in 27 minutes. Jada ran 5 miles in 40 minutes. Both ran at a constant speed. Did they run at the same constant speed? Write yes or no. Explain your thinking.

No; Sample response: Clare and Jada did not run at the same constant speed. If I use the LCM of 3 and 5, I can compare how far Clare and Jada ran 15 miles. Clare could run 15 miles in 135 minutes, and Jada could run 15 miles in 120 minutes. Therefore, Jada ran faster than Clare.

8. Shawn paid \$11.25 for 2.5 lb of chicken. Lin paid \$25.50 for 6 lb of chicken. Lin says she paid less per pound of chicken than Shawn. Is Lin correct? Write yes or no. Explain your thinking.

Yes; Sample response: Shawn paid \$4.50 per pound, and Lin paid \$4.25 per pound.

Additional Practice | Answer Key

Unit 2 | Lesson 9

Name: _____ Date: _____ Period: _____

Additional Practice 2.09

1. There are 3 possible mixtures of a pink paint.

- Mixture A is made with 18 tsp of white paint and 12 tsp of red paint.
- Mixture B is made with 6 tsp of white paint and 5 tsp of red paint.
- Mixture C is made with 12 tsp of white paint and 10 tsp of red paint.

Which mixture is the *lightest tint* of pink paint? Explain your thinking.

Mixture A: Sample response: Mixtures B and C are equivalent ratios, so their color is the same. I mixed equivalent ratios between Mixture A with Mixture B. When they both have 18 tsp of white paint, Mixture A has 12 tsp of red paint and Mixture B has 15 tsp of red paint. The mixture with less red paint makes a lighter pink.

2. Priya has 2 white marbles and 4 blue marbles. Lin has 4 white marbles and 16 blue marbles. Who has the greater ratio of white marbles to blue marbles? Explain your thinking.

A. Priya
B. Lin
C. They have the same ratio of white to blue marbles.
Students' explanations may vary.

3. Kiran shops at a bulk store where he can purchase dry goods by the ounce.

a. Determine the price per ounce for each item that Kiran buys.

Item	Price (\$)	Number of ounces	Price per ounce (\$)
Banana chips	9	36	0.25
Macadamia nuts	16	8	2
Dried mango	8	8	1
Cinnamon pecans	18	24	0.75
Pistachios	3.75	5	0.75

b. Which item has the least price per ounce? Explaining your thinking.
Banana chips; Students' explanations may vary.

Unit 2 Lesson 9

45

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

4. Noah's team won 10 games and lost 5 games. Tyler's team won 12 games and lost 4 games. Whose team had the greater ratios of wins to losses? Explain your thinking.

A. Noah's team
B. Tyler's team
C. Both teams have the same ratio of wins to losses.
Students' explanations may vary.

5. Movie tickets cost different amounts depending on the day and time of the show.

- Bard paid \$39 for 6 tickets.
- Andre paid \$21.75 for 3 tickets.
- Mai paid \$31.25 for 5 tickets.

Who paid the lowest price per ticket? Explain your thinking.

A. Bard
B. Andre
C. Mai
Students' explanations may vary.

6. Diego swam 200 meters in 58 seconds. Han swam 300 meters in 87 seconds. Both swam at a constant speed. Who swam at a faster constant speed? Explain your thinking.

A. Diego
B. Han
C. They swam at the same speed.
Students' explanations may vary.

7. Clare ran 3 miles in 27 minutes. Jada ran 5 miles in 40 minutes. Both ran at a constant speed. Did they run at the same constant speed? Write yes or no. Explain your thinking.
No; Sample response: Clare and Jada did not run at the same constant speed. If I use the LCM of 3 and 5, I can compare how far Clare and Jada ran 15 miles. Clare could run 15 miles in 135 minutes, and Jada could run 15 miles in 120 minutes. Therefore, Jada ran faster than Clare.

8. Shawn paid \$11.25 for 2.5 lb of chicken. Lin paid \$25.50 for 6 lb of chicken. Lin says she paid less per pound of chicken than Shawn. Is Lin correct? Write yes or no. Explain your thinking.
Yes; Sample response: Shawn paid \$4.50 per pound, and Lin paid \$4.25 per pound.

Unit 2 Lesson 9

46

Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.RP.A.3.A
2	2	6.RP.A.3.A
3	2	6.RP.A.3.A
4	2	6.RP.A.3.A
5	2	6.RP.A.3.A
6	2	6.RP.A.3.A
7	2	6.RP.A.3.A
8	3	6.RP.A.3.A

Notes:

Additional Practice**2.10**

- 1.** To make a fruit smoothie, Andre uses $\frac{1}{2}$ cups of almond milk and $1\frac{1}{2}$ cups of frozen berries. The table shows equivalent ratios of almond milk and frozen berries.

Almond milk (cups)	Frozen berries (cups)
$\frac{1}{2}$	$1\frac{1}{2}$
1	3
$1\frac{1}{2}$	$4\frac{1}{2}$
2	6

Which statements are *true* about the ratio of almond milk to frozen berries?
Select *all* that apply.

- A. For every 3 cups of berries, there is 1 cup of almond milk.
 - B. For every 2 cups of berries, there are 6 cups of almond milk.
 - C. For every $1\frac{1}{2}$ cups of berries, there is 1 cup of almond milk.
 - D. For every 1 cup of almond milk, there are 3 cups of berries.
 - E. For every $\frac{1}{2}$ cups of almond milk, there are $1\frac{1}{2}$ cups of berries.
- 2.** A particular pink paint is made by mixing 3 parts of red paint with 9 parts of white paint. Complete the table with the amount of red paint and white paint needed to make different amounts of the same shade of pink paint.

Red paint	White paint
1	3
$\frac{1}{2}$	$1\frac{1}{2}$
4	12
2	6

- 3.** In a recipe for waffles, there are $2\frac{1}{4}$ cups of flour for every 2 cups of milk. A family is making several batches of waffles. Determine how much of each ingredient the family will need. Consider using a table to help with your thinking.

- a** How many cups of milk are needed to make 3 batches of waffles?

6 cups

- b** How many cups of flour are needed to make 3 batches of waffles?

$6\frac{3}{4}$ or $\frac{27}{4}$ cups

- c** How many cups of milk are needed to make 5 batches of waffles?

10 cups

- d** How many cups of flour are needed to make 6 batches of waffles?

$13\frac{1}{2}$ or $\frac{27}{2}$ cups

- 4.** A car travels at a constant speed and its distance traveled in 1, 2, and 3 hours is shown on the table. How far does the car travel in 8 hours? Explain your thinking.

520 miles; Sample response: The car travels 520 miles in 8 hours because $8 \cdot 65 = 520$.

Time (hours)	Distance (miles)
1	65
2	130
3	195
8	520

- 5.** Complete the table to determine two equivalent ratios to 24 : 15 with lesser values and two equivalent ratios with greater values.

8	5
16	10
24	15
32	20
40	25

- 6.** A recipe for a batch of bran muffins calls for $\frac{3}{4}$ cup of brown sugar and 3 cups of bran cereal. Andre says that, if he triples the recipe, he will need $3\frac{3}{4}$ cups of brown sugar and 9 cups of bran cereal. Is Andre correct? Write yes or no. Explain your thinking.

No; Sample response: If Andre triples the recipe, he will need $\frac{3}{4} \cdot 3 = 2\frac{1}{4}$ cups of brown sugar.

Additional Practice | Answer Key

Unit 2 | Lesson 10

Name: _____ Date: _____ Period: _____

Additional Practice

2.10

1. To make a fruit smoothie, Andre uses $\frac{1}{2}$ cups of almond milk and $1\frac{1}{2}$ cups of frozen berries. The table shows equivalent ratios of almond milk and frozen berries.

Almond milk (cups)	Frozen berries (cups)
$\frac{1}{2}$	$1\frac{1}{2}$
1	3
$1\frac{1}{2}$	$4\frac{1}{2}$
2	6

Which statements are true about the ratio of almond milk to frozen berries?
Select all that apply.

A. For every 3 cups of berries, there is 1 cup of almond milk.
 B. For every 2 cups of berries, there are 6 cups of almond milk.
 C. For every $1\frac{1}{2}$ cups of berries, there is 1 cup of almond milk.
 D. For every 1 cup of almond milk, there are 3 cups of berries.
 E. For every $\frac{1}{2}$ cups of almond milk, there are $1\frac{1}{2}$ cups of berries.

2. A particular pink paint is made by mixing 3 parts of red paint with 9 parts of white paint. Complete the table with the amount of red paint and white paint needed to make different amounts of the same shade of pink paint.

Red paint	White paint
1	3
$\frac{1}{2}$	$1\frac{1}{2}$
4	12
2	6

Unit 2 Lesson 10 47 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

3. In a recipe for waffles, there are $2\frac{1}{4}$ cups of flour for every 2 cups of milk. A family is making several batches of waffles. Determine how much of each ingredient the family will need. Consider using a table to help with your thinking.

a. How many cups of milk are needed to make 3 batches of waffles?
6 cups

b. How many cups of flour are needed to make 3 batches of waffles?
 $6\frac{3}{4}$ or $\frac{27}{4}$ cups

c. How many cups of milk are needed to make 5 batches of waffles?
10 cups

d. How many cups of flour are needed to make 6 batches of waffles?
 $13\frac{1}{2}$ or $\frac{27}{2}$ cups

4. A car travels at a constant speed and its distance traveled in 1, 2, and 3 hours is shown on the table. How far does the car travel in 8 hours? Explain your thinking.

520 miles; Sample response: The car travels 520 miles in 8 hours because $8 \cdot 65 = 520$.

Time (hours)	Distance (miles)
1	65
2	130
3	195
8	520

5. Complete the table to determine two equivalent ratios to 24 : 15 with lesser values and two equivalent ratios with greater values.

8	5
16	10
24	15
32	20
40	25

6. A recipe for a batch of bran muffins calls for $\frac{3}{4}$ cup of brown sugar and 3 cups of bran cereal. Andre says that, if he triples the recipe, he will need $3\frac{3}{4}$ cups of brown sugar and 9 cups of bran cereal. Is Andre correct? Write yes or no. Explain your thinking.

No; Sample response: If Andre triples the recipe, he will need $\frac{3}{4} \cdot 3 = 2\frac{1}{4}$ cups of brown sugar.

Unit 2 Lesson 10 48 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.3.A
2	2	6.RP.A.3.A
3	2	6.RP.A.3.A
4	2	6.RP.A.3.A
5	2	6.RP.A.3.A
6	3	6.RP.A.3.A

Notes:

Additional Practice**2.11**

- 1.** Determine the missing number on the ratio table.

7	12
28	48

- 2.** A recipe calls for 2 lb of chicken and $3\frac{1}{2}$ cups of tomato sauce. Andre makes 3 batches of the recipe. Which gives the amounts needed for 3 batches?
- A. 5 lb of chicken, 9 cups of tomato sauce
 - B. 5 lb of chicken, $10\frac{1}{2}$ cups of tomato sauce
 - C. 6 lb of chicken, 9 cups of tomato sauce
 - D.** 6 lb of chicken, $10\frac{1}{2}$ cups of tomato sauce
- 3.** A chef is pickling onions. He needs 12 gallons of white vinegar. The restaurant supply store sells 2 gallons of vinegar for \$4.88, but allows customers to buy any amount of vinegar at the same rate. Which of the following ratios correctly represents the price of the vinegar? Select *all* that apply.
- A. 7 gallons to \$14.64
 - B. 14 gallons to \$34.16
 - C. 1 gallon to \$2.44
 - D. 20 gallons to \$43.92
 - E. 5 gallons to \$12.20
- 4.** A full-grown elephant drinks about 1,330 liters of water each week. Complete each ratio based on this information.
- a. **190** liters to 1 day
- b. 570 liters to **3** days
- c. **3,990** liters to 3 weeks
- d. 2,280 liters to **12** days
- e. **15,960** liters to 12 weeks

5. A caterer needs to buy 38 lb of potatoes for a catering event. It costs \$6 for 5 lb of potatoes at a restaurant supply store.

- a Write a ratio for the price of the potatoes per pound.

\$6 : 5 or 1.20

- b If all potatoes are sold at this rate, how much will the caterer pay for the potatoes they need? Explain your thinking.

\$45.60; Sample response: The caterer will pay \$45.60 for 38 lb of potatoes.

I used equivalent ratios to determine that the cost of the potatoes is \$1.20 per pound. Because the caterer needs 38 lb, I multiplied the cost of 1 lb by 38: $1.20 \cdot 38 = 45.60$.

6. A caterer also needs to buy 130 rolls for the catering event. A bakery sells rolls by the dozen where it costs \$4.80 for a dozen rolls.

- a Write a ratio for the given information about the cost of the rolls.

\$4.80 : 12 or \$0.40 per roll

- b If all rolls are sold at the same rate, how much will the caterer pay for the rolls they need? Explain your thinking.

\$52; Sample response: The caterer will pay \$52 for 130 rolls. I used equivalent ratios to determine that the cost of 1 roll is \$0.40. Because the caterer needs 130 rolls, I multiplied the cost of 1 roll by 130: $0.40 \cdot 130 = 52$.

7. The directions for a shade of green paint say, “Mix 7 ml yellow paint with 3 ml blue paint.” Han has 42 ml of yellow paint and 25 ml of blue paint. If Han wants to use all of the yellow paint, how much blue paint, if any, will he have left? Explain your thinking.

Note: Consider using this ratio table to help with your thinking.

7 ml; Sample response:

Yellow (ml)	Blue (ml)
7	3
42	18

I used equivalent ratios to determine that Han will use 18 ml of blue paint with 42 ml of yellow paint. Then I subtracted to find how much blue paint was left: $25 - 18 = 7$.

8. Mai is reading a 55-page book. She read the first 35 pages in 30 minutes. If she continues to read at the same rate, will she be able to complete this book in less than 1 hour? Write yes or no. Explain your thinking.

Yes; Sample reasoning: Mai can read 70 pages in 1 hour, so she will be able to complete her 55-page book within one hour.

Name: _____ Date: _____ Period: _____

Additional Practice

2.11

1. Determine the missing number on the ratio table.

7	12
28	48

2. A recipe calls for 2 lb of chicken and $3\frac{1}{2}$ cups of tomato sauce. Andre makes 3 batches of the recipe. Which gives the amounts needed for 3 batches?

A. 5 lb of chicken, 9 cups of tomato sauce
 B. 5 lb of chicken, $10\frac{1}{2}$ cups of tomato sauce
 C. 6 lb of chicken, 9 cups of tomato sauce
 D. 6 lb of chicken, $10\frac{1}{2}$ cups of tomato sauce
 E. 7 gallons to \$14.64

3. A chef is pickling onions. He needs 12 gallons of white vinegar. The restaurant supply store sells 2 gallons of vinegar for \$4.88, but allows customers to buy any amount of vinegar at the same rate. Which of the following ratios correctly represents the price of the vinegar? Select all that apply.

A. 7 gallons to \$14.64
 B. 14 gallons to \$34.16
 C. 1 gallon to \$2.44
 D. 20 gallons to \$43.92
 E. 5 gallons to \$12.20

4. A full-grown elephant drinks about 1,330 liters of water each week. Complete each ratio based on this information.

a. 190 liters to 1 day
 b. 570 liters to 3 days
 c. 3,990 liters to 3 weeks
 d. 2,280 liters to 12 days
 e. 15,960 liters to 12 weeks

Unit 2 Lesson 11 49 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. A caterer needs to buy 38 lb of potatoes for a catering event. It costs \$6 for 5 lb of potatoes at a restaurant supply store.

a. Write a ratio for the price of the potatoes per pound.
 $\$6 : 5 \text{ or } 1.20$

b. If all potatoes are sold at this rate, how much will the caterer pay for the potatoes they need? Explain your thinking.
\$45.60; Sample response: The caterer will pay \$45.60 for 38 lb of potatoes. I used equivalent ratios to determine that the cost of the potatoes is \$1.20 per pound. Because the caterer needs 38 lb, I multiplied the cost of 1 lb by $38: 1.20 \cdot 38 = 45.60$.

6. A caterer also needs to buy 130 rolls for the catering event. A bakery sells rolls by the dozen where it costs \$4.80 for a dozen rolls.

a. Write a ratio for the given information about the cost of the rolls.
 $\$4.80 : 12 \text{ or } \0.40 per roll

b. If all rolls are sold at the same rate, how much will the caterer pay for the rolls they need? Explain your thinking.
\$52; Sample response: The caterer will pay \$52 for 130 rolls. I used equivalent ratios to determine that the cost of 1 roll is \$0.40. Because the caterer needs 130 rolls, I multiplied the cost of 1 roll by $130: 0.40 \cdot 130 = 52$.

7. The directions for a shade of green paint say, "Mix 7 ml yellow paint with 3 ml blue paint." Han has 42 ml of yellow paint and 25 ml of blue paint. If Han wants to use all of the yellow paint, how much blue paint, if any, will he have left? Explain your thinking.

Note: Consider using this ratio table to help with your thinking.
7 ml; Sample response:

Yellow (ml)	Blue (ml)
7	3
42	18

 I used equivalent ratios to determine that Han will use 18 ml of blue paint with 42 ml of yellow paint. Then I subtracted to find how much blue paint was left: $25 - 18 = 7$.

8. Mai is reading a 55-page book. She read the first 35 pages in 30 minutes. If she continues to read at the same rate, will she be able to complete this book in less than 1 hour? Write yes or no. Explain your thinking.
Yes; Sample reasoning: Mai can read 70 pages in 1 hour, so she will be able to complete her 55-page book within one hour.

Unit 2 Lesson 11 50 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.RP.A.3
2	2	6.RP.A.3
3	2	6.RP.A.3
4	2	6.RP.A.3
5	2	6.RP.A.3
6	2	6.RP.A.3
7	2	6.RP.A.3
8	3	6.RP.A.3

Notes:

Additional Practice**2.13**

- 1.** The ratio of cats to dogs at a boarding facility one weekend is $3 : 8$. There are 33 dogs and cats staying for the weekend in all. Complete the table to show how many dogs and how many cats were at the boarding facility for the weekend.

Cats	Dogs	Total animals
3	8	11
9	24	33

- 2.** The ratio of yellow labrador retrievers to black labrador retrievers at a puppy training class is $4 : 3$. If there are 14 labrador retrievers at the class, how many are yellow labrador retrievers and how many are black labrador retrievers? Consider using a diagram or table to help with your thinking.

8 yellow; 6 black; Students' explanations may vary.

- 3.** A veterinarian examined 72 pets at her clinic in one day. The ratio of dogs to other pets was $8 : 1$. How many dogs and how many other pets did the veterinarian see? Consider using a diagram or table to help with your thinking.

64 dogs, 8 other pets; Students' explanations may vary.

- 4.** A boarding facility washes 5 small dogs for every 2 large dogs. Consider using a diagram or table to help with your thinking.

- a** If a total of 35 dogs were washed during one week, how many were large dogs?

10 large dogs; Students' explanations may vary.

- b** If a total of 42 dogs were washed during another week, how many were small dogs?

30 small dogs; Students' explanations may vary.

- c** If 40 small dogs were washed last week, what is the total number of dogs that were washed last week?

56 dogs; Students' explanations may vary.

5. Diego has \$100. He uses the ratio 3 : 2 to determine how much he can spend and how much he can save. Consider using a diagram or table to help with your thinking.

a How much money will Diego spend?

\$60; Students' explanations may vary.

b How much money will Diego save?

\$40; Students' explanations may vary.

6. Jada has a bag of 110 marbles. The ratio of red marbles to blue marbles is 4 : 1. Consider using a diagram or table to help with your thinking.

a How many red marbles does Jada have?

88 red marbles; Students' explanations may vary.

b How many blue marbles does Jada have?

22 blue marbles; Students' explanations may vary.

7. The first floor of a house contains a family room and a dining room. The combined area of these two rooms is 270 ft². The ratio of the area of the family room to the area of the dining room is 4 : 2. What is the area of each room? Consider using this table to help with your thinking.

Family room (ft ²)	Dining room (ft ²)	Total area (ft ²)
4	2	6
180	90	270

a What is the area of the family room?

180 ft²

b What is the area of the dining room?

90 ft²

8. A teacher is planning a field trip to the zoo. The zoo requires 3 chaperones for every 25 students. Shawn says, "If there are 112 students in Grade 6 going on this field trip, 12 chaperones are needed." Is Shawn correct? Write yes or no. Explain your thinking.

Yes; Sample response: 3 chaperones for every 25 students gives a ratio of 3 : 25, and represents a total of 28 of the tickets. 112 tickets is 4 times as many tickets, so multiply the 3 and 25 each by 4 to get the total number of tickets for the chaperones and students.

Name: Date: Period:

Additional Practice

2.13

1. The ratio of cats to dogs at a boarding facility one weekend is 3 : 8. There are 33 dogs and cats staying for the weekend in all. Complete the table to show how many dogs and how many cats were at the boarding facility for the weekend.

Cats	Dogs	Total animals
3	8	11
9	24	33

2. The ratio of yellow labrador retrievers to black labrador retrievers at a puppy training class is 4 : 3. If there are 14 labrador retrievers at the class, how many are yellow labrador retrievers and how many are black labrador retrievers? Consider using a diagram or table to help with your thinking.
8 yellow; 6 black; Students' explanations may vary.

3. A veterinarian examined 72 pets at her clinic in one day. The ratio of dogs to other pets was 8 : 1. How many dogs and how many other pets did the veterinarian see? Consider using a diagram or table to help with your thinking.
64 dogs, 8 other pets; Students' explanations may vary.

4. A boarding facility washes 5 small dogs for every 2 large dogs. Consider using a diagram or table to help with your thinking.

- If a total of 35 dogs were washed during one week, how many were large dogs?
10 large dogs; Students' explanations may vary.
- If a total of 42 dogs were washed during another week, how many were small dogs?
30 small dogs; Students' explanations may vary.
- If 40 small dogs were washed last week, what is the total number of dogs that were washed last week?
50 dogs; Students' explanations may vary.

5. Diego has \$100. He uses the ratio 3 : 2 to determine how much he can spend and how much he can save. Consider using a diagram or table to help with your thinking.

- How much money will Diego spend?
\$60; Students' explanations may vary.
- How much money will Diego save?
\$40; Students' explanations may vary.

6. Jada has a bag of 110 marbles. The ratio of red marbles to blue marbles is 4 : 1. Consider using a diagram or table to help with your thinking.

- How many red marbles does Jada have?
88 red marbles; Students' explanations may vary.
- How many blue marbles does Jada have?
22 blue marbles; Students' explanations may vary.

7. The first floor of a house contains a family room and a dining room. The combined area of these two rooms is 270 ft². The ratio of the area of the family room to the area of the dining room is 4 : 2. What is the area of each room? Consider using this table to help with your thinking.

Family room (ft ²)	Dining room (ft ²)	Total area (ft ²)
4	2	6
180	90	270

- What is the area of the family room?
180 ft².
- What is the area of the dining room?
90 ft².

8. A teacher is planning a field trip to the zoo. The zoo requires 3 chaperones for every 25 students. Shawn says, "If there are 112 students in Grade 6 going on this field trip, 12 chaperones are needed." Is Shawn correct? Write yes or no. Explain your thinking.
Yes; Sample response: 3 chaperones for every 25 students gives a ratio of 3:25, and represents a total of 28 of the tickets. 112 tickets is 4 times as many tickets, so multiply the 3 and 25 each by 4 to get the total number of tickets for the chaperones and students.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: Date: Period:

5. Diego has \$100. He uses the ratio 3 : 2 to determine how much he can spend and how much he can save. Consider using a diagram or table to help with your thinking.

- How much money will Diego spend?
\$60; Students' explanations may vary.
- How much money will Diego save?
\$40; Students' explanations may vary.

6. Jada has a bag of 110 marbles. The ratio of red marbles to blue marbles is 4 : 1. Consider using a diagram or table to help with your thinking.

- How many red marbles does Jada have?
88 red marbles; Students' explanations may vary.
- How many blue marbles does Jada have?
22 blue marbles; Students' explanations may vary.

7. The first floor of a house contains a family room and a dining room. The combined area of these two rooms is 270 ft². The ratio of the area of the family room to the area of the dining room is 4 : 2. What is the area of each room? Consider using this table to help with your thinking.

Family room (ft ²)	Dining room (ft ²)	Total area (ft ²)
4	2	6
180	90	270

- What is the area of the family room?
180 ft².
- What is the area of the dining room?
90 ft².

8. A teacher is planning a field trip to the zoo. The zoo requires 3 chaperones for every 25 students. Shawn says, "If there are 112 students in Grade 6 going on this field trip, 12 chaperones are needed." Is Shawn correct? Write yes or no. Explain your thinking.
Yes; Sample response: 3 chaperones for every 25 students gives a ratio of 3:25, and represents a total of 28 of the tickets. 112 tickets is 4 times as many tickets, so multiply the 3 and 25 each by 4 to get the total number of tickets for the chaperones and students.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Practice Problem Analysis

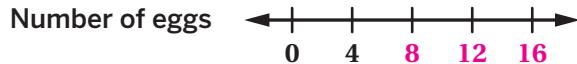
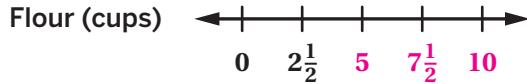
Problem	DOK	Standard(s)
1	2	6.RP.A.3
2	2	6.RP.A.3
3	2	6.RP.A.3
4	2	6.RP.A.3
5	2	6.RP.A.3
6	3	6.RP.A.3
7	3	6.RP.A.3
8	3	6.RP.A.3

Notes:

Additional Practice**2.14**

- 1.** The double number line diagram shows the amount of flour and eggs needed for one batch of homemade pasta.

a Complete the diagram to show the amount of flour and eggs needed for 2, 3, and 4 batches of homemade pasta.



b What is the ratio of cups of flour to eggs?

2 1/2 : 4

c How much flour and how many eggs are needed in 5 batches of homemade pasta?

12 1/2 cups of pasta; 20 eggs

d How much flour is used with 16 eggs?

10 cups of flour

e How many eggs are used with $7\frac{1}{2}$ cups of flour?

12 eggs

- 2.** One batch of purple paint uses 3 tsp of blue paint and 5 tsp of red paint. Shawn made a large amount of the same color purple paint using 40 tsp of red paint. Explain your thinking for each part.

a How many batches of purple paint did Shawn make?

8 batches; Students' explanations may vary.

b How many teaspoons of blue paint did Shawn use?

24 tsp; Students' explanations may vary.

- 3.** Kiran has 80 chocolate chip granola bars, 72 peanut butter granola bars, and 16 oatmeal raisin granola bars for a bake sale. He wants to make bags that have all three types of granola bars and the same number of each type in each bag, without any left over. Which are possible combinations of granola bars in the bags? Select *all* that apply.

- A. 8 bags with 10 chocolate chip bars, 9 peanut butter bars, and 2 oatmeal raisin bars.
- B. 2 bags with 40 chocolate chip bars, 36 peanut butter bars, and 8 oatmeal raisin bars.
- C. 16 bags with 5 chocolate chip bars, 4 peanut butter bars, and 1 oatmeal raisin bars.
- D. 10 bags with 4 chocolate chip bars, 7 peanut butter bars, and 2 oatmeal raisin bars.
- E. 4 bags with 20 chocolate chip bars, 18 peanut butter bars, and 4 oatmeal raisin bars.

- 4.** A bakery makes blueberry muffins, raspberry muffins, and banana muffins in the ratio of 9 : 2 : 4. If the bakery makes 540 muffins today, how many of each type did they make?

a Blueberry muffins

324 blueberry muffins

b Raspberry muffins

72 raspberry muffins

c Banana muffins

144 banana muffins

Name: _____ Date: _____ Period: _____

Additional Practice

2.14

1. The double number line diagram shows the amount of flour and eggs needed for one batch of homemade pasta.

a. Complete the diagram to show the amount of flour and eggs needed for 2, 3, and 4 batches of homemade pasta.

b. What is the ratio of cups of flour to eggs?
 $\frac{2\frac{1}{2}}{2} : 4$

c. How much flour and how many eggs are needed in 5 batches of homemade pasta?
 $12\frac{1}{2}$ cups of pasta; 20 eggs

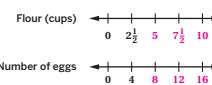
d. How much flour is used with 16 eggs?
10 cups of flour

e. How many eggs are used with $7\frac{1}{2}$ cups of flour?
12 eggs

2. One batch of purple paint uses 3 tsp of blue paint and 5 tsp of red paint. Shawn made a large amount of the same color purple paint using 40 tsp of red paint. Explain your thinking for each part.

a. How many batches of purple paint did Shawn make?
8 batches; Students' explanations may vary.

b. How many teaspoons of blue paint did Shawn use?
24 tsp; Students' explanations may vary.



Name: _____ Date: _____ Period: _____

3. Kiran has 80 chocolate chip granola bars, 72 peanut butter granola bars, and 16 oatmeal raisin granola bars for a bake sale. He wants to make bags that have all three types of granola bars and the same number of each type in each bag, without any left over. Which are possible combinations of granola bars in the bags? Select *all* that apply.

A. 8 bags with 10 chocolate chip bars, 9 peanut butter bars, and 2 oatmeal raisin bars.
 B. 2 bags with 40 chocolate chip bars, 36 peanut butter bars, and 8 oatmeal raisin bars.
 C. 16 bags with 5 chocolate chip bars, 4 peanut butter bars, and 1 oatmeal raisin bar.
 D. 10 bags with 4 chocolate chip bars, 7 peanut butter bars, and 2 oatmeal raisin bars.
 E. 4 bags with 20 chocolate chip bars, 18 peanut butter bars, and 4 oatmeal raisin bars.

4. A bakery makes blueberry muffins, raspberry muffins, and banana muffins in the ratio of 9 : 2 : 4. If the bakery makes 540 muffins today, how many of each type did they make?

a. Blueberry muffins
324 blueberry muffins

b. Raspberry muffins
72 raspberry muffins

c. Banana muffins
144 banana muffins

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.RP.A.3
2	2	6.RP.A.1
3	2	6.NS.B.4
4	2	6.RP.A.3.D

Notes:

Additional Practice**3.01**

Problems 1–3: For each pair, circle the larger unit of measurement.

1. **A.** Mile **B.** Meter

2. **A.** Inch **B.** Foot

3. **A.** Pound **B.** Gram

4. Determine whether each unit of measurement measures length, volume, or weight.

Unit	Length	Volume	Weight
Millimeter	X		
Pound			X
Cup		X	
Quart		X	
Yard	X		
Gram			X

Problems 5–7: Identify a unit that can be used to measure:

5. The length of a hammer.

Inches

6. The volume of an orange soda can.

Fluid ounces

7. The weight of a truck.

Tons

8. Select *all* the measurements that you could measure from a box of cereal.

- A. Inches
- B. Miles
- C. Kilometers
- D. Gallons
- E. Cups
- F. Ounces

9. Match each object with the unit you would most likely use to measure it.

- | | |
|---|---------------------|
| a. The height of a house . | d. Kilometers |
| b. The length of a nail. | e. Pounds |
| c. The weight of a staple. | c. Grams |
| d. The distance between two towns. | b. Centimeters |
| e. The weight of a piggy bank. | a. Feet |
| f. The volume of a pitcher of lemonade. | f. Gallons |

Additional Practice | Answer Key

Unit 3 | Lesson 1

Name: _____ Date: _____ Period: _____

Additional Practice

3.01

Problems 1–3: For each pair, circle the larger unit of measurement.

1. A. Mile B. Meter

2. A. Inch B. Foot

3. A. Pound B. Gram

4. Determine whether each unit of measurement measures length, volume, or weight.

Unit	Length	Volume	Weight
Millimeter	X		
Pound			X
Cup		X	
Quart		X	
Yard	X		
Gram			X

Problems 5–7: Identify a unit that can be used to measure:

5. The length of a hammer.
Inches

6. The volume of an orange soda can.
Fluid ounces

7. The weight of a truck.
Tons

Unit 3 Lesson 1 59 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

8. Select all the measurements that you could measure from a box of cereal.

A. Inches
 B. Miles
 C. Kilometers
 D. Gallons
 E. Cups
 F. Ounces

9. Match each object with the unit you would most likely use to measure it.

a. The height of a house.	<input type="checkbox"/> d. Kilometers
b. The length of a nail.	<input type="checkbox"/> e. Pounds
c. The weight of a staple.	<input type="checkbox"/> f. Grams
d. The distance between two towns.	<input type="checkbox"/> b. Centimeters
e. The weight of a piggy bank.	<input type="checkbox"/> a. Feet
f. The volume of a pitcher of lemonade.	<input type="checkbox"/> c. Gallons

Unit 3 Lesson 1 60 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.3.D
2	1	6.RP.A.3.D
3	1	6.RP.A.3.D
4	1	6.RP.A.3.D
5	2	6.RP.A.3.D
6	2	6.RP.A.3.D
7	2	6.RP.A.3.D
8	2	6.RP.A.3.D
9	2	6.RP.A.3.D

Notes:

Additional Practice**3.03**

- 1.** Cordelia is 66 inches tall. If 100 inches = 254 centimeters, which value is closest to her height in centimeters?
 - A. 41.94 centimeters
 - B. 83.82 centimeters
 - C. **167.64 centimeters**
 - D. 335.28 centimeters

- 2.** A yard is equal to 3 feet, and there are 1,760 yards in 1 mile. How many feet are there in 5 miles?
 - A. 3,520
 - B. 5,280
 - C. 7,040
 - D. 8,800**

- 3.** Gloria's family exchanged 500 dollars for 480 euros. Complete the table to determine the conversions between euros and dollars.

Dollars	Euros
500	480
50	48
2	1.92
4	3.84
1,250	1,200
2,200	2,112

Problems 4–6: Use the conversion rate that makes the most sense to determine the approximate value of each missing quantity. Show or explain your thinking.

1 kilogram = 1000 grams	3 ounces \approx 85 grams
11 pounds \approx 5 kilograms	4 kilograms \approx 141 ounces

- 4.** 18 ounces \approx **510** grams
- 5.** 25 kilograms \approx **55** pounds
- 6.** 28 kilograms \approx **987** ounces

7. Josephine lives 600 meters from her school in France. Thomas lives 1,000 feet from his school in the United States. Given that every 3 meters is approximately 10 feet, who lives farther from their school? Circle one and explain your thinking.

Josephine

Thomas

About the same distance

Since every 3 meters is approximately 10 feet, then 600 meters is approximately equal to 2,000 feet. Since 2,000 feet is greater than 1,000 feet, Josephine lives farther from their school than Thomas.

8. Auden's puppy eats about 100 grams of dog food per day. Auden wants to know how many pounds that is. Auden knows that there is approximately 454 grams in a pound. About how many pounds is 100 grams?

Approximately 2.2 pounds

Name: _____ Date: _____ Period: _____

Additional Practice **3.03**

1. Cordelia is 66 inches tall. If $100 \text{ inches} = 254 \text{ centimeters}$, which value is closest to her height in centimeters?
 A. 41.94 centimeters
 B. 83.82 centimeters
 C. 167.64 centimeters
 D. 335.28 centimeters

2. A yard is equal to 3 feet, and there are 1,760 yards in 1 mile. How many feet are there in 5 miles?
 A. 3,520
 B. 5,280
 C. 7,040
 D. 8,800

3. Gloria's family exchanged 500 dollars for 480 euros. Complete the table to determine the conversions between euros and dollars.

Dollars	Euros
500	480
50	48
2	1.92
4	3.84
1,250	1,200
2,200	2,112

Problems 4–6: Use the conversion rate that makes the most sense to determine the approximate value of each missing quantity. Show or explain your thinking.

1 kilogram = 1000 grams	3 ounces = 85 grams
11 pounds = 5 kilograms	4 kilograms = 141 ounces

4. 18 ounces ≈ 510 grams
 5. 25 kilograms ≈ 55 pounds
 6. 28 kilograms ≈ 987 ounces

Unit 3 Lesson 3 **63** © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

7. Josephine lives 600 meters from her school in France. Thomas lives 1,000 feet from his school in the United States. Given that every 3 meters is approximately 10 feet, who lives farther from their school? Circle one and explain your thinking.
 Josephine Thomas About the same distance
 Since every 3 meters is approximately 10 feet, then 600 meters is approximately equal to 2,000 feet. Since 2,000 feet is greater than 1,000 feet, Josephine lives farther from their school than Thomas.

8. Auden's puppy eats about 100 grams of dog food per day. Auden wants to know how many pounds that is. Auden knows that there is approximately 454 grams in a pound.
 About how many pounds is 100 grams?
 Approximately 2.2 pounds

Unit 3 Lesson 3 **64** Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.3.D
2	1	6.RP.A.3.D
3	1	6.RP.A.3.D
4	2	6.RP.A.3.D
5	2	6.RP.A.3.D
6	2	6.RP.A.3.D
7	2	6.RP.A.3.D
8	2	6.RP.A.3.D

Notes:

Additional Practice

3.05

Problems 1–2: Turtle A walks 1.5 feet in 5 seconds. Turtle B walks 3 feet in 9 seconds. Each turtle keeps walking at those speeds.

- How far does each turtle walk in 45 seconds?

Turtle A walks 13.5 feet in 45 seconds. Turtle B walks 15 feet in 45 seconds.

- If the two turtles start at the same place and walk in the same direction, how far apart will the two turtles be after 3 minutes? Show or explain your thinking.

When I multiply 45 seconds by 4, I get 180 seconds or 3 minutes. When I multiply 13.5 by 4, I get 54 feet. So, Turtle A travels 54 feet in 3 minutes. When I multiply 15 by 4, I get 60 feet. So, Turtle B travels 60 feet in 3 minutes. The turtles will be 6 feet apart.

- A cheetah runs 100 m in 6 seconds.

- At this rate, how long will it take the cheetah to run 150 m? Show your thinking.

9 seconds

- How far will the cheetah run in 27 seconds? Show your thinking.

450 m

- Snail A travels 4 in. in 7 minutes. Snail B travels 6 in. in 10 minutes. Each snail continues traveling at a constant speed.

- How far does Snail A travel in 35 minutes? Show your thinking.

20 in.

- How far does Snail B travel in 35 minutes? Show your thinking.

21 in.

- If the two snails start at the same place and travel in the same direction, how far apart will the two snails be after 84 minutes? Show your thinking.

2.4 in.

5. Elena reads 15 pages in 25 minutes. Shawn reads 12 pages in 15 minutes. Both read at a constant rate.

a Who reads faster? Show your thinking.

Shawn

b How many pages can Elena read in 1 hour? Show your thinking.

36 pages

c How many pages can Shawn read in 1 hour? Show your thinking.

48 pages

Priya types 1,100 words in 20 minutes. Tyler types 600 words in 10 minutes. Andre types 300 words in 6 minutes. Each person types at a constant rate. Use this information for Problems 6–8.

6. Complete the tables to represent the number of words each person can type in different amounts of time.

a	Priya		b	Tyler		c	Andre	
	Words	Time (min)		Words	Time (min)		Words	Time (min)
	55	1		60	1		50	1
	1,650	30		1,800	30		1,500	30
	2,475	45		2,700	45		2,250	45

7. Which person is typing at a faster rate? How much faster? Show or explain your thinking.

Tyler; Sample response: Tyler is typing 60 words per minute, which is 5 words per minute faster than Priya and 10 words per minute faster than Andre.

8. How long will it take each person to type 3,300 words? Explain your thinking.

Sample response: To type 3,300 words, it will take Priya 60 minutes, it will take Tyler 55 minutes, and it will take Andre 66 minutes.

Additional Practice | Answer Key

Unit 3 | Lesson 5

Name: _____ Date: _____ Period: _____

Additional Practice **3.05**

Problems 1–2: Turtle A walks 1.5 feet in 5 seconds. Turtle B walks 3 feet in 9 seconds. Each turtle keeps walking at those speeds.

- How far does each turtle walk in 45 seconds?
Turtle A walks 13.5 feet in 45 seconds. Turtle B walks 15 feet in 45 seconds.
- If the two turtles start at the same place and walk in the same direction, how far apart will the two turtles be after 3 minutes? Show or explain your thinking.
When I multiply 45 seconds by 4, I get 180 seconds or 3 minutes. When I multiply 13.5 by 4, I get 54 feet. So, Turtle A travels 54 feet in 3 minutes. When I multiply 15 by 4, I get 60 feet. So, Turtle B travels 60 feet in 3 minutes. The turtles will be 6 feet apart.
- A cheetah runs 100 m in 6 seconds.
 - At this rate, how long will it take the cheetah to run 150 m? Show your thinking.
9 seconds
 - How far will the cheetah run in 27 seconds? Show your thinking.
450 m
- Snail A travels 4 in. in 7 minutes. Snail B travels 6 in. in 10 minutes. Each snail continues traveling at a constant speed.
 - How far does Snail A travel in 35 minutes? Show your thinking.
20 in.
 - How far does Snail B travel in 35 minutes? Show your thinking.
21 in.
 - If the two snails start at the same place and travel in the same direction, how far apart will the two snails be after 84 minutes? Show your thinking.
2.4 in.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

- Elena reads 15 pages in 25 minutes. Shawn reads 12 pages in 15 minutes. Both read at a constant rate.
 - Who reads faster? Show your thinking.
Shawn
 - How many pages can Elena read in 1 hour? Show your thinking.
36 pages
 - How many pages can Shawn read in 1 hour? Show your thinking.
48 pages

Priya types 1,100 words in 20 minutes. Tyler types 600 words in 10 minutes. Andre types 300 words in 6 minutes. Each person types at a constant rate. Use this information for Problems 6–8.

- Complete the tables to represent the number of words each person can type in different amounts of time.

a	Priya	b	Tyler	c	Andre			
	Words	Time (min)	Words	Time (min)	Words	Time (min)		
	55	1		60	1		50	1
	1,650	30		1,800	30		1,500	30
	2,475	45		2,700	45		2,250	45

- Which person is typing at a faster rate? How much faster? Show or explain your thinking.
Tyler: Sample response: Tyler is typing 60 words per minute, which is 5 words per minute faster than Priya and 10 words per minute faster than Andre.
- How long will it take each person to type 3,300 words? Explain your thinking.
Sample response: To type 3,300 words, it will take Priya 60 minutes, it will take Tyler 55 minutes, and it will take Andre 66 minutes.

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.RP.A.2
2	2	6.RP.A.2, 6.RP.A.3
3	2	6.RP.A.2
4	2	6.RP.A.2
5	2	6.RP.A.2
6	2	6.RP.A.2
7	3	6.RP.A.2
8	3	6.RP.A.2

Notes:

Additional Practice**3.06**

Problems 1–3: Tomas purchased a new printer for their office. The printer can print 250 pages every 2 minutes.

1. How many pages can the printer make per minute?

The printer can print 125 pages per minute.

2. How many minutes does it take per page?

It takes 0.008 minutes per page.

3. How many pages can be printed in 10 minutes?

1,250 pages can be printed in 10 minutes.

4. A farm lets you pick 2 pt of blueberries for \$6.00.

- a What is the cost per pint? Show your thinking.

\$3

- b How many pints can you buy per dollar? Show your thinking.

$\frac{1}{3}$ of a pint (or equivalent)

- c At this rate, how many pints can you buy for \$15? Show your thinking.

5 pt

- d At this rate, how much will 7 pt of blueberries cost? Show your thinking.

\$21

5. A farm lets you pick 4 lb of strawberries for \$16.00.

- a What is the cost per pound? Show your thinking.

\$4

- b How many pounds can you buy per dollar? Show your thinking.

$\frac{1}{4}$ lb

- c At this rate, how many pounds can you buy for \$22? Show your thinking.

$5\frac{1}{2}$ lb

- d At this rate, how much will 10 lb of strawberries cost? Show your thinking.

\$40

Clare paid \$10 for 8 game tickets at her school carnival. Use this information for Problems 6–8.

6. Complete the table to show different numbers of tickets that can be purchased for different dollar amounts at the same rate.

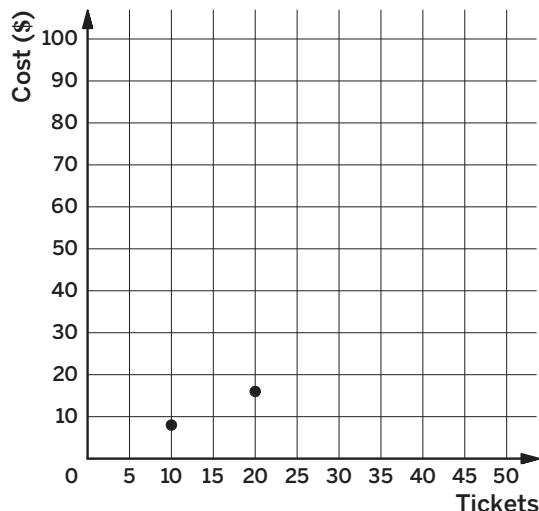
Tickets	Cost (\$)	Cost per ticket (\$)
8	10	1.25
1	1.25	1.25
10	12.50	1.25
15	18.75	1.25
24	30	1.25

7. Clare says that this graph represents two pairs of numbers of tickets and cost, in dollars. Is Clare's graph correct? Explain your thinking.

No; Sample response: Clare reversed the order of the coordinates. She should graph points at (8, 10) and (16, 20).

8. Kiran says that if he pays \$6 for 4 tickets, he's getting a better deal than Clare. Do you agree with Kiran? Explain your thinking.

No; Sample response: Kiran is paying \$1.50 per ticket if he's paying \$6 for 4 tickets, so Clare is getting the better deal at \$1.25 per ticket.



Additional Practice | Answer Key

Unit 3 | Lesson 6

Name: _____ Date: _____ Period: _____

Additional Practice 3.06

Problems 1–3: Tomas purchased a new printer for their office. The printer can print 250 pages every 2 minutes.

- How many pages can the printer make per minute?
The printer can print 125 pages per minute.
- How many minutes does it take per page?
It takes 0.008 minutes per page.
- How many pages can be printed in 10 minutes?
1,250 pages can be printed in 10 minutes.
- A farm lets you pick 2 pt of blueberries for \$6.00.
 - What is the cost per pint? Show your thinking.
\$3
 - How many pints can you buy per dollar? Show your thinking.
 $\frac{1}{3}$ of a pint (or equivalent)
 - At this rate, how many pints can you buy for \$15? Show your thinking.
5 pt
 - At this rate, how much will 7 pt of blueberries cost? Show your thinking.
\$21
- A farm lets you pick 4 lb of strawberries for \$16.00.
 - What is the cost per pound? Show your thinking.
\$4
 - How many pounds can you buy per dollar? Show your thinking.
 $\frac{1}{4}$ lb
 - At this rate, how many pounds can you buy for \$22? Show your thinking.
 $5\frac{1}{2}$ lb
 - At this rate, how much will 10 lb of strawberries cost? Show your thinking.
\$40

Unit 3 Lesson 6 69 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Clare paid \$10 for 8 game tickets at her school carnival. Use this information for Problems 6–8.

- Complete the table to show different numbers of tickets that can be purchased for different dollar amounts at the same rate.
- Clare says that this graph represents two pairs of numbers of tickets and cost, in dollars. Is Clare's graph correct? Explain your thinking.
Note: Sample response: Clare reversed the order of the coordinates. She should graph points at (8, 10) and (16, 20).
- Kiran says that if he pays \$6 for 4 tickets, he's getting a better deal than Clare. Do you agree with Kiran? Explain your thinking.
Note: Sample response: Kiran is paying \$1.50 per ticket if he's paying \$6 for 4 tickets, so Clare is getting the better deal at \$1.25 per ticket.

Tickets	Cost (\$)	Cost per ticket (\$)
8	10	1.25
16	20	1.25
10	12.50	1.25
15	18.75	1.25
24	30	1.25

Unit 3 Lesson 6 70 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.3,
2	1	6.RP.A.2, 6.RP.A.3
3	1	6.RP.A.3
4	2	6.RP.A.3.B
5	2	6.RP.A.3.B
6	2	6.RP.A.3.B
7	3	6.RP.A.3.B
8	3	6.RP.A.3.B

Notes:

Additional Practice**3.07**

- 1.** Which ratio is *not* equivalent to 8 : 6?

- A. 4 : 3
- B. 1 : $\frac{3}{4}$
- C. $\frac{4}{3} : 1$
- D.** $\frac{3}{4} : 1$

- 2.** Which ratios are equivalent to 2 : 8? Select *all* that apply.

- A. 1 : 4
- B. 1 : 2
- C. $\frac{2}{8} : 1$
- D. $1 : \frac{1}{4}$
- E. 8 : 32

- 3.** Lin bought a 40 lb bag of dog food for \$48.80. Shawn bought an 8 lb bag of dog food for \$9.88.

- a** Complete this table to determine the unit rate for each bag of dog food.

	Dog food (lb)	Price (\$)	Unit rate (\$ per lb)
Lin	40	48.80	1.22
Shawn	8	9.88	1.24

- b** Which size bag of dog food offers the best deal? Explain your thinking.

40-lb bag; Sample response: The 40-lb bag of dog food offers the best deal because it has a lower unit rate.

- 4.** Which brand of peanut butter offers the best deal per ounce? Explain your thinking.

- Brand A: 28 oz for \$4.76
- Brand B: 48 oz for \$8.64
- Brand C: 16 oz for \$3.52

Brand A; Sample response: Brand A offers the best deal. Brand A costs \$0.17 per ounce, Brand B costs \$0.18 per ounce, and Brand C costs \$0.22 per ounce.

- 5.** The grocery store Noah is shopping at offers different varieties of bags of apples.

- a Complete the table to determine the unit price for each variety of apple.

Apple variety	Price (\$)	Weight (lb)	Unit rate (\$ per lb)
Gala	6.45	5	1.29
Fuji	3.08	4	0.77
Honeycrisp	5.37	3	1.79
Granny Smith	7.74	6	1.29

- b Which variety of apples is the best deal? Explain your thinking.

Fuji apples; Sample response: Fuji apples are the best deal because their unit price is the least: \$0.77 per lb.

- 6.** Jada reads 15 pages in 12 minutes. Bard reads 21 pages in 28 minutes. Who reads faster? Explain your thinking.

Jada; Sample response: Bard reads 0.75 pages per minute and Jada reads 1.25 pages per minute.

- 7.** Mai uses 8 cups of apples to make 3 pies. Mai says, “At this same rate, I can make 5 pies using 16 cups of apples.” Is Mai correct? Explain your thinking.

No; Sample response: Mai uses $2\frac{2}{3}$ cups of apples to make one pie, so Mai will use $13\frac{1}{3}$ cups of apples to make 5 pies.

- 8.** Plane A travels 2,260 miles in 4 hours. Plane B travels 810 miles in $1\frac{1}{2}$ hours. Plane C travels 3,692 miles in $6\frac{1}{2}$ hours. Tyler claims that Plane C has the fastest speed. Do you agree with Tyler? Explain your thinking.

Yes; Sample response: Plane A travels 565 mph, Plane B travels 540 mph, and Plane C travels 568 miles per hour. Plane C is traveling the fastest.

Additional Practice | Answer Key

Unit 3 | Lesson 7

Name: _____ Date: _____ Period: _____

Additional Practice **3.07**

1. Which ratio is *not* equivalent to 8 : 6?

A. 4 : 3
 B. 1 : $\frac{3}{4}$
 C. $\frac{4}{3}$: 1
 D. $\frac{3}{4}$: 1
 E. 8 : 32

2. Which ratios are equivalent to 2 : 8? Select *all* that apply.

A. 1 : 4
 B. 1 : 2
 C. $\frac{2}{8}$: 1
 D. 1 : $\frac{1}{4}$
 E. 8 : 32

3. Lin bought a 40 lb bag of dog food for \$48.80. Shawn bought an 8 lb bag of dog food for \$9.88.

a. Complete this table to determine the unit rate for each bag of dog food.

	Dog food (lb)	Price (\$)	Unit rate (\$ per lb)
Lin	40	48.80	1.22
Shawn	8	9.88	1.24

b. Which size bag of dog food offers the best deal? Explain your thinking.
 40-lb bag: Sample response: The 40-lb bag of dog food offers the best deal because it has a lower unit rate.

4. Which brand of peanut butter offers the best deal per ounce? Explain your thinking.

- Brand A: 28 oz for \$4.76
- Brand B: 48 oz for \$8.64
- Brand C: 16 oz for \$3.52

Brand A: Sample response: Brand A offers the best deal. Brand A costs \$0.17 per ounce. Brand B costs \$0.18 per ounce, and Brand C costs \$0.22 per ounce.

Unit 3 Lesson 7 71 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. The grocery store Noah is shopping at offers different varieties of bags of apples.

a. Complete the table to determine the unit price for each variety of apple.

Apple variety	Price (\$)	Weight (lb)	Unit rate (\$ per lb)
Gala	6.45	5	1.29
Fuji	3.08	4	0.77
Honeycrisp	5.37	3	1.79
Granny Smith	7.74	6	1.29

b. Which variety of apples is the best deal? Explain your thinking.
 Fuji apples: Sample response: Fuji apples are the best deal because their unit price is the least: \$0.77 per lb.

6. Jada reads 15 pages in 12 minutes. Bard reads 21 pages in 28 minutes. Who reads faster? Explain your thinking.
 Jada: Sample response: Bard reads 0.75 pages per minute and Jada reads 1.25 pages per minute.

7. Mai uses 8 cups of apples to make 3 pies. Mai says, "At this same rate, I can make 5 pies using 16 cups of apples." Is Mai correct? Explain your thinking.
 Mai: Sample response: Mai uses $2\frac{2}{3}$ cups of apples to make one pie, so Mai will use $13\frac{1}{3}$ cups of apples to make 5 pies.

8. Plane A travels 2,260 miles in 4 hours. Plane B travels 810 miles in $1\frac{1}{2}$ hours. Plane C travels 3,692 miles in $4\frac{1}{2}$ hours. Tyler claims that Plane C has the fastest speed. Do you agree with Tyler? Explain your thinking.
 Yes: Sample response: Plane A travels 565 mph, Plane B travels 540 mph, and Plane C travels 568 miles per hour. Plane C is traveling the fastest.

Unit 3 Lesson 7 72 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.3.B
2	1	6.RP.A.3.B
3	2	6.RP.A.2, 6.RP.A.3.B
4	2	6.RP.A.2, 6.RP.A.3.B
5	2	6.RP.A.2, 6.RP.A.3.B
6	2	6.RP.A.2, 6.RP.A.3.B
7	2	6.RP.A.2, 6.RP.A.3.B
8	3	6.RP.A.2, 6.RP.A.3.B

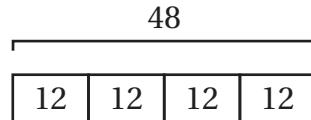
Notes:

Additional Practice**4.03**

- 1.** Refer to the tape diagram shown.

- a** Write a multiplication equation that could be represented by the diagram.

$$12 \cdot 4 = 48$$



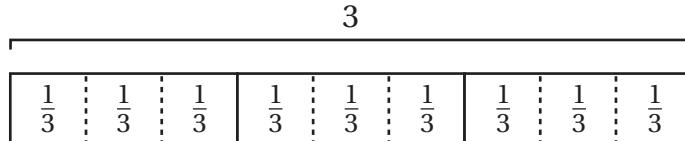
- b** Write a division equation that could be represented by the diagram.

$$48 \div 4 = 12$$

- 2.** Refer to the tape diagram shown.

- a** Write a multiplication equation that could be represented by the diagram.

$$\frac{1}{3} \cdot 9 = 3$$



- b** Write a division equation that could be represented by the diagram.

$$3 \div 9 = \frac{1}{3}$$

- 3.** Andre's neighborhood swimming pool is open for 10 hours each day. Each lifeguard's shift is $2\frac{1}{2}$ hours. How many shifts will be available throughout the day?

Four shifts will be available throughout the day.

- 4.** Mai was filling several same-sized jars with oatmeal to make overnight oats. She put $\frac{2}{3}$ cup of oatmeal in each jar, using a total of 6 cups.

- Mai says, "I can use the equation $6 \cdot ? = \frac{2}{3}$ to determine how many jars are filled."
- Diego says, "I can use the equation $6 \div \frac{2}{3} = ?$ to determine how many jars are filled."

Do you agree with one, both, or neither of them? Explain your thinking.

Explanations vary. I agree with Diego. Each jar can hold $\frac{2}{3}$ cup of oatmeal. Since they need to find out many groups of $\frac{2}{3}$ are in 6, $6 \div \frac{2}{3} = ?$ is the correct equation.

Problems 5–6: Philipe is making an ice cream sundae with two friends. Philipe's two friends are using different-sized scoops to make their sundaes. If Philipe's recipe for the ice cream sundae calls for 6 cups of ice cream, how many scoops of ice cream does each friend need?

5. Tomas: $\frac{1}{2}$ -cup scoop

12 scoops

6. Angelica: 3 cup-scoop

2 scoops

7. Priya was filling snack bags with trail mix. After using 9 cups of trail mix, she had filled 12 bags. If all of the snack bags have the same amount of trail mix, how much is in each bag?

- a Multiplication equation:

$$12 \bullet ? = 9$$

- b Division equation:

$$9 \div 12 = ?$$

- c Diagram:

Sample response:



- d Solution:

$$\frac{3}{4} \text{ cups of trail mix}$$

Name: _____ Date: _____ Period: _____

Additional Practice

4.03

1. Refer to the tape diagram shown.

a. Write a multiplication equation that could be represented by the diagram.
 $12 \times 4 = 48$

b. Write a division equation that could be represented by the diagram.
 $48 \div 4 = 12$

2. Refer to the tape diagram shown.

a. Write a multiplication equation that could be represented by the diagram.
 $3 \times 9 = 27$

b. Write a division equation that could be represented by the diagram.
 $27 \div 3 = 9$

3. Andre's neighborhood swimming pool is open for 10 hours each day. Each lifeguard's shift is $2\frac{1}{2}$ hours. How many shifts will be available throughout the day?
Four shifts will be available throughout the day.

4. Mai was filling several same-sized jars with oatmeal to make overnight oats. She put $\frac{2}{3}$ cup of oatmeal in each jar, using a total of 6 cups.

- Mai says, "I can use the equation $6 \times ? = \frac{2}{3}$ to determine how many jars are filled."
- Diego says, "I can use the equation $6 \div \frac{2}{3} = ?$ to determine how many jars are filled."

Do you agree with one, both, or neither of them? Explain your thinking.
Explanations vary. I agree with Diego. Each jar can hold $\frac{2}{3}$ cup of oatmeal. Since they need to find out many groups of $\frac{2}{3}$ are in 6, $6 \div \frac{2}{3} = ?$ is the correct equation.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 4 Lesson 3

91

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Problems 5–6: Philipe is making an ice cream sundae with two friends. Philipe's two friends are using different-sized scoops to make their sundaes. If Philipe's recipe for the ice cream sundae calls for 6 cups of ice cream, how many scoops of ice cream does each friend need?

5. Tomas: $\frac{1}{2}$ -cup scoop
12 scoops

6. Angelica: 3 cup-scoop
2 scoops

7. Priya was filling snack bags with trail mix. After using 9 cups of trail mix, she had filled 12 bags. If all of the snack bags have the same amount of trail mix, how much is in each bag?

a. Multiplication equation:
 $12 \times ? = 9$

b. Division equation:
 $9 \div 12 = ?$

c. Diagram:
Sample response:

d. Solution:
 $\frac{3}{4}$ cups of trail mix

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 4 Lesson 3

92

Additional Practice

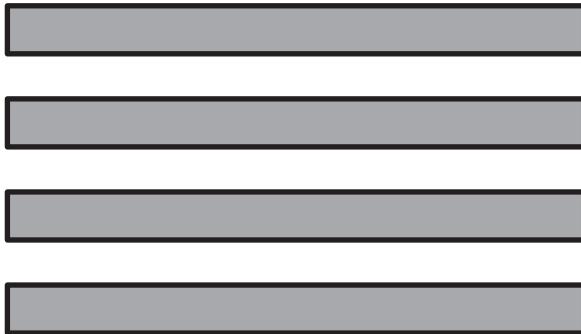
Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	3.OA.B
2	1	5.NBT.B.7
3	1	6.NS.A.1
4	2	6.NS.A.1
5	1	6.NS.A.1
6	1	6.NS.A.1
7	2	4.NF.B.4.A

Notes:

Additional Practice**4.04**

Problems 1–5: Levi is planting herbs in his garden. Determine how many of each herb plant Levi can fit in 1 planter. Use the diagrams if they help with your thinking.



1. Sage, if 10 sage plants fill $\frac{1}{2}$ of a planter.

20 sage plants

2. Thyme, if 8 thyme plants fill $\frac{2}{3}$ of a planter.

12 thyme plants

3. Basil, if 3 basil plants fill $\frac{1}{3}$ of a planter.

9 basil plants

4. Oregano, if 3 oregano plants fill $\frac{3}{4}$ of a planter.

4 oregano plants

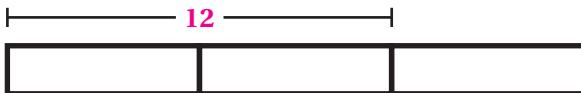
5. Levi wrote the expression $3 \div \frac{3}{4}$ to represent how many oregano plants fill 1 planter.

Describe a situation that represents the expression $6 \div \frac{2}{3}$.

Explanations vary. If 6 rosemary plants fill $\frac{2}{3}$ of a planter, then the expression $6 \div \frac{2}{3}$ could represent how many rosemary plants can fit in one planter.

Problems 6–7: Juni picks 12 blackberries from her backyard, which fill $\frac{2}{3}$ of a cup.

6. Label the tape diagram to represent Juni's situation.



7. Determine how many blackberries fill 1 cup. Use the tape diagram if it helps with your thinking.

18 blackberries fill 1 cup.



8. Maj is painting his kitchen. He uses 5 gallons of paint for $\frac{5}{8}$ of the kitchen. How many gallons of paint would he need to paint the whole kitchen?

8 gallons of paint

9. Sergio is planting flowers in his garden. 21 flowers fill 3 small planters. How many flowers fill 1 small planter?

7 flowers

10. Match each representation with a question.

Representation	18 flowers fill 2 planters. How many flowers fill 1 planter?	18 flowers fill $\frac{2}{3}$ of a planter. How many flowers fill 1 planter?
$18 \div 2 = ?$	X	
$18 \div \frac{2}{3} = ?$		X
$2 \times ? = 18$	X	
$\frac{2}{3} \times ? = 18$		X
		X

Name: _____ Date: _____ Period: _____

Additional Practice 4.04

Problems 1–5: Levi is planting herbs in his garden. Determine how many of each herb plant Levi can fit in 1 planter. Use the diagrams if they help with your thinking.

- Sage, if 10 sage plants fill $\frac{1}{2}$ of a planter.
20 sage plants
- Thyme, if 8 thyme plants fill $\frac{2}{3}$ of a planter.
12 thyme plants
- Basil, if 3 basil plants fill $\frac{1}{3}$ of a planter.
9 basil plants
- Oregano, if 3 oregano plants fill $\frac{3}{4}$ of a planter.
4 oregano plants
- Levi wrote the expression $3 \div \frac{3}{4}$ to represent how many oregano plants fill 1 planter. Describe a situation that represents the expression $6 \div \frac{2}{3}$.
Explanations vary. If 6 rosemary plants fill $\frac{2}{3}$ of a planter, then the expression $6 \div \frac{2}{3}$ could represent how many rosemary plants can fit in one planter.

Problems 6–7: Juni picks 12 blackberries from her backyard, which fill $\frac{2}{3}$ of a cup.

- Label the tape diagram to represent Juni's situation.

Unit 4 Lesson 4 93 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

- Determine how many blackberries fill 1 cup. Use the tape diagram if it helps with your thinking.
18 blackberries fill 1 cup.

- Maj is painting his kitchen. He uses 5 gallons of paint for $\frac{5}{6}$ of the kitchen. How many gallons of paint would he need to paint the whole kitchen?
8 gallons of paint
- Sergio is planting flowers in his garden. 21 flowers fill 3 small planters. How many flowers fill 1 small planter?
7 flowers
- Match each representation with a question.

Representation	18 flowers fill 2 planters. How many flowers fill 1 planter?	18 flowers fill $\frac{2}{3}$ of a planter. How many flowers fill 1 planter?
$18 \div 2 = ?$	X	
$18 \div \frac{2}{3} = ?$		X
$2 \times ? = 18$	X	
$\frac{2}{3} \times ? = 18$		X
		X

Unit 4 Lesson 4 94 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.NS.A.1
2	1	6.NS.A.1
3	1	6.NS.A.1
4	1	6.NS.A.1
5	2	6.NS.A.1
6	1	6.NS.A.1
7	2	6.NS.A.1
8	1	6.NS.A.1
9	1	6.NS.A.1
10	2	6.NS.A.1

Notes:

Additional Practice**4.05**

A hexagon represents 1 whole. Use the pattern blocks shown to complete Problems 1–4.



- 1.** What fractions of a whole does each of the following shapes or combinations of shapes represent? Show or explain your thinking.

a 2 rhombuses

$\frac{4}{6}$ or $\frac{2}{3}$; Sample response: 1 rhombus is equivalent to 2 triangles, so 2 rhombuses is equivalent to 4 triangles, or $\frac{2}{3}$ of a hexagon.

b 3 trapezoids

$1\frac{1}{2}$; Sample response: 1 trapezoid is equivalent to $\frac{1}{2}$ of a hexagon, so 3 trapezoids is equivalent to $1\frac{1}{2}$ hexagons.

c 3 triangles

$\frac{3}{6}$ or $\frac{1}{2}$; Sample response: 1 triangle is $\frac{1}{6}$ of a hexagon, so 3 triangles is equivalent to $\frac{1}{2}$ of a hexagon.

d 1 hexagon and 1 triangle

$1\frac{1}{6}$; Sample response: 1 triangle is $\frac{1}{6}$ of a hexagon, and 1 hexagon is 1, so 1 hexagon and 1 triangle represents $1\frac{1}{6}$.

- 2.** Write an equation that could be used to represent each question. Use a question mark for the unknown. Then solve the equation.

a How many $\frac{1}{2}$ s are in 3? $? \cdot \frac{1}{2} = 3$ or $3 \div \frac{1}{2} = ?; 6$

b How many $\frac{2}{3}$ s are in 4? $? \cdot \frac{2}{3} = 4$ or $4 \div \frac{2}{3} = ?; 6$

c How many $\frac{1}{6}$ s are in $3\frac{1}{2}$? $? \cdot \frac{1}{6} = 3\frac{1}{2}$ or $3\frac{1}{2} \div \frac{1}{6} = ?; 21$

- 3.** How many $\frac{1}{6}$ s are in $1\frac{2}{3}$? Show your thinking.

A. $\frac{1}{10}$

B. $\frac{5}{18}$

C. $3\frac{3}{5}$

D. 10

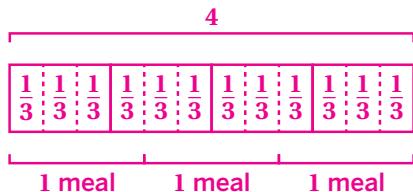
- 4.** Determine how many $\frac{1}{3}$ s are in $2\frac{2}{3}$. Show or explain your thinking.

8; Sample response: If the hexagon represents 1 whole, then the rhombus represents $\frac{1}{3}$ because it takes 3 rhombuses to make one hexagon. The figure representing $2\frac{2}{3}$ can be decomposed into 8 rhombuses, or $8\frac{1}{3}$ by $\frac{8}{3}$ s.



5. Bard buys rice in a 4-cup box. Bard's family uses $1\frac{1}{3}$ cups of rice per meal. How many meals does one box last?

- a Draw a diagram to represent the scenario. Label your diagram. **Sample response:**



- b Write a multiplication or division equation to represent the scenario. Use a question mark for the unknown.

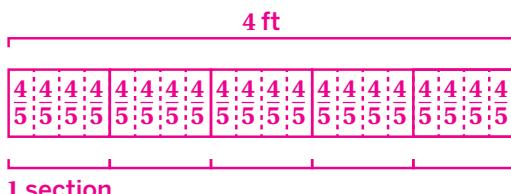
$$? \cdot 1\frac{1}{3} = 4 \text{ or } 4 \div 1\frac{1}{3} = ?$$

- c Determine how many meals one box lasts. Explain your thinking.

3 meals; Sample response: There are 3 portions of $1\frac{1}{3}$ in a 4-cup box.

6. Clare is cutting a 4-ft board into $\frac{4}{5}$ ft sections. How many sections of board will Clare cut?

- a Draw a diagram to represent the scenario. Label your diagram. **Sample response:**



- b Write a multiplication or division equation to represent the scenario. Use a question mark for the unknown.

$$? \cdot \frac{4}{5} = 4 \text{ or } 4 \div \frac{4}{5} = ?$$

- c Determine how many sections of board Clare will cut. **5 sections of board**

7. Diego and Han were each asked to write a question that represents the equation $? \cdot \frac{1}{5} = 6$.

Diego's response	Han's response
How many $\frac{1}{5}$ s are in 6?	How many 6s are in $\frac{1}{5}$?

Did either Diego or Han correctly write a question that represents the equation? Explain your thinking.

Yes; Sample response: Diego's question represents the equation because he is finding how many parts are in 6. Han's question is asking how many whole's are in $\frac{1}{5}$, which is not what the equation represents.

Additional Practice | Answer Key

Unit 4 | Lesson 5

Name: _____ Date: _____ Period: _____

Additional Practice

4.05

A hexagon represents 1 whole. Use the pattern blocks shown to complete Problems 1–4.

1. What fractions of a whole does each of the following shapes or combinations of shapes represent? Show or explain your thinking.

- 2 rhombuses
 $\frac{2}{6}$ or $\frac{2}{3}$. Sample response: 1 rhombus is equivalent to 2 triangles, so 2 rhombuses is equivalent to 4 triangles, or $\frac{2}{3}$ of a hexagon.
- 3 trapezoids
 $1\frac{1}{2}$. Sample response: 1 trapezoid is equivalent to $\frac{1}{2}$ of a hexagon, so 3 trapezoids is equivalent to $1\frac{1}{2}$ hexagons.
- 3 triangles
 $\frac{3}{6}$ or $\frac{1}{2}$. Sample response: 1 triangle is $\frac{1}{6}$ of a hexagon, so 3 triangles is equivalent to $\frac{1}{2}$ of a hexagon.
- 1 hexagon and 1 triangle
 $1\frac{1}{6}$. Sample response: 1 triangle is $\frac{1}{6}$ of a hexagon, and 1 hexagon is 1, so 1 hexagon and 1 triangle represents $1\frac{1}{6}$.

2. Write an equation that could be used to represent each question. Use a question mark for the unknown. Then solve the equation.

- How many $\frac{1}{2}$ s are in 3? $? \cdot \frac{1}{2} = 3$ or $3 \div \frac{1}{2} = ?$; 6
- How many $\frac{2}{3}$ s are in 4? $? \cdot \frac{2}{3} = 4$ or $4 \div \frac{2}{3} = ?$; 6
- How many $\frac{1}{6}$ s are in $3\frac{1}{2}$? $? \cdot \frac{1}{6} = 3\frac{1}{2}$ or $3\frac{1}{2} \div \frac{1}{6} = ?$; 21

3. How many $\frac{1}{6}$ s are in $1\frac{2}{3}$? Show your thinking.

A. $\frac{1}{10}$ B. $\frac{5}{18}$
C. $3\frac{3}{5}$ D. 10

4. Determine how many $\frac{1}{3}$ s are in $2\frac{2}{3}$. Show or explain your thinking.
8. Sample response: If the hexagon represents 1 whole, then the rhombus represents $\frac{1}{3}$ because it takes 3 rhombuses to make one hexagon. The figure representing $2\frac{2}{3}$ can be decomposed into 8 rhombuses, or $\frac{1}{3}$ by $\frac{8}{3}$.

Unit 4 Lesson 5 95 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Bard buys rice in a 4-cup box. Bard's family uses $1\frac{1}{3}$ cups of rice per meal. How many meals does one box last?

- Draw a diagram to represent the scenario. Label your diagram. **Sample response:**

- Write a multiplication or division equation to represent the scenario. Use a question mark for the unknown.
 $? \cdot 1\frac{1}{3} = 4$ or $4 \div 1\frac{1}{3} = ?$
- Determine how many meals one box lasts. Explain your thinking.
3 meals; Sample response: There are 3 portions of $1\frac{1}{3}$ in a 4-cup box.

6. Clare is cutting a 4-ft board into $\frac{4}{5}$ ft sections. How many sections of board will Clare cut?

- Draw a diagram to represent the scenario. Label your diagram. **Sample response:**

- Write a multiplication or division equation to represent the scenario. Use a question mark for the unknown.
 $? \cdot \frac{4}{5} = 4$ or $4 \div \frac{4}{5} = ?$
- Determine how many sections of board Clare will cut. **5 sections of board**

7. Diego and Han were each asked to write a question that represents the equation $? \cdot \frac{1}{5} = 6$.

Diego's response	Han's response
How many $\frac{1}{5}$ s are in 6?	How many 6s are in $\frac{1}{5}$?

Did either Diego or Han correctly write a question that represents the equation? Explain your thinking.
Yes; Sample response: Diego's question represents the equation because he is finding how many parts are in 6. Han's question is asking how many whole's are in $\frac{1}{5}$, which is not what the equation represents.

Unit 4 Lesson 5 96 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.NS.A.1
2	2	6.NS.A.1
3	2	6.NS.A.1
4	2	6.NS.A.1
5	2	6.NS.A.1
6	2	6.NS.A.1
7	3	6.NS.A.1

Notes:

Additional Practice**4.06**

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

A. $2 \div \frac{3}{2}$ B. $\frac{3}{2} \div 2$ C. $\frac{3}{4} \div \frac{1}{3}$ D. $\frac{4}{3} \div 2$ E. $4 \div \frac{3}{4}$

- 2.** Jada ordered a 3-ft sub from the grocery store for a party. She cuts the sub into $\frac{1}{2}$ -ft servings. Jada says the sub is long enough to feed 6 people. Do you agree with Jada? Explain your thinking.

Explanations vary. Jada is correct. If she divided a 3-ft sub into a rectangle with 3 wholes and then divided each whole into 2 groups of $\frac{1}{2}$'s, then there would be 6 groups of $\frac{1}{2}$ in 3.

Problems 3–4: Here is a diagram.



- 3.** Determine if the value of $1\frac{1}{2} \div \frac{2}{3}$ is:

Less than 1

Greater than 1

- 4.** Calculate the value of the expression in Problem 3.

Use the diagram if it helps you with your thinking.

Methods vary. $\frac{9}{4}$, or $2\frac{1}{4}$

Problems 5–6: Here is a diagram.



- 5.** Determine if the value of $\frac{1}{2} \div \frac{3}{4}$ is:

Less than 1

Greater than 1

- 6.** Calculate the value of the expression in Problem 5.

Use the diagram if it helps you with your thinking.

Methods vary. $\frac{2}{3}$

Problems 7–9: Here is a diagram.



7. Calculate $\frac{1}{3} \div \frac{3}{2}$.

Use the diagram if it helps you with your thinking.

Methods vary. $\frac{2}{9}$

8. Calculate $\frac{3}{2} \div \frac{1}{3}$.

Use the diagram if it helps you with your thinking.

Methods vary. $\frac{9}{2}$

9. How are Problems 7 and 8 similar? How do their solutions compare? Why do you think this is the case?

Explanations vary. Problems 7 and 8 are similar in that the same two fractions were used. Their solutions are the reciprocals of each other because the order in which they were divided is reversed. One solution is greater than one and one is less than one.

10. Kiran describes how to draw a diagram to represent and calculate $\frac{4}{3} \div \frac{1}{2}$.

Kiran's Response

Draw a tape diagram whose length represents $\frac{4}{3}$. Partition the diagram into 4 equal parts to show 4 groups of $\frac{1}{3}$. Then, partition each $\frac{1}{3}$ into 2 equal parts.

There are 8 groups of $\frac{1}{2}$'s in $\frac{4}{3}$. Therefore, the value of $\frac{4}{3} \div \frac{1}{2}$ is 8.

Did Kiran correctly describe how to draw a tape diagram? Explain or show your thinking.

Explanations vary. Kiran is incorrect. He started out correctly by partitioning a rectangle into 4 equal parts, which each represent $\frac{1}{3}$. However, he should have then made another tape diagram, which represents $\frac{1}{2}$, and determined how many of those $\frac{1}{2}$ parts it will take to make $\frac{4}{3}$.

Additional Practice | Answer Key

Unit 4 | Lesson 6

Name: _____ Date: _____ Period: _____

Additional Practice 4.06

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

A. $2 \div \frac{3}{2}$ B. $\frac{3}{2} \div 2$ C. $\frac{3}{4} \div \frac{1}{3}$ D. $\frac{4}{3} \div 2$ E. $4 \div \frac{3}{4}$

2. Jada ordered a 3-ft sub from the grocery store for a party. She cuts the sub into $\frac{1}{2}$ -ft servings. Jada says the sub is long enough to feed 6 people. Do you agree with Jada? Explain your thinking.
Explanations vary. Jada is correct. If she divided a 3-ft sub into a rectangle with 3 wholes and then divided each whole into 2 groups of $\frac{1}{2}$'s, then there would be 6 groups of $\frac{1}{2}$ in 3.

Problems 3–4: Here is a diagram.



3. Determine if the value of $1\frac{1}{2} \div \frac{2}{3}$ is:
 Less than 1 Greater than 1

4. Calculate the value of the expression in Problem 3.
 Use the diagram if it helps you with your thinking.
Methods vary. $\frac{9}{4}$ or $2\frac{1}{4}$

Problems 5–6: Here is a diagram.



5. Determine if the value of $\frac{1}{2} \div \frac{3}{2}$ is:
 Less than 1 Greater than 1

6. Calculate the value of the expression in Problem 5.
 Use the diagram if it helps you with your thinking.
Methods vary. $\frac{2}{3}$

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.NSO.2.2
2	2	6.NSO.2.2
3	1	6.NSO.2.2
4	2	6.NSO.2.2
5	1	6.NSO.2.2
6	2	6.NSO.2.2
7	2	6.NSO.2.2
8	2	6.NSO.2.2
9	2	6.NSO.2.2
10	2	6.NSO.2.2

Name: _____ Date: _____ Period: _____

Problems 7–9: Here is a diagram.



7. Calculate $\frac{1}{2} \div \frac{1}{2}$.
 Use the diagram if it helps you with your thinking.
Methods vary. $\frac{2}{9}$

8. Calculate $\frac{3}{2} \div \frac{1}{3}$.
 Use the diagram if it helps you with your thinking.
Methods vary. $\frac{9}{2}$

9. How are Problems 7 and 8 similar? How do their solutions compare? Why do you think this is the case?
Explanations vary. Problems 7 and 8 are similar in that the same two fractions were used. Their solutions are the reciprocals of each other because the order in which they were divided is reversed. One solution is greater than one and one is less than one.

10. Kiran describes how to draw a diagram to represent and calculate $\frac{4}{3} \div \frac{1}{2}$.

Kiran's Response

Draw a tape diagram whose length represents $\frac{4}{3}$. Partition the diagram into 4 equal parts to show 4 groups of $\frac{1}{3}$. Then, partition each $\frac{1}{3}$ into 2 equal parts. There are 8 groups of $\frac{1}{6}$'s in $\frac{4}{3}$. Therefore, the value of $\frac{4}{3} \div \frac{1}{2}$ is 8.

Did Kiran correctly describe how to draw a tape diagram? Explain or show your thinking.
Explanations vary. Kiran is incorrect. He started out correctly by partitioning a rectangle into 4 equal parts, which each represent $\frac{1}{3}$. However, he should have then made another tape diagram, which represents $\frac{1}{2}$, and determined how many of those $\frac{1}{2}$ parts it will take to make $\frac{4}{3}$.

Unit 4 Lesson 6 **98** Additional Practice

Notes:

Additional Practice**4.07**

Problems 1–4: Calculate the value of each expression. Draw a diagram if it helps with your thinking.

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

$\frac{16}{3}$ or equivalent

2. $3\frac{2}{3} \div \frac{5}{6}$

$\frac{22}{5}$ or equivalent

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

$\frac{15}{8}$ or equivalent

4. $2\frac{3}{4} \div \frac{5}{6}$

$\frac{33}{10}$ or equivalent

Problems 5–6: Noah picked $3\frac{1}{2}$ cups of blackberries, which is enough for $\frac{3}{4}$ jars of blackberry jam. Show your thinking.

5. How many cups does Noah need for 1 jar of blackberry jam?

Methods vary. $3\frac{1}{2} \div \frac{3}{4} = \frac{7}{2} \div \frac{3}{4} = \frac{14}{4} \div \frac{3}{4} = \frac{14}{3}$. Noah will need $4\frac{2}{3}$ cups of blackberries for 1 jar of jam.

6. How many jars can Noah fill using 8 cups of blackberries?

Methods vary. $\frac{14}{3} \div 8 = \frac{14}{3} \div \frac{24}{3} = \frac{14}{24} = \frac{7}{12}$. Noah can fill $\frac{7}{12}$ of a jar with 8 cups of blackberries.

7. One batch of tomato sauce uses $3\frac{1}{2}$ pounds of tomatoes. André has 5 pounds of tomatoes. He says he can make $1\frac{2}{5}$ batches of tomato sauce. Do you agree with André? Explain your thinking.

Methods vary. Andre is not correct. He can only make $\frac{7}{10}$ of a batch of tomato sauce.

8. After charging for $1\frac{1}{3}$ hours, a laptop is at $\frac{3}{5}$ of its full power. How long will it take the laptop to charge completely? Show your thinking.

Methods vary. $\frac{4}{3} \div \frac{3}{5} = \frac{20}{15} \div \frac{9}{15} = \frac{20}{9} = 2\frac{2}{9}$. It will take $2\frac{2}{9}$ hours to charge the laptop completely.

9. Shawn has $5\frac{1}{2}$ cups of lemonade. If each serving of lemonade is $\frac{3}{4}$ cup, how many servings does Shawn have?

Methods vary. $5\frac{1}{2} \div \frac{3}{4} = \frac{11}{2} \div \frac{3}{4} = \frac{22}{4} \div \frac{3}{4} = \frac{22}{3} = 7\frac{1}{3}$. Shawn has $7\frac{1}{3}$ servings of lemonade.

Name: _____ Date: _____ Period: _____

Additional Practice

4.07

Problems 1–4: Calculate the value of each expression. Draw a diagram if it helps with your thinking.

1. $4 \div \frac{3}{4}$
16 or equivalent
2. $3\frac{2}{3} \div \frac{5}{6}$
22 or equivalent
3. $\frac{5}{2} \div 1\frac{1}{3}$
15 or equivalent
4. $2\frac{3}{4} \div \frac{5}{6}$
33 or equivalent

Problems 5–6: Noah picked $3\frac{1}{2}$ cups of blackberries, which is enough for $\frac{3}{4}$ jars of blackberry jam. Show your thinking.

5. How many cups does Noah need for 1 jar of blackberry jam?
Methods vary. $3\frac{1}{2} \div \frac{3}{4} = \frac{7}{2} \div \frac{3}{4} = \frac{14}{2} \div \frac{3}{4} = \frac{14}{2} \times \frac{4}{3} = \frac{28}{6} = \frac{14}{3}$. Noah will need $4\frac{2}{3}$ cups of blackberries for 1 jar of jam.
6. How many jars can Noah fill using 8 cups of blackberries?
Methods vary. $\frac{14}{3} \div 8 = \frac{14}{3} \div \frac{24}{3} = \frac{14}{24} = \frac{7}{12}$. Noah can fill $\frac{7}{12}$ of a jar with 8 cups of blackberries.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

7. One batch of tomato sauce uses $3\frac{1}{2}$ pounds of tomatoes. André has 5 pounds of tomatoes. He says he can make $1\frac{2}{3}$ batches of tomato sauce. Do you agree with André? Explain your thinking.
Methods vary. André is not correct. He can only make $\frac{7}{10}$ of a batch of tomato sauce.
8. After charging for $1\frac{1}{3}$ hours, a laptop is at $\frac{3}{5}$ of its full power. How long will it take the laptop to charge completely? Show your thinking.
Methods vary. $\frac{4}{5} \div \frac{3}{5} = \frac{20}{15} \div \frac{9}{15} = \frac{20}{9} = 2\frac{2}{9}$. It will take $2\frac{2}{9}$ hours to charge the laptop completely.
9. Shawn has $5\frac{1}{2}$ cups of lemonade. If each serving of lemonade is $\frac{3}{4}$ cup, how many servings does Shawn have?
Methods vary. $5\frac{1}{2} \div \frac{3}{4} = \frac{11}{2} \div \frac{3}{4} = \frac{22}{4} \div \frac{3}{4} = \frac{22}{3} = 7\frac{1}{3}$. Shawn has $7\frac{1}{3}$ servings of lemonade.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

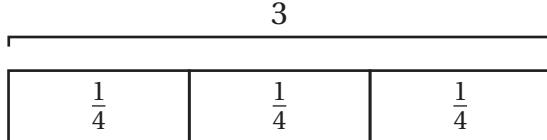
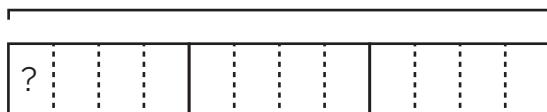
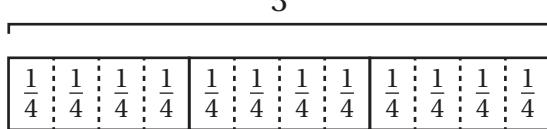
Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.NSO.2.2
2	1	6.NSO.2.2
3	1	6.NSO.2.2
4	1	6.NSO.2.2
5	2	6.NSO.2.3
6	2	6.NSO.2.3
7	2	6.NSO.2.3
8	2	6.NSO.2.3
9	2	6.NSO.2.3

Notes:

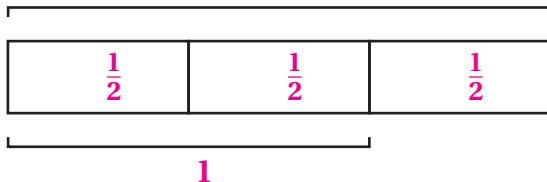
Additional Practice**4.08**

- 1.** Which of the tape diagrams shown represents the expression $3 \div \frac{1}{4}$?

A.**B.****C.**

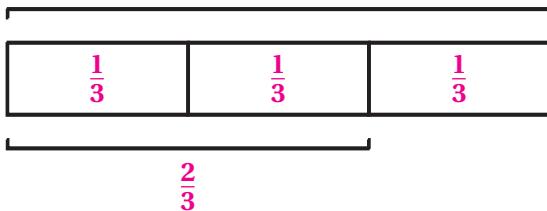
- 2.** Complete the tape diagram shown to represent and solve the following problem.

What fraction of $\frac{2}{3}$ is 1?

 $1\frac{1}{2}$ 

$\frac{3}{2}$ of $\frac{2}{3}$ is 1.

- 3.** Complete the tape diagram to represent and solve the following problem. Tyler picked 1 cup of blueberries, which is enough for $1\frac{1}{2}$ batches of blueberry muffins. How many cups does he need for 1 batch?

1

Tyler needs $\frac{2}{3}$ cups of blueberries for 1 batch.

- 4.** Shawn painted $\frac{5}{2}$ yd² of wall area with 2 gallons of paint. How many gallons of paint were needed to paint each square yard of wall?

$\frac{4}{5}$ gallons of paint

Problems 5–6: Complete the tape diagram to represent and solve each problem.

5. Trevor picked 1.5 cups of raspberries, which is enough for $\frac{3}{4}$ of a pan of raspberry shortcake. How many cups does he need for a whole pan of raspberry shortcake?

2 cups of raspberries



6. Tonya picked 6 cups of blueberries, which is enough for $\frac{3}{4}$ of a pan of blueberry crumble. How many cups does she need for a whole blueberry crumble?

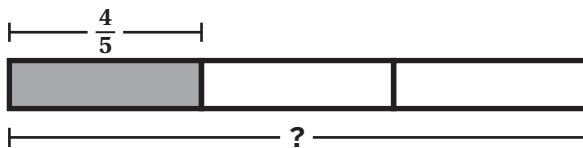
8 cups of blueberries



7. $\frac{3}{5}$ of the town population walks to the park on a given Saturday. If 180 town residents walked to the park that day, how many total residents live in the town?

There are 300 people who live in the town.

8. Calculate $\frac{4}{5} \div \frac{1}{3}$. Use the tape diagram if it helps with your thinking.



$$\frac{4}{5} \div \frac{1}{3} = \frac{4}{5} \times 3 = \frac{12}{5} = 2\frac{2}{5}$$

Additional Practice | Answer Key

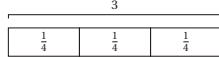
Unit 4 | Lesson 8

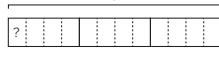
Name: _____ Date: _____ Period: _____

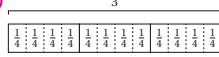
Additional Practice

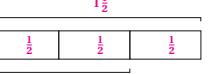
4.08

1. Which of the tape diagrams shown represents the expression $3 \div \frac{1}{4}$?

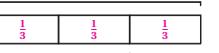
A. 

B. 

C. 

2. Complete the tape diagram shown to represent and solve the following problem.
What fraction of $\frac{2}{3}$ is 1?
 $1\frac{1}{2}$


$\frac{3}{2}$ of $\frac{2}{3}$ is 1.

3. Complete the tape diagram to represent and solve the following problem. Tyler picked 1 cup of blueberries, which is enough for $1\frac{1}{3}$ batches of blueberry muffins. How many cups does he need for 1 batch?
1


Tyler needs $\frac{2}{3}$ cups of blueberries for 1 batch.

4. Shawn painted $\frac{3}{2}$ yd² of wall area with 2 gallons of paint. How many gallons of paint were needed to paint each square yard of wall?
 $\frac{4}{3}$ gallons of paint

Unit 4 Lesson 8 101 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

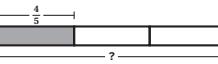
Name: _____ Date: _____ Period: _____

Problems 5–6: Complete the tape diagram to represent and solve each problem.

5. Trevor picked 1.5 cups of raspberries, which is enough for $\frac{1}{2}$ of a pan of raspberry shortcake. How many cups does he need for a whole pan of raspberry shortcake?
2 cups of raspberries


6. Tonya picked 6 cups of blueberries, which is enough for $\frac{3}{4}$ of a pan of blueberry crumble. How many cups does she need for a whole blueberry crumble?
8 cups of blueberries


7. $\frac{3}{5}$ of the town population walks to the park on a given Saturday. If 180 town residents walked to the park that day, how many total residents live in the town?
There are 300 people who live in the town.

8. Calculate $\frac{4}{5} \div \frac{1}{3}$. Use the tape diagram if it helps with your thinking.

$$\frac{4}{5} \div \frac{1}{3} = \frac{4}{5} \times 3 = \frac{12}{5} = 2\frac{2}{5}$$

Unit 4 Lesson 8 102 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.NS.A.1
2	2	6.NS.A.1
3	2	6.NS.A.1
4	2	6.NS.A.1
5	2	6.NS.A.1
6	1	6.NS.A.1
7	1	6.NS.A.1
8	1	6.NS.A.1

Notes:

Additional Practice

4.09

Problems 1–5: Use any strategy to calculate each quotient.

1. $9 \div \frac{1}{3}$

27

2. $9 \div \frac{3}{5}$

15

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

 $12\frac{2}{3}$

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

 $\frac{5}{12}$

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

 $5\frac{1}{2}$

6. How many groups of $\frac{3}{4}$ are in $6\frac{1}{2}$?

 $8\frac{2}{3}$

7. How many groups of $\frac{3}{4}$ are in $3\frac{2}{3}$?

 $4\frac{8}{9}$

8. Use the equation $3\frac{1}{2} \div \frac{1}{6} = 21$ to determine $3\frac{1}{2} \div \frac{2}{6}$. Explain your thinking.

The equation $3\frac{1}{2} \div \frac{1}{6}$ is finding how many groups of $\frac{1}{6}$ are in $3\frac{1}{2}$. There are 21 groups of $\frac{1}{2}$ in $3\frac{1}{2}$. This means there are half as many groups of $\frac{2}{6}$ in $3\frac{1}{2}$, so $10\frac{1}{2}$ groups.

9. Here are four expressions.

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

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

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

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

a

Order these expressions by value from *least* to *greatest*.

$\frac{5}{3} \div \frac{2}{5}$	$\frac{5}{3} \div 2$	$\frac{5}{3} \div 1$	$\frac{5}{3} \div \frac{1}{5}$
Least	Greatest		

- b** How are these expressions alike? How are these expressions different? Explain your thinking.

These expressions are alike in that they are all finding different numbers of groups in $\frac{5}{3}$. These expressions are different because the number of groups is unique. For example, $\frac{5}{3} \div 2$ is finding how many groups of 2 are in $\frac{5}{3}$. Whereas, $\frac{5}{3} \div \frac{2}{5}$ is finding how many groups of $\frac{2}{5}$ are in $\frac{5}{3}$.

- 10.** Here is an expression from the previous problem.

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

Calculate its value. Explain your approach.

$\frac{5}{3} \div \frac{1}{5} = 8\frac{1}{3}$, $\frac{5}{3} \div \frac{1}{5}$ is the same as finding $\frac{5}{3}$ times 5, which equals $\frac{25}{3}$ or $8\frac{1}{3}$.

- 11.** Here is a list of expressions.

$6 \times \frac{1}{2}$	$\frac{1}{3} \div \frac{1}{9}$
$\frac{2}{3} \div \frac{1}{9}$	$\frac{4}{5} \div \frac{1}{5}$
$\frac{2}{3} \div \frac{1}{6}$	$\frac{1}{3} \div \frac{1}{5}$
$9 \times \frac{1}{3}$	$4 \times \frac{3}{2}$

- a** Group the expressions into the appropriate column of the table. One of the expressions will not have a match.

Value of 3	Value of 4	Value of 6
$6 \times \frac{1}{2}$	$\frac{2}{3} \div \frac{1}{6}$	$\frac{2}{3} \div \frac{1}{9}$
$9 \times \frac{1}{3}$	$\frac{4}{5} \div \frac{1}{5}$	$4 \times \frac{3}{2}$
$\frac{1}{3} \div \frac{1}{9}$		

- b** Explain why one of the expressions does not have a match with one of the columns in the table.

$\frac{1}{3} \div \frac{1}{5}$ does not have a match in the table. $\frac{1}{3} \div \frac{1}{5}$ equals $\frac{1}{3} \times 5$. This equals $\frac{5}{3}$.

Additional Practice**4.12**

- 1.** How many groups of $\frac{5}{6}$ are in each of the following quantities? Show your thinking.

a. $\frac{2}{3}$

$\frac{12}{15}$ or $\frac{4}{5}$; Students' explanations may vary.

b. $1\frac{1}{2}$

$\frac{18}{10}$ or $1\frac{4}{5}$; Students' explanations may vary.

c. $4\frac{1}{6}$

$\frac{150}{30}$ or 5; Students' explanations may vary.

- 2.** How many groups of $1\frac{3}{4}$ are in each of the following quantities? Show your thinking.

a. $2\frac{1}{2}$

$\frac{10}{7}$ or $1\frac{3}{7}$; Students' explanations may vary.

b. 4

$\frac{16}{7}$ or $2\frac{2}{7}$; Students' explanations may vary.

c. $\frac{3}{4}$

$\frac{3}{7}$; Students' explanations may vary.

- 3.** Shawn's golf club is $3\frac{3}{4}$ ft tall. Shawn's hockey stick is $5\frac{1}{2}$ ft tall.

- a. What fraction of the golf club's height is the hockey stick? Show your thinking.

$1\frac{7}{15}$ times as tall; Sample response: $5\frac{1}{2} \div 3\frac{3}{4} = \frac{11}{2} \div \frac{15}{4} = \frac{11}{2} \cdot \frac{4}{15} = \frac{22}{15}$ or $1\frac{7}{15}$

- b. How many times as tall is the hockey stick than the golf club? Show your thinking.

$\frac{15}{22}$ of the height; Sample response: $3\frac{3}{4} \div 5\frac{1}{2} = \frac{15}{4} \div \frac{11}{2} = \frac{15}{4} \cdot \frac{2}{11} = \frac{15}{22}$

- 4.** Jada is $5\frac{1}{4}$ ft tall. Her little sister is 4 ft tall. How many times taller is Jada than her sister?

A. $\frac{4}{5}$

B. $\frac{16}{21}$

C. $1\frac{1}{4}$

D. $1\frac{5}{16}$

Clare and Diego each went for a bike ride. Clare rode $1\frac{1}{2}$ mi, and Diego rode $2\frac{3}{4}$ mi. Use this information for Problems 5–6.

5. How many times as far as Clare did Diego ride?

- a Write a division expression to represent this situation.

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

- b Determine the solution. Show your thinking.

Diego rode $1\frac{5}{6}$ times as far as Clare. Sample response: $\frac{11}{4} \div \frac{3}{2} = \frac{11}{4} \cdot \frac{2}{3} = \frac{11}{6}$

6. What fraction of Diego's distance did Clare ride?

- a Write a division expression to represent this situation.

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

- b Determine the solution. Show your thinking.

Clare rode $\frac{6}{11}$ of Diego's distance. Sample response: $\frac{3}{2} \div \frac{11}{4} = \frac{3}{2} \cdot \frac{4}{11} = \frac{6}{11}$

7. Andre uses $1\frac{5}{6}$ lb of tomatoes for a batch of homemade spaghetti sauce. He has $9\frac{1}{2}$ lb of tomatoes from his garden. Does Andre have enough tomatoes to make 6 batches of spaghetti sauce? Explain your thinking.

No; Sample response: Andre does not have enough to make 6 batches of spaghetti sauce, but he has enough to make $5\frac{2}{11}$ batches because $9\frac{1}{2} \div 1\frac{5}{6} = 5\frac{2}{11}$, or he can make 5 whole batches.

8. Mai has worked $3\frac{3}{4}$ hours of her $7\frac{3}{4}$ hour shift. She says that she has worked more than half of her shift. Is Mai correct? Explain your thinking.

No; Sample response: Mai has not quite worked half of her shift. Mai worked $3\frac{3}{4} \div 7\frac{3}{4} = \frac{15}{31}$ of her shift.

Additional Practice | Answer Key

Unit 4 | Lesson 12

Name: _____ Date: _____ Period: _____

Additional Practice

4.12

1. How many groups of $\frac{5}{8}$ are in each of the following quantities? Show your thinking.

- $\frac{2}{3}$
 $\frac{12}{15}$ or $\frac{4}{5}$. Students' explanations may vary.
- $1\frac{1}{2}$
 $\frac{18}{10}$ or $1\frac{4}{5}$. Students' explanations may vary.
- $4\frac{1}{6}$
 $\frac{150}{30}$ or 5; Students' explanations may vary.

2. How many groups of $1\frac{3}{4}$ are in each of the following quantities? Show your thinking.

- $2\frac{1}{2}$
 $\frac{10}{7}$ or $1\frac{3}{7}$. Students' explanations may vary.
- 4
 $\frac{16}{4}$ or $2\frac{2}{7}$. Students' explanations may vary.
- $\frac{3}{4}$
 $\frac{3}{7}$; Students' explanations may vary.

3. Shawn's golf club is $3\frac{3}{4}$ ft tall. Shawn's hockey stick is $5\frac{1}{2}$ ft tall.

- What fraction of the golf club's height is the hockey stick? Show your thinking.
 $1\frac{7}{15}$ times as tall; Sample response: $5\frac{1}{2} \div 3\frac{3}{4} = \frac{11}{2} \div \frac{15}{4} = \frac{11}{2} \cdot \frac{4}{15} = \frac{22}{15}$ or $1\frac{7}{15}$
- How many times as tall is the hockey stick than the golf club? Show your thinking.
 $\frac{15}{22}$ of the height; Sample response: $3\frac{3}{4} \div 5\frac{1}{2} = \frac{15}{4} \div \frac{11}{2} = \frac{15}{4} \cdot \frac{2}{11} = \frac{15}{22}$

4. Jada is $5\frac{1}{4}$ ft tall. Her little sister is 4 ft tall. How many times taller is Jada than her sister?

A. $\frac{4}{5}$ B. $\frac{16}{21}$ C. $1\frac{1}{4}$ D. $1\frac{5}{16}$

Unit 4 Lesson 12 109 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Clare and Diego each went for a bike ride. Clare rode $1\frac{1}{2}$ mi, and Diego rode $2\frac{3}{4}$ mi. Use this information for Problems 5–6.

5. How many times as far as Clare did Diego ride?

- Write a division expression to represent this situation.
 $2\frac{3}{4} \div 1\frac{1}{2}$
- Determine the solution. Show your thinking.
Diego rode $1\frac{5}{6}$ times as far as Clare. Sample response: $\frac{11}{4} \div \frac{3}{2} = \frac{11}{4} \cdot \frac{2}{3} = \frac{11}{6}$

6. What fraction of Diego's distance did Clare ride?

- Write a division expression to represent this situation.
 $1\frac{1}{2} \div 2\frac{3}{4}$
- Determine the solution. Show your thinking.
Clare rode $\frac{6}{11}$ of Diego's distance. Sample response: $\frac{3}{2} \div \frac{11}{4} = \frac{3}{2} \cdot \frac{4}{11} = \frac{6}{11}$

7. Andre uses $1\frac{1}{2}$ lb of tomatoes for a batch of homemade spaghetti sauce. He has $9\frac{1}{2}$ lb of tomatoes from his garden. Does Andre have enough tomatoes to make 6 batches of spaghetti sauce? Explain your thinking.
No: Sample response: Andre does not have enough to make 6 batches of spaghetti sauce, but he has enough to make $5\frac{2}{11}$ batches because $9\frac{1}{2} \div 1\frac{5}{6} = 5\frac{2}{11}$, or he can make 5 whole batches.

8. Mai has worked $3\frac{3}{4}$ hours of her $7\frac{3}{4}$ hour shift. She says that she has worked more than half of her shift. Is Mai correct? Explain your thinking.
No: Sample response: Mai has not quite worked half of her shift. Mai worked $3\frac{3}{4} \div 7\frac{3}{4} = \frac{15}{31}$ of her shift.

Unit 4 Lesson 12 110 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.NS.A.1
2	2	6.NS.A.1
3	2	6.NS.A.1
4	2	6.NS.A.1
5	2	6.NS.A.1
6	2	6.NS.A.1
7	3	6.NS.A.1
8	3	6.NS.A.1

Notes:

Additional Practice**4.13**

- 1.** A rectangular coffee table has a length of $46\frac{1}{2}$ in., a width of w in., and an area of 1,395 in². Select *all* the equations that represent the relationship between the dimensions of the coffee table.

A. $w \cdot 1,395 = 46\frac{1}{2}$

B. $w \div 1,395 = 46\frac{1}{2}$

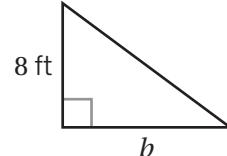
C. $46\frac{1}{2} \cdot w = 1395$

D. $46\frac{1}{2} \cdot 1,395 = w$

E. $1,395 \div w = 46\frac{1}{2}$

F. $1,395 \div 46\frac{1}{2} = w$

- 2.** The triangle has a height of 8 ft and an area of 42 ft². Select *all* the equations that represent the relationship between the dimensions of the triangle.



A. $42 = \frac{1}{2} \cdot b \cdot 8$

B. $42 \div w = \frac{1}{2} \cdot 8$

C. $42 \div b = 8$

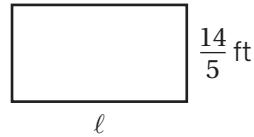
D. $4 \cdot b = 42$

E. $8 \cdot b = 42$

F. $b \div 8 = 42$

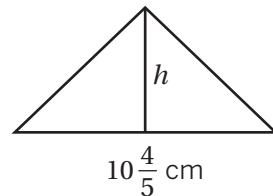
- 3.** The area of the rectangle is 28 ft². What is the length of the rectangle? Show your thinking.

10 ft; Students' explanations may vary.



- 4.** The area of the triangle is 27 cm². What is the missing height h ? Show your thinking.

5 cm; Students' explanations may vary.

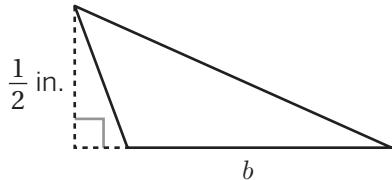


5. Han is tiling a shower wall that is 8 ft by 6 ft. The tiles are squares with a side length of $1\frac{1}{3}$ ft. How many tiles are needed to cover the entire shower wall? Show or explain your thinking.

68 tiles; Sample response: Han needs 68 tiles because $(8 \div 1\frac{1}{3}) \cdot (15 \div 1\frac{1}{3}) = 67\frac{1}{2}$, and Han will need one additional tile to cut in half.

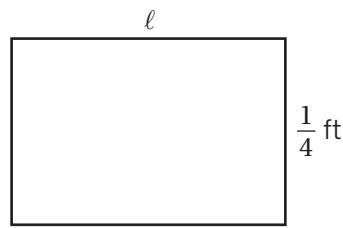
6. The area of the triangle is $\frac{2}{7}$ in². What is the missing length b ? Show your thinking.

$1\frac{1}{7}$ in.; Students' explanations may vary.



7. Lin said the missing length of the rectangle could be determined by solving the equation $\frac{2}{3} = \ell \cdot \frac{1}{4}$. Do you agree or disagree? If you agree, use Lin's equation to solve for ℓ . If you disagree, write an equation that would solve for ℓ and then solve your equation.

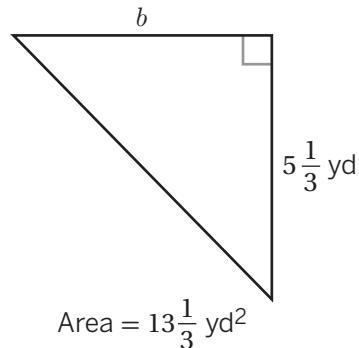
I agree; Sample response: The equation can be used to find the length ℓ of the rectangle. $\frac{2}{3} \div \frac{1}{4} = \frac{2}{3} \cdot \frac{4}{1} = \frac{8}{3}$ or $2\frac{2}{3}$ ft



$$\text{Area} = \frac{2}{3} \text{ ft}^2$$

8. Bard said the missing length of the triangle could be determined by solving the equation $\frac{1}{2} \cdot b \cdot 13\frac{1}{3} = 5\frac{1}{3}$. Do you agree or disagree? If you agree, use Bard's equation to solve for b . If you disagree, write an equation that would solve for b and then solve your equation.

I disagree; Sample response: The value for the area and the height have been switched. The equation Bard should use is $\frac{1}{2} \cdot b \cdot 5\frac{1}{3} = 13\frac{1}{3}$. The base is 5 units long.



$$\text{Area} = 13\frac{1}{3} \text{ yd}^2$$

Name: _____ Date: _____ Period: _____

Additional Practice

4.13

1. A rectangular coffee table has a length of $46\frac{1}{2}$ in., a width of w in., and an area of $1,395 \text{ in}^2$. Select all the equations that represent the relationship between the dimensions of the coffee table.

A. $w + 1,395 = 46\frac{1}{2}$

B. $w \div 1,395 = 46\frac{1}{2}$

C. $46\frac{1}{2} \cdot w = 1395$

D. $46\frac{1}{2} \cdot 1,395 = w$

E. $1,395 \div w = 46\frac{1}{2}$

F. $1,395 \div 46\frac{1}{2} = w$

2. The triangle has a height of 8 ft and an area of 42 ft^2 . Select all the equations that represent the relationship between the dimensions of the triangle.

A. $42 = \frac{1}{2} \cdot b \cdot 8$

B. $42 \div w = \frac{1}{2} \cdot 8$

C. $42 \div b = 8$

D. $4 \cdot b = 42$

E. $8 \cdot b = 42$

F. $b \div 8 = 42$

3. The area of the rectangle is 28 ft^2 . What is the length of the rectangle? Show your thinking.
10 ft; Students' explanations may vary.

4. The area of the triangle is 27 cm^2 . What is the missing height h ? Show your thinking.
5 cm; Students' explanations may vary.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 4 Lesson 13

111

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Han is tiling a shower wall that is 8 ft by 6 ft. The tiles are squares with a side length of $1\frac{1}{3}$ ft. How many tiles are needed to cover the entire shower wall? Show or explain your thinking.
68 tiles; Sample response: Han needs 68 tiles because $(8 \div 1\frac{1}{3}) \cdot (15 \div 1\frac{1}{3}) = 67\frac{1}{2}$, and Han will need one additional tile to cut in half.

6. The area of the triangle is $\frac{2}{7} \text{ in}^2$. What is the missing length b ? Show your thinking.
 $1\frac{1}{7}$ in; Students' explanations may vary.

7. Lin said the missing length of the rectangle could be determined by solving the equation $\frac{2}{3} = \ell \cdot \frac{1}{4}$. Do you agree or disagree? If you agree, use Lin's equation to solve for ℓ . If you disagree, write an equation that would solve for ℓ and then solve your equation.
I agree: Sample response: The equation can be used to find the length ℓ of the rectangle $\frac{2}{3} \div \frac{1}{4} = \frac{2}{3} \cdot \frac{4}{1} = \frac{8}{3}$ or $2\frac{2}{3}$ ft

8. Bard said the missing length of the triangle could be determined by solving the equation $\frac{1}{2} \cdot b \cdot 13\frac{1}{3} = 5\frac{1}{3}$. Do you agree or disagree? If you agree, use Bard's equation to solve for b . If you disagree, write an equation that would solve for b and then solve your equation.
I disagree: Sample response: The value for the area and the height have been switched. The equation Bard should use is $\frac{1}{2} \cdot b \cdot 5\frac{1}{3} = 13\frac{1}{3}$. The base is 5 units long.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 4 Lesson 13

112

Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.NS.A.1, 6.G.A.1
2	1	6.NS.A.1, 6.G.A.1
3	2	6.NS.A.1, 6.G.A.1
4	2	6.NS.A.1, 6.G.A.1
5	2	6.NS.A.1, 6.G.A.1
6	2	6.NS.A.1, 6.G.A.1
7	3	6.NS.A.1, 6.G.A.1
8	3	6.NS.A.1, 6.G.A.1

Unit 4 Lesson 13

112

Additional Practice

Notes:

Additional Practice**5.02****Use this key for Problems 1–4.**

- 1.** What number does each diagram represent?

a  

0.0321

b  

0.104

c  

0.0608

0.1
tenth 

0.01
hundredth 

0.001
thousandth 

0.0001
ten-thousandth 

- 2.** Draw a diagram to represent each decimal number.

a 0.3005



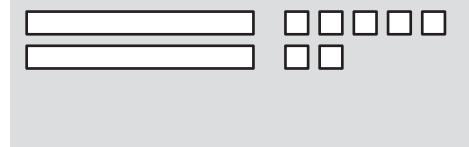
b 0.1502



- 3.** Refer to this diagram.

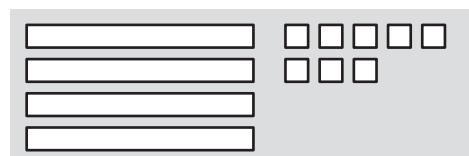
a Write an addition equation that is represented by the diagram.

0.27 + 0.48



b Determine the sum.

0.75



- 4.** Refer to this diagram.

a Write a subtraction equation that is represented by the diagram.

0.048 – 0.004



b Determine the difference.

0.044

5. Consider the expression $2.6 + 0.31$. Write a vertical calculation and determine the sum.

$$\begin{array}{r} 2.60 \\ + 0.31 \\ \hline 2.91 \end{array}$$

6. Consider the expression $5.972 - 2.87$. Write a vertical calculation and determine the difference.

$$\begin{array}{r} 5.972 \\ - 2.870 \\ \hline 3.102 \end{array}$$

7. Mai wrote a vertical calculation for the expression $8.75 + 3.1$. Her work is shown.

$$\begin{array}{r} 8.75 \\ + 3.01 \\ \hline 11.76 \end{array}$$

Did Mai correctly determine the sum? Explain your thinking.

No; Sample response: Mai changed the second addend from 3.1 to 3.01 because the second addend did not have the same amount of digits after the decimal point. The correct sum is 11.85.

$$\begin{array}{r} 8.75 \\ + 3.10 \\ \hline 11.85 \end{array}$$

8. Priya wrote a vertical calculation for the expression $0.91 - 0.8$. Her work is shown.

$$\begin{array}{r} 0.91 \\ - 0.8 \\ \hline 0.83 \end{array}$$

Did Priya correctly determine the difference? Explain your thinking.

No; Sample response: Priya did not line up the decimal points when subtracting. The correct difference is 0.11.

$$\begin{array}{r} 0.91 \\ - 0.80 \\ \hline 0.11 \end{array}$$

Additional Practice | Answer Key

Unit 5 | Lesson 2

Name: _____ Date: _____ Period: _____

Additional Practice 5.02

Use this key for Problems 1–4.

1. What number does each diagram represent?

a. 0.0321
0.0321

b. 0.104
0.104

c. 0.0608
0.0608

2. Draw a diagram to represent each decimal number.

a. 0.3005 ****
0.3005

b. 0.1502 **
0.1502

3. Refer to this diagram.

a. Write an addition equation that is represented by the diagram.
 $0.27 + 0.48$
0.27 + 0.48

b. Determine the sum.
0.75

4. Refer to this diagram.

a. Write a subtraction equation that is represented by the diagram.
 $0.048 - 0.004$
0.048 - 0.004

b. Determine the difference.
0.044

Unit 5 Lesson 2 **119** © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Consider the expression $2.6 + 0.31$. Write a vertical calculation and determine the sum.

$$\begin{array}{r} 2.6 \\ + 0.31 \\ \hline 2.91 \end{array}$$

6. Consider the expression $5.972 - 2.87$. Write a vertical calculation and determine the difference.

$$\begin{array}{r} 5.972 \\ - 2.87 \\ \hline 3.102 \end{array}$$

7. Mai wrote a vertical calculation for the expression $8.75 + 3.1$. Her work is shown.

$$\begin{array}{r} 8.75 \\ + 3.01 \\ \hline 11.76 \end{array}$$

Did Mai correctly determine the sum? Explain your thinking.
No; Sample response: Mai changed the second addend from 3.1 to 3.01 because the second addend did not have the same amount of digits after the decimal point. The correct sum is 11.85.

$$\begin{array}{r} 8.75 \\ + 3.10 \\ \hline 11.85 \end{array}$$

8. Priya wrote a vertical calculation for the expression $0.91 - 0.8$. Her work is shown.

$$\begin{array}{r} 0.91 \\ - 0.8 \\ \hline 0.83 \end{array}$$

Did Priya correctly determine the difference? Explain your thinking.
No; Sample response: Priya did not line up the decimal points when subtracting. The correct difference is 0.11.

$$\begin{array}{r} 0.91 \\ - 0.80 \\ \hline 0.11 \end{array}$$

Unit 5 Lesson 2 **120** **Additional Practice**

Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.3
2	1	6.NS.B.3
3	2	6.NS.B.3
4	2	6.NS.B.3
5	2	6.NS.B.3
6	2	5.NBT.A.3
7	3	6.NS.B.3
8	3	6.NS.B.3

Notes:

Additional Practice**5.04**

- 1.** Determine the correct calculation for $6.3 + 8.12$.

A.
$$\begin{array}{r} 6.3 \\ + 8.12 \\ \hline 8.75 \end{array}$$

B.
$$\begin{array}{r} 6.30 \\ + 8.12 \\ \hline 14.42 \end{array}$$

C.
$$\begin{array}{r} 0 6.3 \\ + 8.1 2 \\ \hline 8.7 5 \end{array}$$

- 2.** Determine the correct calculation for $19 - 1.4$.

A.
$$\begin{array}{r} 1 9 \\ - 1.4 \\ \hline 0.5 \end{array}$$

B.
$$\begin{array}{r} 1 9.0 \\ - 1.4 \\ \hline 0.50 \end{array}$$

C.
$$\begin{array}{r} 19.0 \\ - 1.4 \\ \hline 17.6 \end{array}$$

- 3.** Determine and write the missing digits in each calculation so that the value of each sum is correct.

a
$$\begin{array}{r} 0.805 \\ + \boxed{0.195} \\ \hline 1.000 \end{array}$$

b
$$\begin{array}{r} 3.071 \\ + \boxed{6.929} \\ \hline 10.000 \end{array}$$

c
$$\begin{array}{r} 73.392 \\ - \boxed{26.608} \\ \hline 100.000 \end{array}$$

- 4.** Determine and write the missing digits in each calculation so that the value of each difference is correct.

a
$$\begin{array}{r} 0.5 \\ - \boxed{0.362} \\ \hline 0.138 \end{array}$$

b
$$\begin{array}{r} 5 \\ - \boxed{4.905} \\ \hline 0.095 \end{array}$$

c
$$\begin{array}{r} 50 \\ - \boxed{31.008} \\ \hline 18.992 \end{array}$$

5. The seeding results of the Para Snow BikeCross at the 2020 Winter X Games are shown in the table.

- a Calculate the time difference between the first and second places.

0.506 seconds

Rank	Name	Time (seconds)
1	Doug Henry	53.79
2	Will Posey	54.296
3	Brandon Dudley	58.418

- b Calculate the time difference between the first and third places.

4.628 seconds

6. Using the times from Problem 5, what is the total time of the first, second, and third places?

166.504 seconds

7. Consider these expressions.

Expression 1	Expression 2	Expression 3
$6.8 - 0.0031$	$6.79 - 0.0013$	$6.78 - 0.031$

Jada says that Expression 1 has the greatest value. Do you agree with Jada? Explain your thinking.

Yes; Sample response: Jada is correct, Expression 1 has the greatest value. The difference of Expression 1 is 6.7969, the difference of Expression 2 is 6.7887, and the difference of Expression 3 is 6.749.

8. Three times for the 100 m women's breaststroke at the 2016 Summer Olympics are shown.

Katie Meili (USA)	Lilly King (USA)	Yulia Efimova (Russia)
1:05.69	1:04.93	1:05.50

- a Order the swimmers by time, from first place (gold) to third place (bronze).

Lilly King, Yulia Efimova, Katie Meili

- b Calculate the difference between first place (gold) and third place (bronze). Explain what the difference in time means.

0 : 00.76; Sample response: The difference in time between gold and bronze is seventy-six hundredths of a second, or less than one second.

Additional Practice | Answer Key

Unit 5 | Lesson 4

Name: _____ Date: _____ Period: _____

Additional Practice

5.04

1. Determine the correct calculation for $6.3 + 8.12$.

A. $\begin{array}{r} 6.3 \\ + 8.12 \\ \hline 8.75 \end{array}$

B. $\begin{array}{r} 6.30 \\ + 8.12 \\ \hline 14.42 \end{array}$

C. $\begin{array}{r} 0.63 \\ + 8.12 \\ \hline 8.75 \end{array}$

2. Determine the correct calculation for $19 - 1.4$.

A. $\begin{array}{r} 19 \\ - 1.4 \\ \hline 0.5 \end{array}$

B. $\begin{array}{r} 19.0 \\ - 1.40 \\ \hline 0.50 \end{array}$

C. $\begin{array}{r} 19.0 \\ - 1.4 \\ \hline 17.6 \end{array}$

3. Determine and write the missing digits in each calculation so that the value of each sum is correct.

a. $\begin{array}{r} 0.805 \\ + 0.195 \\ \hline 1.000 \end{array}$

b. $\begin{array}{r} 3.071 \\ + 6.929 \\ \hline 10.000 \end{array}$

c. $\begin{array}{r} 73,392 \\ - 26,608 \\ \hline 100.000 \end{array}$

4. Determine and write the missing digits in each calculation so that the value of each difference is correct.

a. $\begin{array}{r} 0.5 \\ - 0.302 \\ \hline 0.138 \end{array}$

b. $\begin{array}{r} 5 \\ - 4.905 \\ \hline 0.095 \end{array}$

c. $\begin{array}{r} 50 \\ - 34.08 \\ \hline 18.992 \end{array}$

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.3
2	1	6.NS.B.3
3	2	6.NS.B.3
4	2	6.NS.B.3
5	2	6.NS.B.3
6	2	6.NS.B.3
7	3	6.NS.B.3
8	3	6.NS.B.3

Name: _____ Date: _____ Period: _____

5. The seeding results of the Para Snow BikeCross at the 2020 Winter X Games are shown in the table.

Rank	Name	Time (seconds)
1	Doug Henry	53.79
2	Will Posey	54.296
3	Brandon Dudley	58.418

a. Calculate the time difference between the first and second places.
0.506 seconds

b. Calculate the time difference between the first and third places.
4.628 seconds

6. Using the times from Problem 5, what is the total time of the first, second, and third places?
166.504 seconds

7. Consider these expressions.

Expression 1	Expression 2	Expression 3
$6.8 - 0.0031$	$6.79 - 0.0013$	$6.78 - 0.031$

Jada says that Expression 1 has the greatest value. Do you agree with Jada? Explain your thinking.

Yes; Sample response: Jada is correct. Expression 1 has the greatest value. The difference of Expression 1 is 6.7969, the difference of Expression 2 is 6.7887, and the difference of Expression 3 is 6.749.

8. Three times for the 100 m women's breaststroke at the 2016 Summer Olympics are shown.

Katie Meili (USA)	Lilly King (USA)	Yulia Efimova (Russia)
1:05.69	1:04.93	1:05.50

a. Order the swimmers by time, from first place (gold) to third place (bronze).
Lilly King, Yulia Efimova, Katie Meili

b. Calculate the difference between first place (gold) and third place (bronze). Explain what the difference in time means.
0 : 00.76; Sample response: The difference in time between gold and bronze is seventy-six hundredths of a second, or less than one second.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Additional Practice**5.05**

- 1.** Select all expressions that are equivalent to $(0.5) \cdot (0.8)$.

A. $5 \cdot (0.1) \cdot 8 \cdot (0.01)$

B. $5 \cdot (0.01) \cdot 8 \cdot (0.1)$

C. $5 \cdot (0.1) \cdot 8 \cdot (0.1)$

D. $5 \cdot (0.01) \cdot 8 \cdot (0.01)$

E. $5 \cdot \frac{1}{10} \cdot 8 \cdot \frac{1}{10}$

F. $5 \cdot 8 \cdot \frac{1}{10} \cdot \frac{1}{10}$

G. $5 \cdot 8 \cdot \frac{1}{10}$

H. $\frac{5}{10} \cdot \frac{8}{10}$

- 2.** Determine the product. Use your work from parts a–d to answer part e. Show your thinking.

a $15 \cdot (0.1)$

1.5

b $38 \cdot \frac{1}{10}$

3.8

c $3.1 \cdot 0.1$

0.31

d $1.84 \cdot \frac{1}{10}$

0.184

- e What happens to the decimal point of the original number when you multiply it by $\frac{1}{10}$? Explain your thinking.

Sample response: The decimal point moves one place to the left because multiplying by $\frac{1}{10}$ is the same as dividing by 10.

- 3.** Determine the product. Show your thinking.

a $151 \cdot \frac{1}{100}$

1.51

b $8.3 \cdot (0.01)$

0.083

c $1.95 \cdot \frac{1}{100}$

0.0195

d $9.436 \cdot (0.01)$

0.09436

- 4.** Which expressions have the same value as $(0.316) \cdot (0.9)$. Select all that apply.

 A. 0.02844 B. $316 \cdot 9 \cdot (0.0001)$ C. $316 \cdot \frac{1}{1,000} \cdot 9 \cdot \frac{1}{10}$ D. $316 \cdot \frac{1}{1,000} \cdot 9 \cdot \frac{1}{100}$ E. $316 \cdot 9 \cdot \frac{1}{1,0000}$

- 5.** Calculate the value of each expression by first writing the decimal factors as fractions, and then writing their product as a decimal. Show your thinking.

a $(5.7) \cdot 3$

17.1; Sample response:

$$\frac{57}{10} \cdot \frac{3}{1} = \frac{171}{10} = 17.1$$

b $(0.8) \cdot (6.4)$

5.12; Sample response:

$$\frac{8}{10} \cdot \frac{64}{10} = \frac{512}{100} = 5.12$$

c $(0.1) \cdot (0.23)$

0.023; Sample response:

$$\frac{1}{10} \cdot \frac{23}{100} = \frac{23}{1000} = 0.023$$

d $(0.48) \cdot (0.29)$

0.1392; Sample response:

$$\frac{48}{100} \cdot \frac{29}{100} = \frac{1392}{10000} = 0.1392$$

- 6.** Calculate the value of each expression by first writing the decimal factors as fractions, and then writing their product as a decimal.
Show your thinking.

a $(1.6) \cdot (0.006)$

0.0096; Sample response:

$$\frac{16}{10} \cdot \frac{6}{1,000} = \frac{96}{10,000} = 0.0096$$

b $(0.007) \cdot (0.038)$

.000266; Sample response:

$$\frac{7}{1,000} \cdot \frac{38}{1,000} = \frac{266}{1,000,000} = 0.000266$$

- 7.** Noah calculated the value of the expression $(0.18) \cdot (0.09)$ by first writing the decimal factors as fractions, and then writing their product as a decimal. Noah's work is shown: $\frac{18}{100} \cdot \frac{9}{10} = \frac{162}{1000} = 0.162$. Is Noah correct? Explain your thinking.

No; Sample response: Noah did not correctly write the second factor. 0.09 should be written as $\frac{9}{100}$, not $\frac{9}{10}$. The value of the expression $(0.18) \cdot (0.09)$ is 0.0162.

- 8.** Tyler explains what happens to a decimal point of a number that is multiplied by 0.01. "When I multiply by the decimal 0.01, move the decimal point two places to the right because multiplying by $\frac{1}{100}$ is the same as dividing by 100." Is Tyler correct? Explain your thinking.

No; Sample response: Tyler should move the decimal point two places to the left when multiplying by 0.01.

Additional Practice | Answer Key

Unit 5 | Lesson 5

Name: _____ Date: _____ Period: _____

Additional Practice

5.05

1. Select all expressions that are equivalent to $(0.5) \cdot (0.8)$.

A. $5 \cdot (0.1) \cdot 8 \cdot (0.01)$
 C. $5 \cdot (0.1) \cdot 8 \cdot (0.1)$
 E. $5 \cdot \frac{1}{10} \cdot 8 \cdot \frac{1}{10}$
 G. $5 \cdot 8 \cdot \frac{1}{10}$

B. $5 \cdot (0.01) \cdot 8 \cdot (0.1)$
 D. $5 \cdot (0.01) \cdot 8 \cdot (0.01)$
 F. $5 \cdot 8 \cdot \frac{1}{10} \cdot \frac{1}{10}$
 H. $\frac{5}{10} \cdot \frac{8}{10}$

2. Determine the product. Use your work from parts a–d to answer part e. Show your thinking.

a. $15 \cdot (0.1)$
1.5

b. $38 \cdot \frac{1}{10}$
3.8

c. $3.1 \cdot 0.1$
0.31

d. $1.84 \cdot \frac{1}{10}$
0.184

e. What happens to the decimal point of the original number when you multiply it by $\frac{1}{10}$? Explain your thinking.
Sample response: The decimal point moves one place to the left because multiplying by $\frac{1}{10}$ is the same as dividing by 10.

3. Determine the product. Show your thinking.

a. $151 \cdot \frac{1}{100}$
1.51

b. $8.3 \cdot (0.01)$
0.083

c. $1.95 \cdot \frac{1}{100}$
0.0195

d. $9.436 \cdot (0.01)$
0.09436

Unit 5 Lesson 5 125 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

4. Which expressions have the same value as $(0.316) \cdot (0.9)$. Select all that apply.

A. 0.02844
 C. $316 \cdot \frac{1}{1,000} \cdot 9 \cdot \frac{1}{10}$
 E. $316 \cdot 9 \cdot \frac{1}{1,000}$

B. $316 \cdot 9 \cdot (0.0001)$
 D. $316 \cdot \frac{1}{1,000} \cdot 9 \cdot \frac{1}{100}$

5. Calculate the value of each expression by first writing the decimal factors as fractions, and then writing their product as a decimal. Show your thinking.

a. $(5.7) \cdot 3$
17.1
17.1; Sample response:

$$\frac{57}{10} \cdot \frac{3}{1} = \frac{171}{10} = 17.1$$

b. $(0.8) \cdot (6.4)$
5.12
5.12; Sample response:

$$\frac{8}{10} \cdot \frac{64}{10} = \frac{512}{100} = 5.12$$

c. $(0.1) \cdot (0.23)$
0.023
0.023; Sample response:

$$\frac{1}{10} \cdot \frac{23}{100} = \frac{23}{1000} = 0.023$$

d. $(0.48) \cdot (0.29)$
0.1392
0.1392; Sample response:

$$\frac{48}{100} \cdot \frac{29}{100} = \frac{1392}{10000} = 0.1392$$

6. Calculate the value of each expression by first writing the decimal factors as fractions, and then writing their product as a decimal. Show your thinking.

a. $(1.6) \cdot (0.006)$
0.0096
0.0096; Sample response:

$$\frac{16}{10} \cdot \frac{6}{1000} = \frac{96}{10000} = 0.0096$$

b. $(0.007) \cdot (0.038)$
.000266
.000266; Sample response:

$$\frac{7}{1000} \cdot \frac{38}{100} = \frac{266}{1000000} = 0.000266$$

7. Noah calculated the value of the expression $(0.18) \cdot (0.09)$ by first writing the decimal factors as fractions, and then writing their product as a decimal. Noah's work is shown: $\frac{18}{100} \cdot \frac{9}{10} = \frac{162}{1000} = 0.162$. Is Noah correct? Explain your thinking.
No: Sample response: Noah did not correctly write the second factor. 0.09 should be written as $\frac{9}{100}$, not $\frac{1}{10}$. The value of the expression $(0.18) \cdot (0.09)$ is 0.0162.

8. Tyler explains what happens to a decimal point of a number that is multiplied by 0.01. "When I multiply by the decimal 0.01, move the decimal point two places to the right because multiplying by $\frac{1}{100}$ is the same as dividing by 100." Is Tyler correct? Explain your thinking.
No: Sample response: Tyler should move the decimal point two places to the left when multiplying by 0.01.

Unit 5 Lesson 5 126 Additional Practice

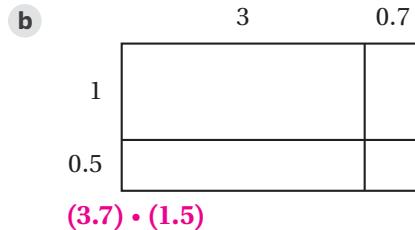
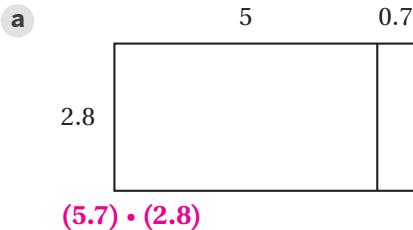
Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.3
2	1	6.NS.B.3
3	2	6.NS.B.3
4	2	6.NS.B.3
5	2	6.NS.B.3
6	2	6.NS.B.3
7	3	6.NS.B.3
8	3	6.NS.B.3

Notes:

Additional Practice**5.07**

- 1.** Write a multiplication expression that represents each area diagram.



- 2.** The rectangle has an area in square units and has been partitioned into four smaller rectangles. For each expression, write the name of the smaller rectangle whose area matches each expression. Then determine the area of each smaller rectangle.

a $(0.3) \cdot 3$
B; 0.9 square units

b $3 \cdot 4$
D; 12 square units

c $(0.3) \cdot (0.5)$
C; 0.15 square units

d $4 \cdot (0.5)$
A; 2 square units

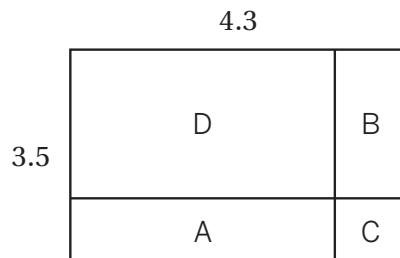
e Determine the total area of the rectangle.
15.05 square units

- 3.** The area diagram represents $(6.8) \cdot (4.3)$.

a Determine the areas of Rectangles A and B.

Rectangle A: 27.2 square units;
Rectangle B: 2.04 square units

b What is the area of the larger 6.8 by 4.3 rectangle?
29.24 square units

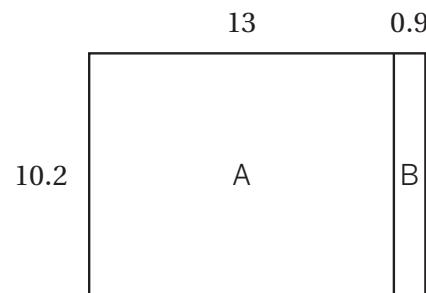
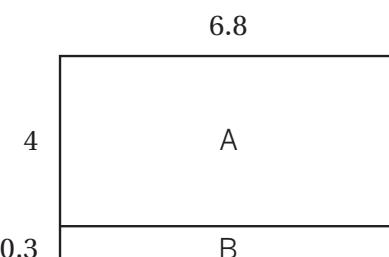


- 4.** The area diagram represents $(13.9) \cdot (10.2)$.

a Determine the areas of Rectangles A and B.

Rectangle A: 132.6 square units;
Rectangle B: 9.18 square units

b What is the area of the larger 13.9 by 10.2 rectangle?
141.78 square units



5. Consider the expression $(0.24) \cdot (0.13)$.

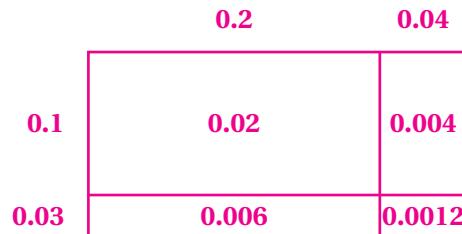
a Draw an area diagram to represent this expression.

b Use a vertical calculation to determine the product.

0.0312; Sample response:

$$\begin{array}{r} 0.24 \\ \times 0.13 \\ \hline 0.02 \\ + 0.006 \\ \hline 0.0312 \end{array}$$

Sample response:



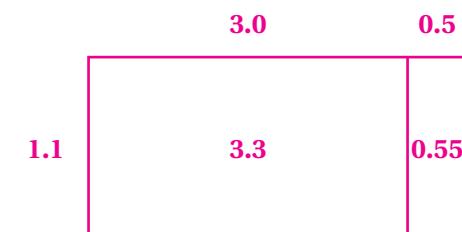
6. Consider the expression $(3.5) \cdot (1.1)$.

a Draw an area diagram to represent this expression.

b Use a vertical calculation to determine the product.

3.85; Sample response:

$$\begin{array}{r} 3.5 \\ \times 1.1 \\ \hline 35 \\ + 35 \\ \hline 3.85 \end{array}$$



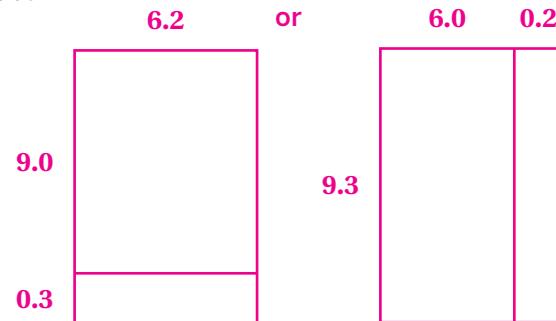
7. Tyler drew an area diagram to represent the expression $(6.2) \cdot (9.3)$.

a Tyler's teacher told him that there is another way he could use an area diagram to represent the same expression. Draw another area diagram that Tyler could use. **Sample response:**

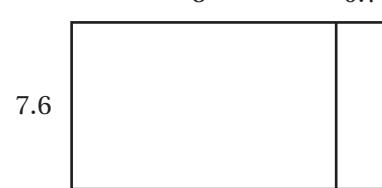
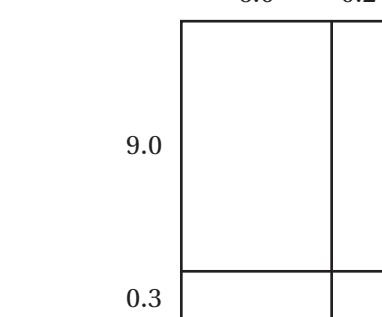
b Use a vertical calculation to determine the product.

57.66; Sample response:

$$\begin{array}{r} 6.2 \\ \times 9.3 \\ \hline 186 \\ + 558 \\ \hline 57.66 \end{array}$$



8. Bard drew this area diagram to represent the expression $(5.7) \cdot (7.6)$, and claimed to be able to use it to determine the area of the rectangle. Kiran said Bard's area diagram is not correct because it only shows two partitioned rectangles, when instead it should show four partitioned rectangles. Who is correct? Explain your thinking.



Both; Sample response: Both Bard and Kiran are correct. There are different area models that can be used to determine the area of the rectangle.

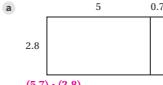
Additional Practice | Answer Key

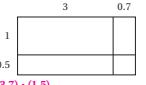
Unit 5 | Lesson 7

Name: _____ Date: _____ Period: _____

Additional Practice **5.07**

1. Write a multiplication expression that represents each area diagram.

a  $(5.7) \cdot (2.8)$

b  $(3.7) \cdot (1.5)$

2. The rectangle has an area in square units and has been partitioned into four smaller rectangles. For each expression, write the name of the smaller rectangle whose area matches each expression. Then determine the area of each smaller rectangle.

a $(0.3) \cdot 3$
B: 0.9 square units

b $3 \cdot 4$
D: 12 square units

c $(0.3) \cdot (0.5)$
C: 0.15 square units

d $4 \cdot (0.5)$
A: 2 square units

e Determine the total area of the rectangle.
15.05 square units

3. The area diagram represents $(6.8) \cdot (4.3)$.

a Determine the areas of Rectangles A and B.
Rectangle A: 27.2 square units;
Rectangle B: 2.04 square units

b What is the area of the larger 6.8 by 4.3 rectangle?
29.24 square units

4. The area diagram represents $(13.9) \cdot (10.2)$.

a Determine the areas of Rectangles A and B.
Rectangle A: 132.6 square units;
Rectangle B: 9.18 square units

b What is the area of the larger 13.9 by 10.2 rectangle?
141.78 square units

Unit 5 Lesson 7 **129** © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Consider the expression $(0.24) \cdot (0.13)$.
Sample response:

a Draw an area diagram to represent this expression.

b Use a vertical calculation to determine the product.
0.0312; Sample response:

$$\begin{array}{r} 0.24 \\ \times 0.13 \\ \hline 0.024 \\ + 0.0072 \\ \hline 0.0312 \end{array}$$

6. Consider the expression $(3.5) \cdot (1.1)$.
Sample response:

a Draw an area diagram to represent this expression.

b Use a vertical calculation to determine the product.
3.85; Sample response:

$$\begin{array}{r} 3.5 \\ \times 1.1 \\ \hline 35 \\ + 35 \\ \hline 3.85 \end{array}$$

7. Tyler drew an area diagram to represent the expression $(6.2) \cdot (9.3)$.
Sample response:

a Tyler's teacher told him that there is another way he could use an area diagram to represent the same expression. Draw another area diagram that Tyler could use.
Sample response:

b Use a vertical calculation to determine the product.
57.66; Sample response:

$$\begin{array}{r} 6.2 \\ \times 9.3 \\ \hline 186 \\ + 558 \\ \hline 57.66 \end{array}$$

8. Bard drew this area diagram to represent the expression $(5.7) \cdot (7.6)$, and claimed to be able to use it to determine the area of the rectangle. Kiran said Bard's area diagram is not correct because it only shows two partitioned rectangles, when instead it should show four partitioned rectangles. Who is correct? Explain your thinking.
Both; Sample response: Both Bard and Kiran are correct. There are different area models that can be used to determine the area of the rectangle.

Unit 5 Lesson 7 **130** Additional Practice

Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.3
2	2	6.NS.B.3
3	2	6.NS.B.3
4	2	6.NS.B.3
5	2	6.NS.B.3
6	2	6.NS.B.3
7	3	6.NS.B.3
8	3	6.NS.B.3

Notes:

Additional Practice**5.08**

- 1.** Evaluate each expression.

a $3 \cdot (0.5)$

1.5

b $(6.2) \cdot 3$

18.6

c $2 \cdot (16.3)$

32.6

d $(0.9) \cdot 5$

4.5

- 2.** A pound of turkey lunch meat at the deli costs \$7.49 per pound. Lin wants to purchase 2.25 lb of turkey for the week. Determine how much Lin will pay, rounded to the nearest cent. Show your thinking.

\$16.85; Sample response:

$$\begin{array}{r}
 7.49 \\
 \times 2.25 \\
 \hline
 3745 \\
 1498 \\
 + 1498 \\
 \hline
 16.8525
 \end{array}$$

- 3.** Use vertical calculations to determine each product. Show your thinking.

a $(3.4) \cdot (7.6)$

$$\begin{array}{r}
 3.4 \\
 \times 7.6 \\
 \hline
 204 \\
 + 238 \\
 \hline
 25.84
 \end{array}$$

b $(1.2) \cdot (9.9)$

$$\begin{array}{r}
 1.2 \\
 \times 9.9 \\
 \hline
 108 \\
 + 108 \\
 \hline
 11.88
 \end{array}$$

- 4.** Use vertical calculations to determine each product. Show your thinking.

a $(0.54) \cdot (0.8)$

$$\begin{array}{r}
 0.54 \\
 \times 0.8 \\
 \hline
 432 \\
 + 000 \\
 \hline
 0.432
 \end{array}$$

b $(8.79) \cdot (6.04)$

$$\begin{array}{r}
 8.79 \\
 \times 6.04 \\
 \hline
 3516 \\
 000 \\
 + 5274 \\
 \hline
 53.0916
 \end{array}$$

5. Which weighs more and by how much: A dog that weighs 5.4 kg or a cat that weighs 10.25 lb? Use the conversion 1 kg = 2.2 lb. Show your thinking.

The dog weighs more, by 1.63 lb Students' explanations may vary.

6. A pound of strawberries costs \$4.29 and a pound of bananas costs \$0.69. What is the combined cost of 1.5 lb of strawberries and 0.8 lb of bananas? Round your answer to the nearest cent. Show your thinking.

\$6.99; Sample response: 1.5 lb of strawberries costs 6.435 and 0.8 lb of bananas costs 0.552. $6.435 + 0.552 = 6.987$

7. Four polygons with their dimensions are given.

- A parallelogram with a base of 6.437 cm and a height of 5.5 cm.
- A square with side lengths of 5.91 cm.
- A triangle with a base of 17.8 cm and a height of 4.3 cm.
- A rectangle that is 14.25 cm wide and 2.5 cm long.

Noah says that the square has the greatest area. Is Noah correct? Explain your thinking.

No; Sample response: The parallelogram has an area of $(6.437) \cdot (5.5) = 35.4035 \text{ cm}^2$, the square has an area of $(5.91) \cdot (5.91) = 34.9281 \text{ cm}^2$, the triangle has an area of $(17.8 \cdot 4.3) \div 2 = 38.27 \text{ cm}^2$, and the rectangle has an area of $(14.25) \cdot (2.5) = 35.625 \text{ cm}^2$. Therefore, the triangle has the greatest area.

8. There are 2.75 g of sugar in 1 oz of applesauce. Shawn says this means that there are 165 g of sugar in 6 oz of applesauce. Do you agree or disagree with Shawn? Explain your thinking.

I disagree; Sample response: Shawn placed the decimal point in the incorrect place after multiplying. There are $(2.75) \cdot 6 = 16.5$ g of sugar in 6 oz of applesauce.

Additional Practice | Answer Key

Unit 5 | Lesson 8

Name: _____ Date: _____ Period: _____

Additional Practice

5.08

- Evaluate each expression.
 - $3 \cdot (0.5)$
1.5
 - $(6.2) \cdot 3$
18.6
 - $2 \cdot (16.3)$
32.6
 - $(0.9) \cdot 5$
4.5
- A pound of turkey lunch meat at the deli costs \$7.49 per pound. Lin wants to purchase 2.25 lb of turkey for the week. Determine how much Lin will pay, rounded to the nearest cent. Show your thinking.
\$16.85; Sample response:

$$\begin{array}{r}
 & 7.49 \\
 \times & 2.25 \\
 \hline
 & 3745 \\
 & 1498 \\
 + & 1498 \\
 \hline
 & 16.8525
 \end{array}$$
- Use vertical calculations to determine each product. Show your thinking.
 - $(3.4) \cdot (7.6)$
 - $(1.2) \cdot (9.9)$

$ \begin{array}{r} 3.4 \\ \times 7.6 \\ \hline 204 \\ + 238 \\ \hline 25.84 \end{array} $	$ \begin{array}{r} 1.2 \\ \times 9.9 \\ \hline 108 \\ + 108 \\ \hline 11.88 \end{array} $
---	---
- Use vertical calculations to determine each product. Show your thinking.
 - $(0.54) \cdot (0.8)$
 - $(8.79) \cdot (6.04)$

$ \begin{array}{r} 0.54 \\ \times 0.8 \\ \hline 432 \\ + 000 \\ \hline 0.432 \end{array} $	$ \begin{array}{r} 8.79 \\ \times 6.04 \\ \hline 3516 \\ 5274 \\ \hline 53.0916 \end{array} $
--	---

Unit 5 Lesson 8 131 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

- Which weighs more and by how much: A dog that weighs 5.4 kg or a cat that weighs 10.25 lb? Use the conversion 1 kg = 2.2 lb. Show your thinking.
The dog weighs more, by 1.63 lb. Students' explanations may vary.
- A pound of strawberries costs \$4.29 and a pound of bananas costs \$0.69. What is the combined cost of 1.5 lb of strawberries and 0.8 lb of bananas? Round your answer to the nearest cent. Show your thinking.
\$6.99; Sample response: 1.5 lb of strawberries costs 6.435 and 0.8 lb of bananas costs 0.552. $6.435 + 0.552 = 6.987$
- Four polygons with their dimensions are given.
 - A parallelogram with a base of 6.437 cm and a height of 5.5 cm.
 - A square with side lengths of 5.91 cm.
 - A triangle with a base of 17.8 cm and a height of 4.3 cm.
 - A rectangle that is 14.25 cm wide and 2.5 cm long.

Noah says that the square has the greatest area. Is Noah correct? Explain your thinking.
No; Sample response: The parallelogram has an area of $(6.437) \cdot (5.5) = 35.4035 \text{ cm}^2$, the square has an area of $(5.91) \cdot (5.91) = 34.9281 \text{ cm}^2$, the triangle has an area of $(17.8 \cdot 4.3) \div 2 = 38.27 \text{ cm}^2$, and the rectangle has an area of $(14.25) \cdot (2.5) = 35.625 \text{ cm}^2$. Therefore, the triangle has the greatest area.
- There are 2.75 g of sugar in 1 oz of applesauce. Shawn says this means that there are 165 g of sugar in 6 oz of applesauce. Do you agree or disagree with Shawn? Explain your thinking.
I disagree; Sample response: Shawn placed the decimal point in the incorrect place after multiplying. There are $(2.75) \cdot 6 = 16.5 \text{ g}$ of sugar in 6 oz of applesauce.

Unit 5 Lesson 8 132 Additional Practice

Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.3
2	2	6.NS.B.3
3	2	6.NS.B.3
4	2	6.NS.B.3
5	2	6.NS.B.3
6	2	6.NS.B.3
7	3	6.NS.B.3
8	3	6.NS.B.3

Notes:

Additional Practice**5.10**

- 1.** Use long division to match each fraction and decimal.

Fraction	Decimal
a. $\frac{1}{4}$ b. 0.8
b. $\frac{4}{5}$ c. 0.3
c. $\frac{3}{10}$ d. 0.5
d. $\frac{4}{8}$ a. 0.25

- 2.** Use long division to show that the fraction and decimal in each pair are equal.

a $\frac{7}{10}$ and 0.7

$$\begin{array}{r} 0.7 \\ 10 \overline{)7.0} \\ -70 \\ \hline 0 \end{array}$$

b $\frac{9}{50}$ and 0.18

$$\begin{array}{r} 0.18 \\ 50 \overline{)9.00} \\ -50 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

c $\frac{12}{25}$ and 0.48

$$\begin{array}{r} 0.48 \\)12.00 \\ -100 \\ \hline 200 \\ -200 \\ \hline 0 \end{array}$$

- 3.** Use long division to determine each quotient. Write your answer as a decimal.

a $26 \div 5$
5.2

b $75 \div 8$
9.375

c $79 \div 4$
19.75

- 4.** Use long division to determine each quotient. Write your answer as a decimal.

a $324 \div 5$
64.8

b $509 \div 8$
63.625

c $951 \div 6$
158.5

5. Use long division to determine each quotient. Write your answer as a decimal.

a $240 \div 32$

7.5

b $1,650 \div 16$

103.125

c $8,415 \div 20$

420.75

6. Complete the table by using long division to determine the salinity of the water sources. Show your thinking and express any remainders as decimals.

Water source	Salt (g)	Water (liters)	Salinity (g/l)
Indian Ocean	1,235	38	32.5
Pacific Ocean	1,352	40	33.8
Arctic Ocean	658	20	32.9

7. Mai reasoned, “ $\frac{22}{25}$ is equivalent to $\frac{44}{50}$ and to $\frac{88}{100}$, so the decimal of $\frac{22}{25}$ is 0.88.”

- a Use long division to show that Mai is correct.

$$\begin{array}{r} 0.88 \\ 25)22.00 \\ -200 \\ \hline 200 \\ -200 \\ \hline 0 \end{array}$$

- b Use long division to determine whether the decimal of $\frac{44}{50}$ is also 0.88.

$$\begin{array}{r} 0.88 \\ 50)44.00 \\ -400 \\ \hline 400 \\ -400 \\ \hline 0 \end{array}$$

8. Noah calculated $1,124 \div 20$. Priya said he made a mistake using long division. Is Priya correct? Explain your thinking.

Noah's work:

$$\begin{array}{r} 5.62 \\ 20)1124.00 \\ -100 \\ \hline 124 \\ -120 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

Yes; Sample response: Priya is correct, Noah made a mistake when dividing because he did not place the 5 over the tens place. The correct quotient is 56.2, not 5.62.

Additional Practice | Answer Key

Unit 5 | Lesson 10

Name: _____ Date: _____ Period: _____

Additional Practice

5.10

1. Use long division to match each fraction and decimal.

Fraction	Decimal
a. $\frac{1}{4}$b..... 0.8
b. $\frac{4}{5}$c..... 0.3
c. $\frac{3}{10}$d..... 0.5
d. $\frac{4}{8}$a..... 0.25

2. Use long division to show that the fraction and decimal in each pair are equal.

a) $\frac{7}{10}$ and 0.7	b) $\frac{9}{50}$ and 0.18	c) $\frac{12}{25}$ and 0.48
$ \begin{array}{r} 0.7 \\ 10 \overline{)7.0} \\ -70 \\ \hline 0 \end{array} $	$ \begin{array}{r} 0.18 \\ 50 \overline{)9.00} \\ -50 \\ \hline 40 \\ -40 \\ \hline 0 \end{array} $	$ \begin{array}{r} 0.48 \\ 25 \overline{)12.00} \\ -100 \\ \hline 200 \\ -200 \\ \hline 0 \end{array} $

3. Use long division to determine each quotient. Write your answer as a decimal.

a) $26 \div 5$ 5.2	b) $75 \div 8$ 9.375	c) $79 \div 4$ 19.75
-----------------------	-------------------------	-------------------------

4. Use long division to determine each quotient. Write your answer as a decimal.

a) $324 \div 5$ 64.8	b) $509 \div 8$ 63.625	c) $951 \div 6$ 158.5
-------------------------	---------------------------	--------------------------

Unit 5 Lesson 10 135 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Use long division to determine each quotient. Write your answer as a decimal.

a) $240 \div 32$ 7.5	b) $1,650 \div 16$ 103.125	c) $8,415 \div 20$ 420.75
-------------------------	-------------------------------	------------------------------

6. Complete the table by using long division to determine the salinity of the water sources. Show your thinking and express any remainders as decimals.

Water source	Salt (g)	Water (liters)	Salinity (g/l)
Indian Ocean	1,235	38	32.5
Pacific Ocean	1,352	40	33.8
Arctic Ocean	658	20	32.9

7. Mai reasoned, “ $\frac{22}{25}$ is equivalent to $\frac{44}{50}$ and to $\frac{88}{100}$, so the decimal of $\frac{22}{25}$ is 0.88.”

a) Use long division to show that Mai is correct.

$$\begin{array}{r}
 0.88 \\
 25 \overline{)22.00} \\
 -20 \\
 \hline
 20 \\
 -20 \\
 \hline
 0
 \end{array}$$

b) Use long division to determine whether the decimal of $\frac{44}{50}$ is also 0.88.

$$\begin{array}{r}
 0.88 \\
 50 \overline{)44.00} \\
 -40 \\
 \hline
 40 \\
 -40 \\
 \hline
 0
 \end{array}$$

8. Noah calculated $1,124 \div 20$. Priya said he made a mistake using long division. Is Priya correct? Explain your thinking.

Noah's work:

$$\begin{array}{r}
 5.62 \\
 20 \overline{)1124.00} \\
 -100 \\
 \hline
 124 \\
 -120 \\
 \hline
 40 \\
 -40 \\
 \hline
 0
 \end{array}$$

Yes; Sample response: Priya is correct. Noah made a mistake when dividing because he did not place the 5 over the tens place. The correct quotient is 56.2, not 5.62.

Unit 5 Lesson 10 136 Additional Practice

Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.2
2	2	6.NS.B.2
3	2	6.NS.B.2
4	2	6.NS.B.2
5	2	6.NS.B.2
6	2	6.NS.B.2
7	2	6.NS.B.2
8	3	6.NS.B.2

Notes:

Additional Practice**5.11**

- 1.** Without evaluating, which expression(s) have the same value as $35 \div 10$? Select *all* that apply.
 - A. $0.35 \div 10$
 - B. $3.5 \div 1$
 - C. $350 \div 100$
 - D. $350 \div 1,000$
 - E. $3,500 \div 100$

- 2.** Without evaluating, which expression(s) have the same value as $2,100 \div 30$? Select *all* that apply.
 - A. $210 \div 0.3$
 - B. $21 \div 3$
 - C. $2.1 \div 0.03$
 - D. $21 \div 0.3$
 - E. $210 \div 3$

- 3.** Evaluate the expression $\left(5,607 \cdot \frac{1}{10}\right) \div 5$. Show your thinking.
112.14; Students' explanations may vary.

- 4.** Evaluate the expression $\left(42,959 \cdot \frac{1}{10}\right) \div 7$. Show your thinking.
613.7; Students' explanations may vary.

- 5.** Use long division to determine each quotient. Show your thinking.
 - a** $15.4 \div 28$
0.55; Students' explanations may vary.

 - b** $6.86 \div 2$
3.43; Students' explanations may vary.

 - c** $529 \div 0.5$
1,058; Students' explanations may vary.

6. Consider the expression $84 \div 1.5$.

- a Use what you know about related expressions to write a new division expression with a whole number divisor. Explain your thinking.

840 ÷ 15; Sample response: I can multiply both the dividend and divisor by 10 so that both are whole numbers.

- b Evaluate the expression you wrote for part a. Show your thinking.

56; Students' explanations may vary.

7. Tyler paid \$37.36 for four 1-lb containers of protein powder. How much is each container of protein powder? Show your thinking.

\$9.34; Students' explanations may vary.

8. Lin used long division to determine the quotient of $42 \div 1.4$. Her work is shown.
Is Lin correct or incorrect? If she is correct, write a related expression Lin could use to divide. If Lin is incorrect, explain her error and determine the correct quotient.

$$\begin{array}{r} 0.3 \\ 1.4 \overline{)4\,2} \\ -4\,2 \\ \hline 0 \end{array}$$

Incorrect; Sample response: Lin ignored the decimal point in 1.4. Lin should use a related expression of $420 \div 14$ to determine the quotient, which is 30.

Name: _____ Date: _____ Period: _____

Additional Practice

5.11

1. Without evaluating, which expression(s) have the same value as $35 \div 10$? Select all that apply.

A. $0.35 \div 10$
 B. $3.5 \div 1$
 C. $350 \div 100$
 D. $350 \div 1,000$
 E. $3,500 \div 100$

2. Without evaluating, which expression(s) have the same value as $2,100 \div 30$? Select all that apply.

A. $210 \div 3$
 B. $21 \div 3$
 C. $2.1 \div 0.03$
 D. $21 \div 0.3$
 E. $210 \div 3$

3. Evaluate the expression $(5,607 \cdot \frac{1}{10}) \div 5$. Show your thinking.
112.14; Students' explanations may vary.

4. Evaluate the expression $(42,959 \cdot \frac{1}{10}) \div 7$. Show your thinking.
613.7; Students' explanations may vary.

5. Use long division to determine each quotient. Show your thinking.

a. $15.4 \div 28$
0.55; Students' explanations may vary.

b. $6.86 \div 2$
3.43; Students' explanations may vary.

c. $529 \div 0.5$
1,058; Students' explanations may vary.

Unit 5 Lesson 11 137 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

6. Consider the expression $84 \div 1.5$.

a. Use what you know about related expressions to write a new division expression with a whole number divisor. Explain your thinking.
840 \div 15; Sample response: I can multiply both the dividend and divisor by 10 so that both are whole numbers.

b. Evaluate the expression you wrote for part a. Show your thinking.
56; Students' explanations may vary.

7. Tyler paid \$37.36 for four 1-lb containers of protein powder. How much is each container of protein powder? Show your thinking.
\$9.34; Students' explanations may vary.

8. Lin used long division to determine the quotient of $42 \div 1.4$. Her work is shown. Is Lin correct or incorrect? If she is correct, write a related expression Lin could use to divide. If Lin is incorrect, explain her error and determine the correct quotient.

Incorrect; Sample response: Lin ignored the decimal point in 1.4. Lin should use a related expression of 420 ÷ 14 to determine the quotient, which is 30.

Unit 5 Lesson 11 138 Additional Practice

Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.3
2	1	6.NS.B.3
3	2	6.NS.B.3
4	2	6.NS.B.3
5	2	6.NS.B.3
6	2	6.NS.B.3
7	2	6.NS.B.3
8	3	6.NS.B.3

Notes:

Additional Practice**5.12**

- 1.** Without evaluating, which expression(s) have the same value as $54.4 \div 1.7$? Select *all* that apply.

- A. $544 \div 17$ B. $540 \div 17$
 C. $5,440 \div 170$ D. $544 \div 0.17$
 E. $5.44 \div 0.17$

- 2.** Consider the expression $0.0063 \div 0.009$.

- a Write two different division expressions that have the same quotient as $0.0063 \div 0.009$.

Sample answer: $6.3 \div 9$, $63 \div 90$ (or equivalent)

- b Evaluate $0.0063 \div 0.009$. Show your thinking.

0.7; Students' explanations may vary.

- 3.** Bard said, “To determine the value of $5.064 \div 8$, I can divide 5,064 by 80.”

- a Do you agree with Bard? Explain your thinking.

No; Sample response: I do not agree with Bard because Bard did not multiply both the dividend and divisor by the same power of 10.

- b Calculate the quotient of $5.064 \div 8$. Show your thinking.

0.633; Students' explanations may vary.

- 4.** Clare said, “To determine the value of $730.2 \div 0.6$, I can divide 7,302 by 6.

- a Do you agree with Clare? Explain your thinking.

Yes; Sample response: I agree with Clare because both the dividend and divisor were multiplied by the same power of 10.

- b Calculate the quotient of $730.2 \div 0.6$.

1,217

- 5.** A bag of quarters weighs 8.5 kg. Each quarter weighs 5.67 g. Which is the best estimate for the number of quarters in the bag? Show your thinking.

- A. 15,000
C. 150

- B. 1,500
D. 15

- 6.** Different brands of water bottles containing 16.9 oz are sold in different quantities for different prices at a local grocery store. Complete the table to determine the unit cost for each brand.

Brand	Price (\$)	Quantity	Unit cost (\$)
Purely Water	4.40	40	0.11
Spring Water	4.80	32	0.15
Mountain Water	3.12	12	0.26

- 7.** Evaluate each expression. Show your thinking.

a $11.9 \div 1.7$

7; Students' explanations may vary.

b $0.036 \div 0.02$

1.8; Students' explanations may vary.

- 8.** Diego says, “To determine the value of $180 \div 1.2$, I can divide 18,000 by 120.” Mai says, “To determine the value of $180 \div 1.2$, I can divide 1,800 by 12.”

- a Who is correct? Explain your thinking.

Both; Sample response: Diego multiplied both the dividend and divisor by 100, and Mai multiplied both the divisor and dividend by 10.

- b Calculate the quotient of $180 \div 1.2$. Show your thinking.

150; Students' explanations may vary.

Additional Practice | Answer Key

Unit 5 | Lesson 12

Name: _____ Date: _____ Period: _____

Additional Practice

5.12

1. Without evaluating, which expression(s) have the same value as $54.4 \div 1.7$? Select all that apply.

A. $544 \div 17$
 B. $540 \div 17$
 C. $5,440 \div 170$
 D. $544 \div 0.17$
 E. $5.44 \div 0.17$

2. Consider the expression $0.0063 \div 0.009$.

a. Write two different division expressions that have the same quotient as $0.0063 \div 0.009$.
Sample answer: $6.3 \div 9$, $63 \div 90$ (or equivalent)

b. Evaluate $0.0063 \div 0.009$. Show your thinking.
0.7; Students' explanations may vary.

3. Bard said, "To determine the value of $5,064 \div 8$, I can divide 5,064 by 80."

a. Do you agree with Bard? Explain your thinking.
No; Sample response: I do not agree with Bard because Bard did not multiply both the dividend and divisor by the same power of 10.

b. Calculate the quotient of $5,064 \div 8$. Show your thinking.
633; Students' explanations may vary.

4. Clare said, "To determine the value of $730.2 \div 0.6$, I can divide 7,302 by 6."

a. Do you agree with Clare? Explain your thinking.
Yes; Sample response: I agree with Clare because both the dividend and divisor were multiplied by the same power of 10.

b. Calculate the quotient of $730.2 \div 0.6$.
1,217

5. A bag of quarters weighs 8.5 kg. Each quarter weighs 5.67 g. Which is the best estimate for the number of quarters in the bag? Show your thinking.

A. 15,000
 B. 1,500
C. 150

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 5 Lesson 12

139

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

6. Different brands of water bottles containing 16.9 oz are sold in different quantities for different prices at a local grocery store. Complete the table to determine the unit cost for each brand.

Brand	Price (\$)	Quantity	Unit cost (\$)
Purely Water	4.40	40	0.11
Spring Water	4.80	32	0.15
Mountain Water	3.12	12	0.26

7. Evaluate each expression. Show your thinking.

a. $11.9 \div 1.7$
7; Students' explanations may vary.

b. $0.036 \div 0.02$
1.8; Students' explanations may vary.

8. Diego says, "To determine the value of $180 \div 1.2$, I can divide 18,000 by 120." Mai says, "To determine the value of $180 \div 1.2$, I can divide 1,800 by 12."
b. Who is correct? Explain your thinking.
Both; Sample response: Diego multiplied both the dividend and divisor by 100, and Mai multiplied both the divisor and dividend by 10.

b. Calculate the quotient of $180 \div 1.2$. Show your thinking.
150; Students' explanations may vary.

Unit 5 Lesson 12

140

Additional Practice

Notes:

Practice Problem Analysis

Problems	DOK	Standard(s)
1	1	6.NS.B.3
2	2	6.NS.B.3
3	2	6.NS.B.3
4	2	6.NS.B.3
5	2	6.NS.B.3
6	2	6.NS.B.3
7	2	6.NS.B.3
8	3	6.NS.B.3

Additional Practice

5.16

1. Circle the expression that has a greater value.

9% of 180

1.8% of 90

They have the same value.

Problems 2–5. Alicia sells art prints on her online shop. Every week, she sells \$550 of art prints. She tries to spend no more than 6% of her weekly art print sales on art supplies.

2. Write an expression to represent how much money Alicia spends on art supplies every week.

$$550 \times 0.06$$

3. How much money, at most, does Alicia spend on art supplies each week?

$$\$33$$

4. Alicia puts 11% of her weekly art print sales into a savings account for an upcoming art fair. How much money does Alicia save each week?

Alicia saves **\$60.50** each week.

5. Alicia recently had to spend \$99.00 to renew her website hosting platform. What percent of her weekly art print sales did she spend on website maintenance?

- A. 0.18%
- B. 9%
- C. 18%
- D. 90%

Problems 6–7. Capri is remodeling their kitchen. They went to the hardware store and purchased these items.

Items	Cost (\$)
Hammer	13.57
Wood	27.25
Nails	5.25
Screwdriver	9.50
Paint	12.66
Paintbrush	4.80
Floor tiles	35.97
Total	109.00

6. Floor tiles are the most expensive item. What percent of the total cost are the floor tiles?

- A. 30%
- B. 31%
- C. 32%
- D. 33%

7. What percentage of the total hardware store bill is wood? Show or explain your thinking.

25%

Explanations vary. Capri spent \$27.25 on wood. Since the total bill was \$109, Capri spent $\frac{27.25}{109} = 0.25 = 25\%$ on wood.

Name: Date: Period:

Additional Practice

5.16

1. Circle the expression that has a greater value.
9% of 180 1.8% of 90 They have the same value.

Problems 2–5. Alicia sells art prints on her online shop. Every week, she sells \$550 of art prints. She tries to spend no more than 6% of her weekly art print sales on art supplies.

2. Write an expression to represent how much money Alicia spends on art supplies every week.
 550×0.06

3. How much money, at most, does Alicia spend on art supplies each week?
\$33

4. Alicia puts 11% of her weekly art print sales into a savings account for an upcoming art fair. How much money does Alicia save each week?
Alicia saves \$60.50 each week.

5. Alicia recently had to spend \$99.00 to renew her website hosting platform. What percent of her weekly art print sales did she spend on website maintenance?
A. 0.18%
B. 9%
C. 18%
D. 90%

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 5 Lesson 16

147

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: Date: Period:

Problems 6–7. Capri is remodeling their kitchen. They went to the hardware store and purchased these items.

Items	Cost (\$)
Hammer	13.57
Wood	27.25
Nails	5.25
Screwdriver	9.50
Paint	12.66
Paintbrush	4.80
Floor tiles	35.97
Total	109.00

6. Floor tiles are the most expensive item. What percent of the total cost are the floor tiles?
A. 30%
B. 31%
C. 32%
D. 33%

7. What percentage of the total hardware store bill is wood? Show or explain your thinking.
25%
Explanations vary. Capri spent \$27.25 on wood. Since the total bill was \$109, Capri spent $\frac{27.25}{109} = 0.25 = 25\%$ on wood.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Unit 5 Lesson 16

148

Additional Practice

Practice Problem Analysis

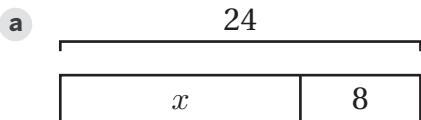
Problems	DOK	Standard(s)
1	1	6.RP.A.3
2	2	6.RP.A.3
3	1	6.RP.A.3
4	1	6.RP.A.3
5	1	6.RP.A.3
6	1	6.RP.A.3
7	2	6.RP.A.3

Notes:

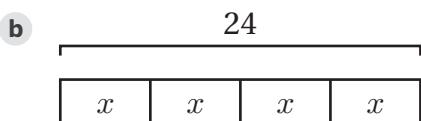
Additional Practice

6.01

- 1.** Determine the value of x in each tape diagram.



16

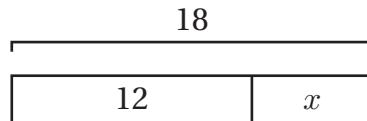


6

- 2.** Which equations could represent the tape diagram?

Select all that apply.

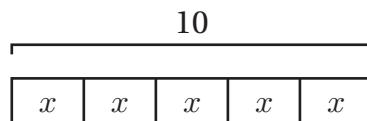
- A. $12 - x = 18$ D. $x = 18 + 12$
 B. $12 + x = 18$ E. $18 - x = 12$
 C. $12 = 18 + x$



- 3.** Which equations could represent the tape diagram?

Select all that apply.

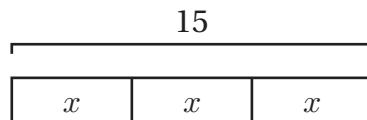
- A. $x + x + x + x + x = 10$
 B. $x = 10 \div 5$
 C. $5 \div 10 = x$
 D. $5 \cdot x = 10$
 E. $10 + 10 + 10 + 10 + 10 = x$
 F. $10 = x \cdot 5$



- 4.** Consider the tape diagram shown.

- a Write an addition equation that represents the tape diagram.

$$x + x + x = 15 \text{ (or equivalent)}$$



- b Write a multiplication equation that represents the tape diagram.

$$3 \cdot x = 15 \text{ (or equivalent)}$$

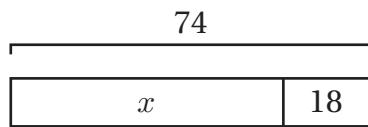
- c Write a division equation that represents the tape diagram.

$$15 \div 3 = x \text{ (or equivalent)}$$

5. Consider the tape diagram shown

a Write an addition equation that represents the tape diagram.

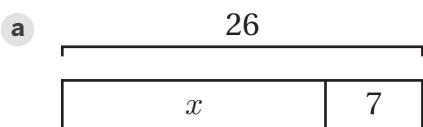
$$x + 18 = 74 \text{ (or equivalent)}$$



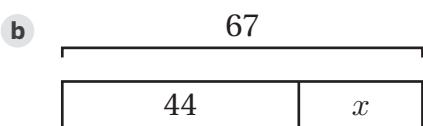
b Write a subtraction equation that represents the tape diagram.

$$74 - 18 = x \text{ or } 74 - x = 18 \text{ (or equivalent)}$$

6. Determine the value of x in each tape diagram.



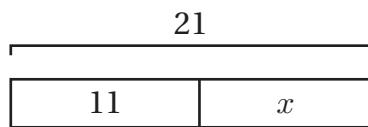
$$19$$



$$23$$

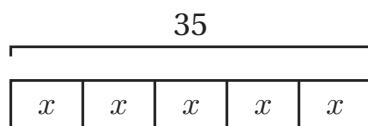
7. Consider the tape diagram shown. How does the diagram show that $x + 11$ has the same value as 21?

Sample response: The diagram shows that $x + 11$ has the same value as 21 because the total length of the tape diagram is labeled.



8. Consider the tape diagram shown. Diego says there are many equations that represent this tape diagram, such as $x + x + x + x + x = 35$. Is Diego correct? Explain your thinking.

Yes; **Sample response:** There are many other equations that represent the same tape diagram such as $5x = 35$ and $35 \div 5 = x$.



Additional Practice | Answer Key

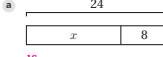
Unit 6 | Lesson 1

Name: _____ Date: _____ Period: _____

Additional Practice

6.01

1. Determine the value of x in each tape diagram.

a. 

b. 

2. Which equations could represent the tape diagram? Select all that apply.

A. $12 - x = 18$ D. $x = 18 + 12$
 B. $12 + x = 18$ E. $18 - x = 12$
 C. $12 = 18 + x$

3. Which equations could represent the tape diagram? Select all that apply.

A. $x + x + x + x + x = 10$
 B. $x = 10 \div 5$
 C. $5 \div 10 = x$
 D. $5 \cdot x = 10$
 E. $10 + 10 + 10 + 10 + 10 = x$
 F. $10 = x \cdot 5$

4. Consider the tape diagram shown.

a. Write an addition equation that represents the tape diagram.
 $x + x + x = 15$ (or equivalent)

b. Write a multiplication equation that represents the tape diagram.
 $3 \cdot x = 15$ (or equivalent)

c. Write a division equation that represents the tape diagram.
 $15 \div 3 = x$ (or equivalent)

Unit 6 Lesson 1 149 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

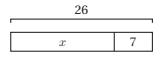
Name: _____ Date: _____ Period: _____

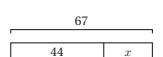
5. Consider the tape diagram shown.

a. Write an addition equation that represents the tape diagram.
 $x + 18 = 74$ (or equivalent)

b. Write a subtraction equation that represents the tape diagram.
 $74 - 18 = x$ or $74 - x = 18$ (or equivalent)

6. Determine the value of x in each tape diagram.

a. 

b. 

7. Consider the tape diagram shown. How does the diagram show that $x + 11$ has the same value as 21?

Sample response: The diagram shows that $x + 11$ has the same value as 21 because the total length of the tape diagram is labeled.

8. Consider the tape diagram shown. Diego says there are many equations that represent this tape diagram, such as $x + x + x + x + x = 35$. Is Diego correct? Explain your thinking.

Yes. Sample response: There are many other equations that represent the same tape diagram such as $5x = 35$ and $35 \div 5 = x$.

Unit 6 Lesson 1 150 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.B.7
2	2	6.EE.B.6
3	2	6.EE.B.6
4	2	6.EE.B.6
5	2	6.EE.B.6
6	1	6.EE.B.7
7	3	6.EE.B.6
8	3	6.EE.B.6

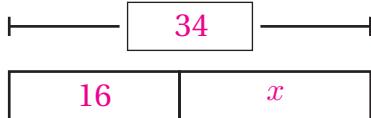
Notes:

Additional Practice

6.02

Problems 1–4: Willow and her friend made 34 ounces of hot chocolate. Willow drank 16 ounces of the hot chocolate. There are x ounces of hot chocolate left.

1. Draw a tape diagram to represent the situation.



2. Select *all* the equations that could represent this situation.

- A. $34 + 16 = x$
- B. $34 - 16 = x$
- C. $16x = 34$
- D. $x + 16 = 34$
- E. $34 \div 16 = x$

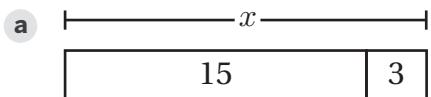
3. Determine the solution to one of the equations you selected in Problem 2.

18

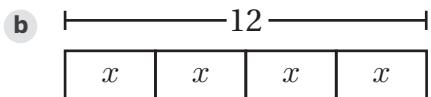
4. Explain the solution's meaning in this situation.

Explanations vary. Since $x = 18$, this means there are 18 ounces of hot chocolate left.

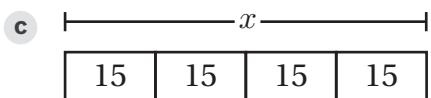
5. Match each equation to the tape diagram that represents it.



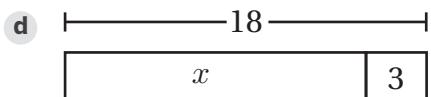
d $18 - 3 = x$



a $15 + 3 = x$



c $x \div 4 = 15$



b $4x = 12$

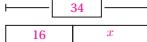
Additional Practice | Answer Key

Unit 6 | Lesson 2

Name: Date: Period:

Additional Practice 6.02

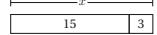
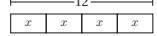
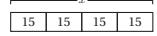
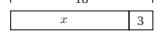
Problems 1–4: Willow and her friend made 34 ounces of hot chocolate. Willow drank 16 ounces of the hot chocolate. There are x ounces of hot chocolate left.

- Draw a tape diagram to represent the situation.

- Select all the equations that could represent this situation.
 A. $34 + 16 = x$
 B. $34 - 16 = x$
 C. $16x = 34$
 D. $x + 16 = 34$
 E. $34 \div 16 = x$
- Determine the solution to one of the equations you selected in Problem 2.
18
- Explain the solution's meaning in this situation.
Explanations vary. Since $x = 18$, this means there are 18 ounces of hot chocolate left.

Unit 6 Lesson 2 **151** © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: Date: Period:

5. Match each equation to the tape diagram that represents it.

a 	d $18 - 3 = x$
b 	a $15 + 3 = x$
c 	c $x \div 4 = 15$
d 	b $4x = 12$

Unit 6 Lesson 2 **152** Additional Practice

Practice Problem Analysis		
Problem	DOK	Standard(s)
1	1	6.EE.B.6
2	2	6.EE.B.6
3	1	6.EE.B.7
4	2	6.EE.B.7
5	2	6.EE.B.6

Notes:

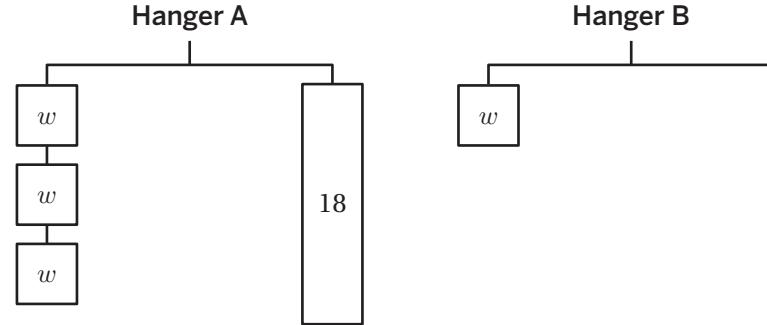
Additional Practice

6.03

Refer to Hangers A and B to complete Problems 1 and 2.

1. Hanger A is balanced. Write an equation that represents Hanger A.

$$w + w + w = 18 \text{ or } 3 \cdot w = 18 \\ (\text{or equivalent})$$



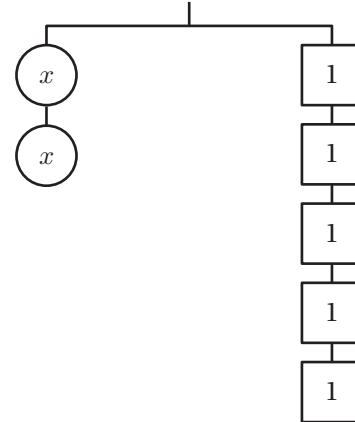
2. Balance Hanger B by completing the right side of the hanger. Then write an equation to represent the balanced hanger.

$$w = 6$$

3. Which equations match the hanger diagram?

Select *all* that apply.

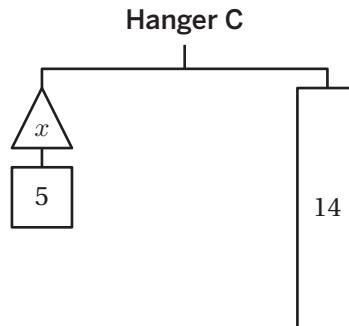
- A. $2x = 1 + 1 + 1 + 1 + 1$
- B. $x + x = 1$
- C. $x + 3 = 5$
- D. $x + x = 5$
- E. $2x = 5$



4. Refer to Hangers C and D.

- a Hanger C is balanced. Write an equation that represents Hanger C.

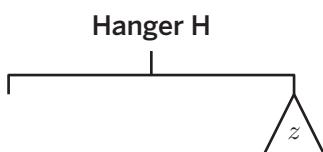
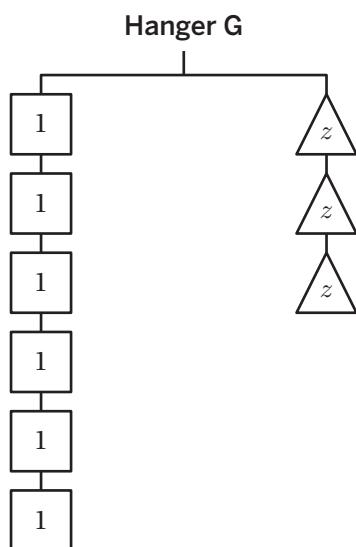
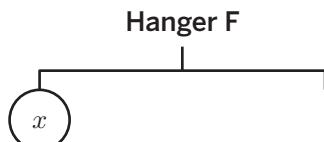
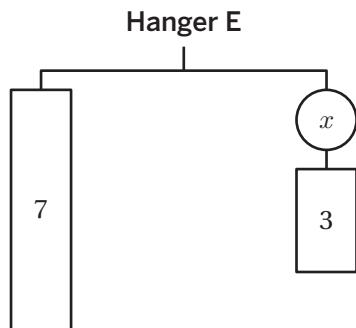
$$x + 5 = 14$$



- b Balance Hanger D by completing the right side of the hanger. Then write an equation to represent the balanced hanger.

$$x = 9$$

Hangers E and G are balanced. Refer to Hangers E, F, G, and H as you complete Problems 5–7.



5. Write equations that represent Hangers E and G.

Hanger E:

$$7 = x + 3 \text{ (or equivalent)}$$

Hanger G:

$$6 = 3z, \text{ or } 1 + 1 + 1 + 1 + 1 + 1 = z + z + z \text{ (or equivalent)}$$

6. Balance Hangers F and H by completing the empty sides of the hangers. Then write equations that represent Hanger F and Hanger H.

Hanger F:

$$x = 4$$

Hanger H:

$$z = 2$$

7. Shawn wants to create a balance hanger by using only x and z . Write an equation that Shawn could use. Explain your thinking.

$z + z = x$ or $2z = x$; Sample response: I know that z is half the amount of x , or x is twice the amount of z .

Name: _____ Date: _____ Period: _____

Additional Practice

6.03

Refer to Hangers A and B to complete Problems 1 and 2.

1. Hanger A is balanced. Write an equation that represents Hanger A.

$w + w + w = 18$ or $3 \cdot w = 18$ (or equivalent)

2. Balance Hanger B by completing the right side of the hanger. Then write an equation to represent the balanced hanger.

$w = 6$

3. Which equations match the hanger diagram? Select all that apply.

A. $2x = 1 + 1 + 1 + 1$
 B. $x + x = 1$
 C. $x + 3 = 5$
 D. $x + x = 5$
 E. $2x = 5$

4. Refer to Hangers C and D.

a. Hanger C is balanced. Write an equation that represents Hanger C.

$x + 5 = 14$

b. Balance Hanger D by completing the right side of the hanger. Then write an equation to represent the balanced hanger.

$x = 9$

Unit 6 Lesson 3 **153** © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Hangers E and G are balanced. Refer to Hangers E, F, G, and H as you complete Problems 5–7.

Hanger E:
 $7 = x + 3$ (or equivalent)

Hanger F:
 $6 = 3z$, or $1 + 1 + 1 + 1 + 1 = z + z + z$ (or equivalent)

Hanger G:
 $1 + 1 + 1 + 1 + 1 = z + z + z$ (or equivalent)

Hanger H:
 $z = 2$

5. Write equations that represent Hangers E and G.

Hanger E:
 $7 = x + 3$ (or equivalent)

Hanger G:
 $6 = 3z$, or $1 + 1 + 1 + 1 + 1 = z + z + z$ (or equivalent)

6. Balance Hangers F and H by completing the empty sides of the hangers. Then write equations that represent Hanger F and Hanger H.

Hanger F:
 $x = 4$

Hanger H:
 $z = 2$

7. Shawn wants to create a balance hanger by using only x and z . Write an equation that Shawn could use. Explain your thinking.
 $z + z = x$ or $2z = x$; Sample response: I know that z is half the amount of x , or z is twice the amount of z .

Unit 6 Lesson 3 **154** Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.B.6, 6.EE.B.7
2	2	6.EE.B.6, 6.EE.B.7
3	2	6.EE.B.6, 6.EE.B.7
4	2	6.EE.B.6, 6.EE.B.7
5	1	6.EE.B.6, 6.EE.B.7
6	2	6.EE.B.6, 6.EE.B.7
7	3	6.EE.B.6, 6.EE.B.7

Notes:

Additional Practice

6.04

- 1.** Write whether each equation is *true* or *false*.

a $11 + 17 = 14 + 14$
True

True

c $4\frac{1}{3} - 1\frac{2}{3} = 2\frac{1}{3}$

False

b $4 \bullet 6 = 25$

False

False

d $6 = 36 \div 6$
True

True

- 2.** Match each equation with its solution.

Equation	Solution
a $6.8 - e = 0.8$	c $\frac{8}{3}$
b $2a = 6.8$	d 13.6
c $\frac{3}{8} \cdot f = 1$	g $1\frac{3}{8}$
d $c \div 2 = 6.8$	a 6
e $g \div \frac{3}{8} = 1$	f 4.8
f $b + 2 = 6.8$	e $\frac{3}{8}$
g $d + \frac{5}{8} = 2$	b 3.4

- 3.** A bottle of ketchup had 44 oz in it. After a family used k ounces, 18 oz was left.

- a Write an equation to represent this scenario.

$$x + 18 = 44 \text{ (or equivalent)}$$

- b** If you substitute 24 or 26 as the value for k , does either value make the equation true? Explain your thinking.

26; Sample response: $26 + 18 = 44$ is a true statement. $24 + 18 = 44$ is a false statement.

- 4.** Clare split 144 beads among x friends. Each friend received 18 beads.

- a Write an equation to represent this scenario.

$x \cdot 18 = 144$ (or equivalent)

- b If you substitute 7 or 8 as the value for x , does either value make the equation true? Explain your thinking.

8; Sample response: $8 \cdot 18 = 144$ is a true statement. $7 \cdot 18 = 144$ is a false statement.

- 5.** A group of five friends earn a total of \$50 raking leaves in their neighborhood. Each friend earns the same amount of money, x dollars. Which equation represents this scenario?

A. $5 + 50 = x$

C. $5 \cdot x = 50$

B. $5 \cdot 50 = x$

D. $x - 5 = 50$

- 6.** A soccer team played 18 games in their season. The team won x games and lost 4 games. Select *all* the equations that represent this scenario.

A. $18 = x - 4$

D. $18 - x = 4$

B. $4 + x = 18$

E. $4 = 18 + x$

C. $x = 18 - 4$

- 7.** Is $x = 24$ a solution to the equation $\frac{3}{4}x = 18$? Explain your thinking.

Yes, 24 is a solution; Sample response: When you multiply $\frac{3}{4}$ and 24, the product is $\frac{72}{4}$, or 18.

- 8.** Noah says that $x = 7.5$ is a solution to the equation $x + 6.1 = 13.4$. Is Noah correct? Explain your thinking.

No; Sample response: Noah is not correct because $7.5 + 6.1 = 13.4$, which is not equal to 13.4 and therefore false. So, 7.5 is not a solution of the equation.

Additional Practice | Answer Key

Unit 6 | Lesson 4

Name: _____	Date: _____	Period: _____																				
Additional Practice																						
6.04																						
<p>1. Write whether each equation is <i>true</i> or <i>false</i>.</p> <table border="0"> <tr> <td><input type="radio"/> A. $11 + 17 = 14 + 14$ True</td> <td><input type="radio"/> C. $4\frac{1}{3} - 1\frac{2}{3} = 2\frac{1}{3}$ False</td> </tr> <tr> <td><input type="radio"/> B. $4 \cdot 6 = 25$</td> <td><input type="radio"/> D. $6 = 36 \div 6$ True</td> </tr> </table> <p>2. Match each equation with its solution.</p> <table border="0"> <thead> <tr> <th>Equation</th> <th>Solution</th> </tr> </thead> <tbody> <tr> <td><input type="radio"/> A. $6.8 - e = 0.8$</td> <td><input type="radio"/> c. $\frac{8}{3}$</td> </tr> <tr> <td><input type="radio"/> B. $2a = 6.8$</td> <td><input type="radio"/> d. 13.6</td> </tr> <tr> <td><input type="radio"/> C. $\frac{3}{8} \cdot f = 1$</td> <td><input type="radio"/> g. $1\frac{3}{8}$</td> </tr> <tr> <td><input type="radio"/> D. $c \div 2 = 6.8$</td> <td><input type="radio"/> a. 6</td> </tr> <tr> <td><input type="radio"/> E. $g \div \frac{3}{8} = 1$</td> <td><input type="radio"/> f. 4.8</td> </tr> <tr> <td><input type="radio"/> F. $b + 2 = 6.8$</td> <td><input type="radio"/> e. $\frac{3}{8}$</td> </tr> <tr> <td><input type="radio"/> G. $d + \frac{5}{8} = 2$</td> <td><input type="radio"/> b. 3.4</td> </tr> </tbody> </table> <p>3. A bottle of ketchup had 44 oz in it. After a family used k ounces, 18 oz was left.</p> <p><input type="radio"/> A. Write an equation to represent this scenario. $x + 18 = 44$ (or equivalent)</p> <p><input type="radio"/> B. If you substitute 24 or 26 as the value for k, does either value make the equation true? Explain your thinking. Sample response: $26 + 18 = 44$ is a true statement. $24 + 18 = 44$ is a false statement.</p>			<input type="radio"/> A. $11 + 17 = 14 + 14$ True	<input type="radio"/> C. $4\frac{1}{3} - 1\frac{2}{3} = 2\frac{1}{3}$ False	<input type="radio"/> B. $4 \cdot 6 = 25$	<input type="radio"/> D. $6 = 36 \div 6$ True	Equation	Solution	<input type="radio"/> A. $6.8 - e = 0.8$	<input type="radio"/> c. $\frac{8}{3}$	<input type="radio"/> B. $2a = 6.8$	<input type="radio"/> d. 13.6	<input type="radio"/> C. $\frac{3}{8} \cdot f = 1$	<input type="radio"/> g. $1\frac{3}{8}$	<input type="radio"/> D. $c \div 2 = 6.8$	<input type="radio"/> a. 6	<input type="radio"/> E. $g \div \frac{3}{8} = 1$	<input type="radio"/> f. 4.8	<input type="radio"/> F. $b + 2 = 6.8$	<input type="radio"/> e. $\frac{3}{8}$	<input type="radio"/> G. $d + \frac{5}{8} = 2$	<input type="radio"/> b. 3.4
<input type="radio"/> A. $11 + 17 = 14 + 14$ True	<input type="radio"/> C. $4\frac{1}{3} - 1\frac{2}{3} = 2\frac{1}{3}$ False																					
<input type="radio"/> B. $4 \cdot 6 = 25$	<input type="radio"/> D. $6 = 36 \div 6$ True																					
Equation	Solution																					
<input type="radio"/> A. $6.8 - e = 0.8$	<input type="radio"/> c. $\frac{8}{3}$																					
<input type="radio"/> B. $2a = 6.8$	<input type="radio"/> d. 13.6																					
<input type="radio"/> C. $\frac{3}{8} \cdot f = 1$	<input type="radio"/> g. $1\frac{3}{8}$																					
<input type="radio"/> D. $c \div 2 = 6.8$	<input type="radio"/> a. 6																					
<input type="radio"/> E. $g \div \frac{3}{8} = 1$	<input type="radio"/> f. 4.8																					
<input type="radio"/> F. $b + 2 = 6.8$	<input type="radio"/> e. $\frac{3}{8}$																					
<input type="radio"/> G. $d + \frac{5}{8} = 2$	<input type="radio"/> b. 3.4																					

Unit 6 Lesson 4

155

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____	Date: _____	Period: _____
<p>4. Clare split 144 beads among x friends. Each friend received 18 beads.</p> <p><input type="radio"/> A. Write an equation to represent this scenario. $x \cdot 18 = 144$ (or equivalent)</p> <p><input type="radio"/> B. If you substitute 7 or 8 as the value for x, does either value make the equation true? Explain your thinking. Sample response: $8 \cdot 18 = 144$ is a true statement. $7 \cdot 18 = 144$ is a false statement.</p> <p>5. A group of five friends earn a total of \$50 raking leaves in their neighborhood. Each friend earns the same amount of money, x dollars. Which equation represents this scenario?</p> <p><input type="radio"/> A. $5 + 50 = x$</p> <p><input checked="" type="radio"/> C. $5 \cdot x = 50$</p> <p><input type="radio"/> B. $5 + 50 = x$</p> <p><input type="radio"/> D. $x - 5 = 50$</p> <p>6. A soccer team played 18 games in their season. The team won x games and lost 4 games. Select all the equations that represent this scenario.</p> <p><input type="radio"/> A. $18 = x - 4$</p> <p><input checked="" type="radio"/> D. $18 - x = 4$</p> <p><input checked="" type="radio"/> B. $4 + x = 18$</p> <p><input type="radio"/> E. $4 = 18 - x$</p> <p><input checked="" type="radio"/> C. $x = 18 - 4$</p> <p>7. Is $x = 24$ a solution to the equation $\frac{3}{4}x = 18$? Explain your thinking. Yes, 24 is a solution. Sample response: When you multiply $\frac{3}{4}$ and 24, the product is $\frac{72}{4}$, or 18.</p> <p>8. Noah says that $x = 7.5$ is a solution to the equation $x + 6.1 = 13.4$. Is Noah correct? Explain your thinking. No. Sample response: Noah is not correct because $7.5 + 6.1 = 13.4$, which is not equal to 13.4 and therefore false. So, 7.5 is not a solution of the equation.</p>		

Unit 6 Lesson 4

156

Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.B.5
2	1	6.EE.B.5
3	2	6.EE.B.5
4	2	6.EE.B.5
5	2	6.EE.B.5
6	2	6.EE.B.5
7	2	6.EE.B.5
8	3	6.EE.B.5

Notes:

Additional Practice

6.05

Problems 1–3: Izzy reads 2.5 books each month. After x months, Izzy has read 12.5 books.

1. Write an equation that could represent this situation.

$$2.5x = 12.5$$

2. Describe the meaning of the x in the situation.

Explanations vary. In this situation, x represents the number of months.

3. How many months did it take for Izzy to read 12.5 books?

It took Izzy 5 months to read 12.5 books.

Problems 4–5: Here is an equation:

$$y + 3 = 27$$

4. Write a situation that the equation could represent.

Explanations vary. Ishani wants to collect a total of 27 shells for an art project. She already has collected 3 shells.

5. Describe the meaning of the y in your situation.

Explanations vary. In this situation, y represents how many shells Ishani still needs to collect.

6. Arti buys 7 lemons to make a lemon custard pie. When he makes the pie, he finds that each lemon has 6 seeds. Select *all* the equations that represent the total number of lemon seeds, s .

A. $s = 6 \div 7$

B. $7s = 6$

C. $7 + 60 = s$

D. $s = 7 \cdot 6$

E. $s \div 7 = 6$

7. Eloise bought a w -pound bag of bird seed at the store. Each week, Eloise puts 0.25 pounds of seeds in her bird feeder. The bag of bird seed lasted 14 weeks. Select *all* the equations that represents the total weight of the bird seed bag, w .

A. $w = 0.25 \cdot 14$

B. $w \div 14 = 0.25$

C. $14 + 0.25 = w$

D. $14 \div 0.25 = w$

E. $14w = 0.25$

Problems 8–10: Willow has \$85 to spend on paint at an art supply shop. It costs \$4.25 per tube of paint. Willow can buy p tubes of paint.

8. Write an equation for the situation.

4.25p = 85

9. Solve the equation for p .

$p = 20$

10. Describe the solutions' meaning.

Willow can buy 20 tubes of paint at the art supply shop.

Additional Practice | Answer Key

Unit 6 | Lesson 5

Name: _____ Date: _____ Period: _____

Additional Practice 6.05

Problems 1–3: Izzy reads 2.5 books each month. After x months, Izzy has read 12.5 books.

1. Write an equation that could represent this situation.
 $2.5x = 12.5$

2. Describe the meaning of the x in the situation.
Explanations vary. In this situation, x represents the number of months.

3. How many months did it take for Izzy to read 12.5 books?
It took Izzy 5 months to read 12.5 books.

Problems 4–5: Here is an equation:
 $y + 3 = 27$

4. Write a situation that the equation could represent.
Explanations vary. Ishani wants to collect a total of 27 shells for an art project. She already has collected 3 shells.

5. Describe the meaning of the y in your situation.
Explanations vary. In this situation, y represents how many shells Ishani still needs to collect.

Unit 6 Lesson 5 157 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

6. Arti buys 7 lemons to make a lemon custard pie. When he makes the pie, he finds that each lemon has 6 seeds. Select all the equations that represent the total number of lemon seeds, s .

A. $s = 6 \div 7$
 B. $7s = 6$
 C. $7 + 60 = s$
 D. $s = 7 \cdot 6$
 E. $s \div 7 = 6$

7. Eloise bought a w -pound bag of bird seed at the store. Each week, Eloise puts 0.25 pounds of seeds in her bird feeder. The bag of bird seed lasted 14 weeks. Select all the equations that represent the total weight of the bird seed bag, w .

A. $w = 0.25 \cdot 14$
 B. $w \div 14 = 0.25$
 C. $14 + 0.25 = w$
 D. $14 \div 0.25 = w$
 E. $14w = 0.25$

Problems 8–10: Willow has \$85 to spend on paint at an art supply shop. It costs \$4.25 per tube of paint. Willow can buy p tubes of paint.

8. Write an equation for the situation.
 $4.25p = 85$

9. Solve the equation for p .
 $p = 20$

10. Describe the solutions' meaning.
Willow can buy 20 tubes of paint at the art supply shop.

Unit 6 Lesson 5 158 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.B.6
2	1	6.EE.B.6
3	1	6.EE.B.6
4	2	6.EE.B.6
5	2	6.EE.B.6
6	1	6.EE.B.6
7	1	6.EE.B.6
8	1	6.EE.B.6
9	1	6.EE.B.7
10	2	6.EE.B.7

Notes:

Additional Practice**6.06**

- 1.** Diego has 21 sheets of paper in his notebook and s sheets have Diego's written class notes. In this scenario, what does the expression $21 - s$ represent?

Explanations vary. The expression $21 - s$ represents the number of paper sheets in Rory's notebook that do not have class notes.

Problems 2–3: The variable p represents the number of plants in a greenhouse.

- 2.** What does $p + 3$ represent?

The expression $p + 3$ represents the number of plants in a greenhouse with an additional 3 plants added to the greenhouse.

- 3.** What does $\frac{1}{3}p$ represent?

The expression $\frac{1}{3}p$ represents one-third of the plants in the greenhouse.

- 4.** Kiara wants to make homemade bread for her family and friends. She needs flour and water for a bread recipe. The directions state that the amount of flour should be 6 cups more than the amount of water. Complete the table to show how much water is needed for different amounts of flour.

Flour (cups)	Water (cups)
10	4
14	8
17	11
x	$x - 6$

Problems 5–7: Strawberries cost \$4.50 per pound. How much would it cost to buy:

5. 3 pounds of strawberries?

\$13.50

6. 7 pounds of strawberries?

\$31.50

7. x pounds of strawberries?

\$4.50x

Problems 8–10: Evaluate the expression $2d + 3$ for each value of d .

Use the example provided in the table as a guide.

d	$2d + 3$	Value of d
6	$2(6) + 3$	15

8. $d = 7$

17

9. $d = 0.6$

4.2

10. $d = \frac{1}{2}$

4

Additional Practice | Answer Key

Unit 6 | Lesson 6

Name: _____ Date: _____ Period: _____

Additional Practice 6.06

1. Diego has 21 sheets of paper in his notebook and s sheets have Diego's written class notes. In this scenario, what does the expression $21 - s$ represent?
Explanations vary. The expression $21 - s$ represents the number of paper sheets in Rory's notebook that do not have class notes.

Problems 2–3: The variable p represents the number of plants in a greenhouse.

2. What does $p + 3$ represent?
The expression $p + 3$ represents the number of plants in a greenhouse with an additional 3 plants added to the greenhouse.

3. What does $\frac{1}{3}p$ represent?
The expression $\frac{1}{3}p$ represents one-third of the plants in the greenhouse.

4. Kiara wants to make homemade bread for her family and friends. She needs flour and water for a bread recipe. The directions state that the amount of flour should be 6 cups more than the amount of water. Complete the table to show how much water is needed for different amounts of flour.

Flour (cups)	Water (cups)
10	4
14	8
17	11
x	$x - 6$

Unit 6 Lesson 6 159 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Problems 5–7: Strawberries cost \$4.50 per pound. How much would it cost to buy:

5. 3 pounds of strawberries?
\$13.50

6. 7 pounds of strawberries?
\$31.50

7. x pounds of strawberries?
\$4.50 x

Problems 8–10: Evaluate the expression $2d + 3$ for each value of d . Use the example provided in the table as a guide.

d	$2d + 3$	Value of d
6	2(6) + 3	15

8. $d = 7$
17

9. $d = 0.6$
4.2

10. $d = \frac{1}{2}$
4

Unit 6 Lesson 6 160 Additional Practice

Practice Problem Analysis		
Problem	DOK	Standard(s)
1	2	6.EE.A.2.A, 6.EE.B.6, 6.RP.A.3.A
2	2	6.EE.B.6
3	2	6.EE.B.6
4	2	6.EE.B.6
5	1	6.RP.A.3.A
6	1	6.RP.A.3.A
7	2	6.EE.B.6
8	1	6.EE.B.6
9	1	6.EE.B.6
10	1	6.EE.B.6

Notes:

Additional Practice

6.07

Problems 1–3: Here are six expressions.

$$3(x + 2) \qquad 3 + 6x \qquad x + x + x + 6$$

$$(3x + 2) + (3x + 2) \qquad x + 3 \qquad (2x + 3) + (x + 3)$$

- 1.** Write all of the expressions that are equivalent to $3x + 6$.

3(x + 2),

$x + x + x + 6$,

$(2x + 3) + (x + 3)$

- 2.** Create another expression that is equivalent to $3x + 6$.

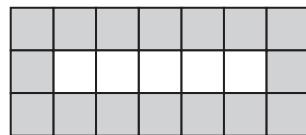
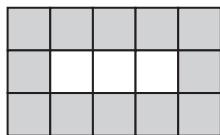
Responses vary. Sample answer: $(x + 3) + (x + 3) + x$

- 3.** Choose an expression that is not equivalent to $3x + 6$. Explain how you know it is not equivalent.

$x + 3$

Explanations vary. I know $x + 3$ is not equivalent to $3x + 6$ because these expressions are not equal for every value of the variable, x .

Problems 4–6: Here are examples of a t -by-1 rectangle.



- 4.** How many border tiles are there in the 3-by-1 rectangle?

12 border tiles

- 5.** How many border tiles are in the 5-by-1 rectangle?

16 border tiles

- 6.** Tristan wants to create an expression to represent the number of border tiles of a t -by-1 rectangle. Which expression is correct?

- A. $t + 6$
- B.** $2t + 6$
- C. $t + 3$
- D. $2t + 3$

Name: _____ Date: _____ Period: _____

Additional Practice **6.07**

Problems 1–3: Here are six expressions.

$3(x + 2)$	$3 + 6x$	$x + x + x + 6$
$(3x + 2) + (3x + 2)$	$x + 3$	$(2x + 3) + (x + 3)$

1. Write all of the expressions that are equivalent to $3x + 6$.

Responses vary. Sample answer: $(x + 3) + (x + 3) + x$

2. Create another expression that is equivalent to $3x + 6$.

Responses vary. Sample answer: $x + 3$

3. Choose an expression that is not equivalent to $3x + 6$. Explain how you know it is not equivalent.

Responses vary. I know $x + 3$ is not equivalent to $3x + 6$ because these expressions are not equal for every value of the variable, x .

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Problems 4–6: Here are examples of a t -by-1 rectangle.



4. How many border tiles are there in the 3-by-1 rectangle?
12 border tiles

5. How many border tiles are in the 5-by-1 rectangle?
16 border tiles

6. Tristan wants to create an expression to represent the number of border tiles of a t -by-1 rectangle. Which expression is correct?

A. $t + 6$
B. $2t + 6$
C. $t + 3$
D. $2t + 3$

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Practice Problem Analysis

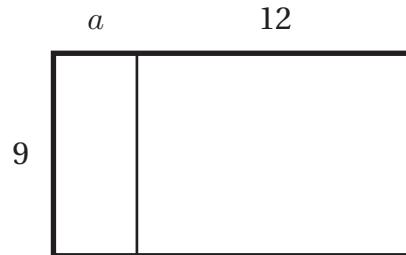
Problem	DOK	Standard(s)
1	1	6.EE.A.3, 6.EE.A.4
2	2	6.EE.A.3, 6.EE.A.4
3	2	6.EE.A.3
4	1	6.EE.A.2.C, 6.EE.A.4
5	1	6.EE.A.2.C, 6.EE.A.4
6	2	6.EE.A.3, 6.EE.A.4

Notes:

Additional Practice**6.08**

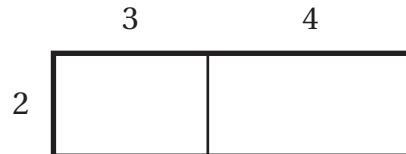
- 1.** Select *all* the expressions that represent the area of the largest, outlined rectangle.

- A. $9a + 108$
- B. $12(a + 9)$
- C. $9 \cdot 12 + 12a$
- D. $9(a + 12)$
- E. $9a + 9 \cdot 12$



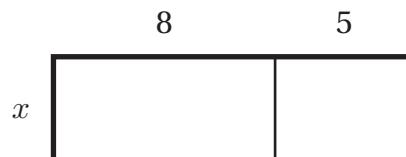
- 2.** Select *all* the expressions that represent the area of the largest, outlined rectangle.

- A. $4 \cdot 2 + 4 \cdot 3$
- B. $2 \cdot 3 + 2 \cdot 4$
- C. $2 \cdot 3 + 4$
- D. $2(4 + 3)$
- E. $3(2 + 4)$



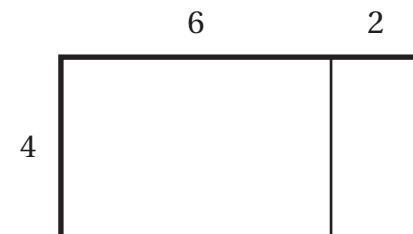
- 3.** Select *all* the expressions that represent the area of the largest, outlined rectangle.

- A. $5x + 8x$
- B. $8x + 40$
- C. $x(5 + 8)$
- D. $5x + 40$
- E. $13x$



- 4.** Select *all* the expressions that represent the area of the largest, outlined rectangle.

- A. $4 + (6 \cdot 2)$
- B. $4(6) + 4(2)$
- C. $24 + 2 \cdot 4$
- D. $4(2) \cdot 4(6)$
- E. $4(2 + 6)$



5. Refer to the partitioned rectangle shown.

a Write an expression that represents the length of the largest, outlined rectangle.

$$1 + a$$

b Write an expression that represents the width of the largest, outlined rectangle.

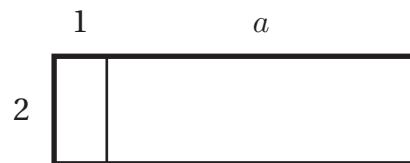
$$2$$

c Write an expression that represents the area of the largest, outlined rectangle as a product of the width and the length.

$$2(1 + a)$$

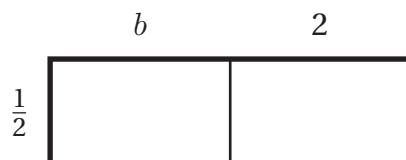
d Write an expression that represents the area of the largest, outlined rectangle as the sum of the areas of the smaller rectangles.

$$2 + 2a \text{ or } 1 \cdot 2 + 2a$$



6. Refer to the partitioned rectangle shown. Bard writes the expression $\frac{1}{2}(b + 2)$ to represent the area of the largest, outlined rectangle. Write another expression that Bard could use to represent the same area.

$$\frac{1}{2}b + 1 \text{ or } \frac{1}{2}b + 2 \cdot \frac{1}{2}$$



7. Refer to the partitioned rectangle shown.

a Write an expression that represents the length of the largest, outlined rectangle.

$$7 + 5$$

b Write an expression that represents the width of the largest, outlined rectangle.

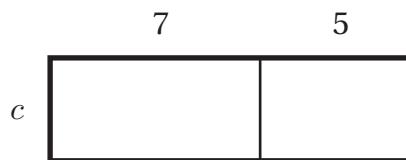
$$c$$

c Write an expression that represents the area of the largest, outlined rectangle as a product of the width and the length.

$$c(7 + 5)$$

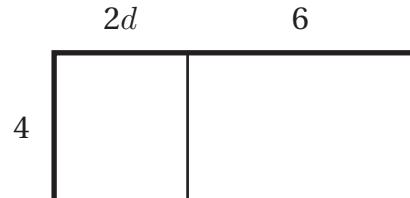
d Write an expression that represents the area of the largest, outlined rectangle as the sum of the areas of the smaller rectangles.

$$7c + 5c$$



8. Refer to the partitioned rectangle shown. Write two different expressions that each represent the total area of the largest, outlined rectangle.

Responses vary. $4(2d + 6)$, $4 \cdot 2d + 4 \cdot 6$, $8d + 4 \cdot 6$, $8d + 24$



Additional Practice | Answer Key

Unit 6 | Lesson 8

Name: _____ Date: _____ Period: _____

Additional Practice 6.08

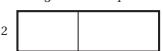
1. Select all the expressions that represent the area of the largest, outlined rectangle.

A. $9a + 108$
 B. $12(a + 9)$
 C. $9 \cdot 12 + 12a$
 D. $9(a + 12)$
 E. $9a + 9 \cdot 12$

9 

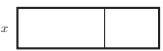
2. Select all the expressions that represent the area of the largest, outlined rectangle.

A. $4 \cdot 2 + 4 \cdot 3$
 B. $2 \cdot 3 + 2 \cdot 4$
 C. $2 \cdot 3 + 4$
 D. $2(4 + 3)$
 E. $3(2 + 4)$

2 

3. Select all the expressions that represent the area of the largest, outlined rectangle.

A. $5x + 8x$
 B. $8x + 40$
 C. $x(5 + 8)$
 D. $5x + 40$
 E. $13x$

x 

4. Select all the expressions that represent the area of the largest, outlined rectangle.

A. $4 + (6 \cdot 2)$
 B. $4(6) + 4(2)$
 C. $24 + 2 \cdot 4$
 D. $4(2) \cdot 4(6)$
 E. $4(2 + 6)$

4 

Unit 6 Lesson 8 163 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Refer to the partitioned rectangle shown.

a. Write an expression that represents the length of the largest, outlined rectangle.
 $1 + a$

b. Write an expression that represents the width of the largest, outlined rectangle.
 2

c. Write an expression that represents the area of the largest, outlined rectangle as a product of the width and the length.
 $2(1 + a)$

d. Write an expression that represents the area of the largest, outlined rectangle as the sum of the areas of the smaller rectangles.
 $2 + 2a$ or $1 \cdot 2 + 2 \cdot a$

1 

6. Refer to the partitioned rectangle shown. Bard writes the expression $\frac{1}{2}(b + 2)$ to represent the area of the largest, outlined rectangle. Write another expression that Bard could use to represent the same area.
 $\frac{1}{2}b + 1$ or $\frac{1}{2}b + 2 \cdot \frac{1}{2}$

$\frac{1}{2}$ 

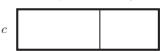
7. Refer to the partitioned rectangle shown.

a. Write an expression that represents the length of the largest, outlined rectangle.
 $7 + 5$

b. Write an expression that represents the width of the largest, outlined rectangle.
 c

c. Write an expression that represents the area of the largest, outlined rectangle as a product of the width and the length.
 $c(7 + 5)$

d. Write an expression that represents the area of the largest, outlined rectangle as the sum of the areas of the smaller rectangles.
 $7c + 5c$

c 

8. Refer to the partitioned rectangle shown. Write two different expressions that each represent the total area of the largest, outlined rectangle.
Responses vary, $4(2d + 6)$, $4 \cdot 2d + 4 \cdot 6$, $8d + 4 \cdot 6$, $8d + 4$

4 

Unit 6 Lesson 8 164 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.EE.A.3, 6.EE.A.4
2	2	6.EE.A.3, 6.EE.A.4
3	2	6.EE.A.3, 6.EE.A.4
4	2	6.EE.A.3, 6.EE.A.4
5	2	6.EE.A.3, 6.EE.A.4
6	2	6.EE.A.3, 6.EE.A.4
7	2	6.EE.A.3, 6.EE.A.4
8	3	6.EE.A.3, 6.EE.A.4

Notes:

Additional Practice**6.09**

- 1.** For each expression, use the Distributive Property to write an equivalent expression.

a $3(x - 4)$

3x – 12

b $(5 - 7) \cdot x$

5x – 7x

c $6x + 9$

3(2x + 3)

d $8x + 12y - 4z$

4(2x + 3y - z) or 2(4x + 6y - 2z)

- 2.** Select *all* the expressions that are equivalent to the expression $12x + 24$.

A. $2(6x + 12)$

D. $12(x + 2)$

B. $4(4x + 6)$

E. $24(2x + 1)$

C. $6(2x + 4)$

- 3.** Select *all* the expressions that are equivalent to the expression $14a - 28b + 42c$.

A. $14(a - 2b + 3c)$

D. $14(a - 2b + 6c)$

B. $7(2a - 4b + 6c)$

E. $7(2a - 4b + 7c)$

C. $2(14a - 14b + 21c)$

F. $2(7a - 14b + 21c)$

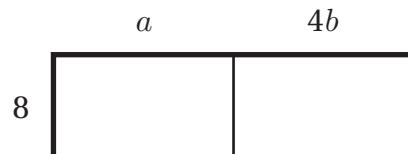
- 4.** Priya writes the area of the partitioned rectangle as the expression $8a + 32b$. Tyler writes the area of the partitioned rectangle as the expression $4(2a + 8b)$.

- a** Who is correct? Explain your thinking.

Both; Sample response: The expressions are equivalent, so both Priya and Tyler correctly wrote the area of the partitioned rectangle.

- b** Write two more equivalent expressions that represent the area of the partitioned rectangle.

8(a + 4b), 2(4a + 16b)



- 5.** For each expression, use the Distributive Property to write an equivalent expression.

a $\frac{1}{2}(x + 8)$

$\frac{1}{2}x + 4$

b $3x(4 - 5)$

$12x - 15x$

c $4xy + 8x$

$4x(y + 2)$ or $2x(2y + 4)$

- 6.** Use the Distributive Property to write two expressions that are equivalent to each expression.

a $10x - 30$

$10(x - 3), 5(2x - 6)$

b $8(x - 2)$

Any two expressions: $8x - 16, 4(2x - 4), 2(4x - 8)$

c $30x + 15y$

$15(2x + y), 5(6x + 3y)$

- 7.** Select all the expressions that are equivalent to the expression $3(8x + 6)$.

A. $2(8x + 9)$ D. $11x + 18$

B. $6(4x + 3)$ E. $24x + 18$

C. $6 + 24x$

- 8.** Clare rewrites the expression $12bc + 8bd$ as $b(12c + 8d)$.

Andre rewrites the expression $12bc + 8bd$ as $4(3bc + 2bd)$.

- a Are Clare and Andre's expressions both equivalent to the expression $12bc + 8bd$? Explain your thinking.

Yes; Sample response: Clare divided $12bc$ and $8bd$ by b , which is a common factor. Andre divided $12bc$ and $8bd$ by 4, which is a common factor. Because both are common factors, both expressions are equivalent to $12bc + 8bd$.

- b Write an additional equivalent expression to the expression $12bc + 8bd$.

$4b(3c + 2d)$

Additional Practice | Answer Key

Unit 6 | Lesson 9

Name: _____ Date: _____ Period: _____

Additional Practice **6.09**

1. For each expression, use the Distributive Property to write an equivalent expression.

- $3(x - 4)$
 $3x - 12$
- $(5 - 7) \cdot x$
 $5x - 7x$
- $6x + 9$
 $3(2x + 3)$
- $8x + 12y - 4z$
 $4(2x + 3y - z)$ or $2(4x + 6y - 2z)$

2. Select all the expressions that are equivalent to the expression $12x + 24$.

A. $2(6x + 12)$ D. $12(x + 2)$
 B. $4(4x + 6)$ E. $24(2x + 1)$
 C. $6(2x + 4)$

3. Select all the expressions that are equivalent to the expression $14a - 28b + 42c$.

A. $14(a - 2b + 3c)$ D. $14(a - 2b + 6c)$
 B. $7(2a - 4b + 6c)$ E. $7(2a - 4b + 7c)$
 C. $2(14a - 14b + 21c)$ F. $2(7a - 14b + 21c)$

4. Priya writes the area of the partitioned rectangle as the expression $8a + 32b$. Tyler writes the area of the partitioned rectangle as the expression $4(2a + 8b)$.

a. Who is correct? Explain your thinking.
Both; Sample response: The expressions are equivalent, so both Priya and Tyler correctly wrote the area of the partitioned rectangle.

b. Write two more equivalent expressions that represent the area of the partitioned rectangle.
 $8(a + 4b)$, $2(4a + 16b)$

Unit 6 Lesson 9 165 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. For each expression, use the Distributive Property to write an equivalent expression.

- $\frac{1}{2}(x + 8)$
 $\frac{1}{2}x + 4$
- $3x(4 - 5)$
 $12x - 15x$
- $4xy + 8x$
 $4x(y + 2)$ or $2x(2y + 4)$

6. Use the Distributive Property to write two expressions that are equivalent to each expression.

- $10x - 30$
 $10(x - 3)$, $5(2x - 6)$
- $8(x - 2)$
Any two expressions: $8x - 16$, $4(2x - 4)$, $2(4x - 8)$
- $30x + 15y$
 $15(2x + y)$, $5(6x + 3y)$

7. Select all the expressions that are equivalent to the expression $3(8x + 6)$.

A. $2(8x + 9)$ D. $11x + 18$
 B. $6(4x + 3)$ E. $24x + 18$
 C. $6 + 24x$

8. Clare rewrites the expression $12bc + 8bd$ as $b(12c + 8d)$. Andre rewrites the expression $12bc + 8bd$ as $4(3bc + 2bd)$.

a. Are Clare and Andre's expressions both equivalent to the expression $12bc + 8bd$? Explain your thinking.
Yes; Sample response: Clare divided $12bc$ and $8bd$ by b , which is a common factor. Andre divided $12bc$ and $8bd$ by 4, which is a common factor. Because both are common factors, both expressions are equivalent to $12bc + 8bd$.

b. Write an additional equivalent expression to the expression $12bc + 8bd$.
 $4b(3c + 2d)$

Unit 6 Lesson 9 166 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.A.3, 6.EE.A.4
2	2	6.EE.A.3, 6.EE.A.4
3	2	6.EE.A.3, 6.EE.A.4
4	3	6.EE.A.3, 6.EE.A.4
5	1	6.EE.A.3, 6.EE.A.4
6	2	6.EE.A.3, 6.EE.A.4
7	2	6.EE.A.3, 6.EE.A.4
8	3	6.EE.A.3, 6.EE.A.4

Notes:

Additional Practice**6.10**

- 1.** Rewrite each expression using exponents.

a $9 \cdot 9 \cdot 9$

9³

b $\frac{1}{2} \cdot \frac{1}{2}$
 $\left(\frac{1}{2}\right)^2$

c $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

2⁷

- 2.** Evaluate each expression.

a 4^2

16

b 2^8

256

c $\left(\frac{1}{3}\right)^2$
 $\frac{1}{9}$

- 3.** Which expression is equivalent to 8^2 ?

A. 6

B. 16

C. 32

D. 64

- 4.** Using what you know about the properties of operations, rewrite each expression using a different operation. Do not evaluate.

a 3^3

3 • 3 • 3

b 5^4

5 • 5 • 5 • 5

c 7^5

7 • 7 • 7 • 7 • 7

5. Select all the expressions that are equivalent to the expression 5^4 .

- A. 20^2 D. 625
 B. $5 + 5 + 5 + 5$ E. $5 \cdot 5^3$
 C. 4^5 F. 25^2

6. The expression 3^5 is equal to 243. Use this to evaluate each of the following expressions. Show your thinking.

a 3^6

729

b $3^3 \cdot 3^2$

243

c 3^4

81

7. The expression 6^4 is equal to 1,296. Use this to evaluate each of the following expressions. Show your thinking.

a 6^3

216

b $\frac{6^4}{6^2}$

36

c $6^2 \cdot 6^2$

1,296

8. The population of New York is about 8.4 million. Is this number closer to 10^6 or 10^7 ? Explain your thinking.

Close to 10^7 ; Sample response: The population of New York is closer to 10 million (10^7) than 1 million (10^6).

Name: Date: Period:

Additional Practice

6.10

1. Rewrite each expression using exponents.

- $9+9+9$
g³
- $\frac{1}{2} \cdot \frac{1}{2}$
($\frac{1}{2}$)²
- $2 \cdot 2 + 2 \cdot 2 + 2 \cdot 2 + 2 \cdot 2$
2⁵

2. Evaluate each expression.

- 4^2
16
- 2^4
256
- $(\frac{1}{3})^3$
 $\frac{1}{9}$

3. Which expression is equivalent to 8^2 ?

- 6
- 16
- 32
- D. 64**

4. Using what you know about the properties of operations, rewrite each expression using a different operation. Do not evaluate.

- 3^3
3 • 3 • 3
- 5^4
5 • 5 • 5 • 5
- 7^3
7 • 7 • 7 + 7 • 7

Unit 6 Lesson 10 167 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: Date: Period:

5. Select all the expressions that are equivalent to the expression 5^4 .

- A. 20^2
D. 625
- B. $5 + 5 + 5 + 5$
E. $5 \cdot 5^3$
- C. 4^5
F. 25^2

6. The expression 3^5 is equal to 243. Use this to evaluate each of the following expressions. Show your thinking.

- 3^5
729
- $3^3 \cdot 3^2$
243
- 3^4
81

7. The expression 6^4 is equal to 1,296. Use this to evaluate each of the following expressions. Show your thinking.

- 6^3
216
- $\frac{6^4}{6^2}$
36
- $6^2 \cdot 6^2$
1,296

8. The population of New York is about 8.4 million. Is this number closer to 10^6 or 10^7 ? Explain your thinking.
Closer to 10^7 ; Sample response: The population of New York is closer to 10 million (10^7) than 1 million (10^6).

Unit 6 Lesson 10 168 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.A.1
2	1	6.EE.A.1
3	2	6.EE.A.1
4	1	6.EE.A.1
5	2	6.EE.A.1
6	2	6.EE.A.1
7	2	6.EE.A.1
8	3	6.EE.A.1

Notes:

Additional Practice

6.11

- 1.** Evaluate each expression.

a $12 + 3^2$

21

d $100 - 7^2$

51

b $6^2 \cdot 5$

180

e $5^2 \div 5$

5

c $35 - 4^2$

19

f $15 \cdot \left(\frac{1}{3}\right)^2$

 $\frac{15}{9}$ or $1\frac{2}{3}$

- 2.** Evaluate each expression.

a $10^3 - 8^2$

936

d $3^3 \cdot 5$

135

b $16 - 10^1$

6

e $4 \cdot \left(\frac{1}{2}\right)^2$

1

c $20 + 2^4$

36

f $\left(\frac{1}{6} \cdot 6\right)^6$

1

- 3.** Determine whether the two expressions in each row are equivalent.
Write *equivalent* or *not equivalent*.

Column A	Column B	Equivalent or not equivalent?
$8^2 + 10$	$10 + 2^6$	Equivalent
$4^2 + 2^2$	$45 - 5^2$	Equivalent
$(3 \cdot 4)^2$	$3^2 + 4^2$	Not equivalent
$9^3 + 9^2$	$3^4 \cdot 10$	Equivalent
$25^2 + 400$	$10^3 - 25$	Not equivalent
$6 \cdot 4^1$	$12 \cdot 2^2$	Not equivalent

4. Kiran says, "I took the number 9 and then multiplied it by the cube of 4." Select *all* the expressions that have the same value as Kiran's result.

- A. $9 \cdot 4^3$ D. $9^3 \cdot 4$
 B. $(9 \cdot 4)^3$ E. 36^3
 C. $9 \cdot 3^4$ F. 576

5. Tyler says, "I added 6 and 7 and then squared the result." Select *all* the expressions that have the same value as Tyler's result.

- A. $6^2 + 7^2$ E. $6 + 7^2$
 B. 13^2 F. 85
 C. $(6 + 7)^2$ G. 169
 D. $6^2 + 7$

6. Shawn says, "I added 50 to the fifth power of 3." Select *all* the expressions that have the same value as Shawn's result.

- A. $3 + (2 \cdot 5) + 50$ D. $3^5 + 50$
 B. $3 + 3^5 + 50$ E. 243
 C. $3^5 \cdot 50$ F. 293

7. Lin says the equation $(9 + 3)^2 = 9^2 + 3^2$ is true because the expressions on both sides of the equal sign are equivalent because they both equal 90. Do you agree or disagree? Explain your thinking.

Disagree; Sample response: I disagree because $(9 + 3)^2 = 12^2 = 144$, and $9^2 + 3^2 = 81 + 9 = 90$. On the left side of the equation, Lin needs to evaluate $9 + 3$ first and then square the sum.

Additional Practice | Answer Key

Unit 6 | Lesson 11

Name: _____ Date: _____ Period: _____

Additional Practice

6.11

1. Evaluate each expression.

(a) $12 + 3^2$ 21	(d) $100 - 7^2$ 51
(b) $6^2 \cdot 5$ 180	(e) $5^2 \div 5$ 5
(c) $35 - 4^2$ 19	(f) $15 \cdot \left(\frac{1}{3}\right)^2$ 15 or 1 $\frac{2}{3}$

2. Evaluate each expression.

(a) $10^2 - 8^2$ 936	(d) $3^2 \cdot 5$ 135
(b) $16 - 10^2$ 6	(e) $4 \cdot \left(\frac{1}{2}\right)^2$ 1
(c) $20 + 2^4$ 36	(f) $\left(\frac{1}{6} \cdot 6\right)^2$ 1

3. Determine whether the two expressions in each row are equivalent. Write *equivalent* or *not equivalent*.

Column A	Column B	Equivalent or not equivalent?
$8^2 + 10$	$10 + 2^8$	Equivalent
$4^2 + 2^2$	$45 - 5^2$	Equivalent
$(3 \cdot 4)^2$	$3^2 + 4^2$	Not equivalent
$9^2 + 9^2$	$3^4 \cdot 10$	Equivalent
$25^2 + 400$	$10^4 - 25$	Not equivalent
$6 \cdot 4^3$	$12 \cdot 2^3$	Not equivalent

Unit 6 Lesson 11 169 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

4. Kiran says, "I took the number 9 and then multiplied it by the cube of 4." Select *all* the expressions that have the same value as Kiran's result.

A. $9 \cdot 4^2$
 B. $(9 \cdot 4)^2$
 C. $9 \cdot 3^2$

D. $9^2 \cdot 4$
 E. 36^2
 F. 576

5. Tyler says, "I added 6 and 7 and then squared the result." Select *all* the expressions that have the same value as Tyler's result.

A. $6^2 + 7^2$
 B. 13^2
 C. $(6 + 7)^2$

D. $6 + 7^2$
 E. 85
 F. 169

6. Shawn says, "I added 50 to the fifth power of 3." Select *all* the expressions that have the same value as Shawn's result.

A. $3 + (2 \cdot 5) + 50$
 B. $3 + 3^5 + 50$
 C. $3^5 \cdot 50$

D. $3^5 + 50$
 E. 243
 F. 293

7. Lin says the equation $(9 + 3)^2 = 9^2 + 3^2$ is true because the expressions on both sides of the equal sign are equivalent because they both equal 90. Do you agree or disagree? Explain your thinking.

Disagree; Sample response: I disagree because $(9 + 3)^2 = 12^2 = 144$, and $9^2 + 3^2 = 81 + 9 = 90$. On the left side of the equation, Lin needs to evaluate $9 + 3$ first and then square the sum.

Unit 6 Lesson 11 170 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.A.1, 6.EE.A.2.C
2	1	6.EE.A.1, 6.EE.A.2.C
3	2	6.EE.A.2.C, 6.EE.A.4
4	2	6.EE.A.2.C
5	2	6.EE.A.2.C
6	2	6.EE.A.2.C
7	3	6.EE.A.2.C

Notes:

Additional Practice**6.12**

- 1.** Match each equation with its solution.

Equation	Solution
a $5^4 \cdot 5 = 5^x$	e $\frac{1}{4}$
b $x^3 - 4 = 60$	f 6
c $\frac{4^3}{4^x} = 16$	b 4
d $\frac{25}{9} = x^2$	h $\frac{3}{7}$
e $\left(\frac{1}{2}\right)^2 = x$	g 2
f $39 - x^2 = 3$	a 5
g $2^6 \cdot 2^x = 2^8$	d $\frac{5}{3}$
h $\frac{9}{49} = x^2$	c 1

- 2.** Determine whether each pair of expressions have the same value.

Write yes or no. If they do not have the same value, determine which expression has the greater value.

a 3^4 and 4^3

No. The expressions have values of 81 and 64, so 3^4 has the greater value.

c 9^1 and 1^9

No. The expressions have values of 9 and 1, so 9^1 has the greater value.

b $5 \cdot 5^3$ and 25^2

Yes. The expressions have values of 625 and 625, so both expressions have the same value.

d $\left(\frac{1}{4}\right)^2$ and $\left(\frac{1}{2}\right)^3$

No. The expressions have values of $\frac{1}{16}$ and $\frac{1}{8}$, so $\left(\frac{1}{2}\right)^3$ has the greater value.

- 3.** Kiran says the equation $10^3 \cdot 10^2 = 10^{10}/10^5$ is true because the expressions on both sides of the equal sign are equivalent. Do you agree or disagree? Explain your thinking.

I agree; Sample response: Both expressions are equivalent to 10^5 .

- 4.** Which value is the solution to the equation $625 = 5^x$?

A. 3**B.** 4**C.** 5**D.** 6

- 5.** Decide whether each pair of expressions have the same value. Write yes or no. If they do not have the same value, determine which expression has the greater value.

a $\left(\frac{3}{5}\right)^3$ or $\frac{3}{5^3}$

No. The expressions have values of $\frac{27}{625}$ and $\frac{3}{625}$, so $\left(\frac{3}{5}\right)^3$ has the greater value.

b $2 \cdot 2^3$ or $4^3 - 6^2$

No. The expressions have values of 16 and 28, so $4^3 - 6^2$ has the greater value.

c $4 \cdot 5^2$ or $4^2 \cdot 5$

No. The expressions have values of 100 and 80, so $4 \cdot 5^2$ has the greater value.

d $7^2 - 9$ or $2^5 + 9$

No. The expressions have values of 40 and 41, so $2^5 + 9$ has the greater value.

- 6.** Evaluate each expression for the given value of each variable.

a 0.3^x , when x is 3

0.027

b $x^2 + 6$, when x is 4

22

c $2x^2 + 3y$, when x is 5 and y is 6

68

d $8y + x^2$, when x is 4 and y is 7

72

- 7.** Clare evaluated the expression $6x^2 - 12$ when x is 2. She says the value of the expression is 1,716. Is Clare correct? Explain your thinking.

No; Sample response: Clare should have found 2^2 before multiplying by 6. The correct answer is 12.

Additional Practice | Answer Key

Unit 6 | Lesson 12

Name: _____ Date: _____ Period: _____

Additional Practice

6.12

1. Match each equation with its solution.

Equation	Solution
a. $5^4 \cdot 5 = 5^t$	e. $\frac{1}{4}$
b. $x^3 - 4 = 60$	f. .6
c. $\frac{4^2}{4^t} = 16$	b. .4
d. $\frac{25}{9} = x^2$	h. $\frac{3}{7}$
e. $\left(\frac{1}{2}\right)^t = x$	g. .2
f. $39 - x^2 = 3$	a. .5
g. $2^6 \cdot 2^t = 2^8$	d. $\frac{5}{3}$
h. $\frac{9}{49} = x^2$	c. .1

2. Determine whether each pair of expressions have the same value. Write yes or no. If they do not have the same value, determine which expression has the greater value.

a. 3^4 and 4^3 No. The expressions have values of 81 and 64, so 3^4 has the greater value.	c. 9^t and 1^9 No. The expressions have values of 9 and 1, so 9^t has the greater value.
b. $5 \cdot 5^t$ and 25^t Yes. The expressions have values of 625 and 625, so both expressions have the same value.	d. $\left(\frac{1}{4}\right)^t$ and $\left(\frac{1}{2}\right)^t$ No. The expressions have values of $\frac{1}{16}$ and $\frac{1}{4}$, so $\left(\frac{1}{2}\right)^t$ has the greater value.

3. Kiran says the equation $10^8 \cdot 10^2 = 10^{16}/10^8$ is true because the expressions on both sides of the equal sign are equivalent. Do you agree or disagree? Explain your thinking.
I agree; Sample response: Both expressions are equivalent to 10^8 .

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

4. Which value is the solution to the equation $625 = 5^t$?
A. 3 B. 4 C. 5 D. 6

5. Decide whether each pair of expressions have the same value. Write yes or no. If they do not have the same value, determine which expression has the greater value.
a. $\left(\frac{3}{5}\right)^t$ or $\frac{3}{5^t}$
No. The expressions have values of $\frac{27}{625}$ and $\frac{3}{625}$, so $\left(\frac{3}{5}\right)^t$ has the greater value.
b. $2 \cdot 2^t$ or $4^t - 6^t$
No. The expressions have values of 16 and 28, so $4^t - 6^t$ has the greater value.
c. $4 \cdot 5^2$ or $4^t \cdot 5$
No. The expressions have values of 100 and 80, so $4 \cdot 5^2$ has the greater value.
d. $7^2 - 9$ or $2^t + 9$
No. The expressions have values of 40 and 41, so $2^t + 9$ has the greater value.

6. Evaluate each expression for the given value of each variable.
a. $0 \cdot x$, when x is 3
0.027
b. $x^2 + 6$, when x is 4
22
c. $2x^2 + 3y$, when x is 5 and y is 6
68
d. $8y + x^2$, when x is 4 and y is 7
72

7. Clare evaluated the expression $6x^2 - 12$ when x is 2. She says the value of the expression is 1,716. Is Clare correct? Explain your thinking.
No. Sample response: Clare should have found 2^2 before multiplying by 6. The correct answer is 12.

© Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.EE.A.2.C, 6.EE.B.5
2	2	6.EE.A.2.C
3	3	6.EE.A.2.C
4	1	6.EE.A.2.C, 6.EE.B.5
5	2	6.EE.A.2.C
6	2	6.EE.A.2.C
7	3	6.EE.A.2.C

Notes:

Additional Practice

6.13

For Problems 1–4, use the following information. A florist uses daisies and gardenias for a wedding. The florist currently has 500 daisies and 200 gardenias.

1. Assuming the ratio of daisies to gardenias is always the same, complete the table.

2. Refer to the table.

- a Write a fraction that represents the ratio of daisies to the total number of flowers.

$$\frac{5}{7}$$

- b Write an equation that represents the relationship between the number of daisies d as the dependent variable and the total number of flowers t as the independent variable.

$$d = \frac{5}{7} \cdot t$$

- c Write an equation that gives the number of daises d if you know the number of gardenias g .

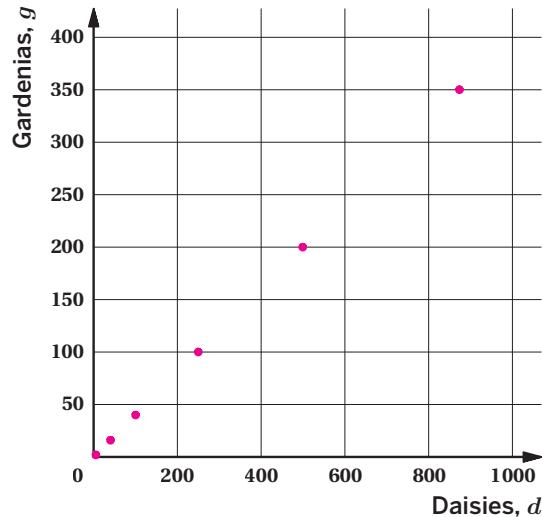
$$d = \frac{5}{2} \cdot g$$

3. Use the points in the table to create a graph that shows the relationship between d and g .

4. Shawn says the equation $g = \frac{5}{2} \cdot d$ will always describe the relationship between d and g , where d is the independent variable. Do you agree or disagree? Explain your thinking.

I disagree; Sample response: Shawn did not use the correct ratio in the equation. The equation Shawn should use when d is the independent variable is $g = \frac{2}{5} \cdot d$.

Daisies, d	Gardenias, g	Total flowers, t
5	2	7
40	16	56
100	40	140
250	100	350
500	200	700
875	350	1,225



For Problems 5–8, use the following information. A thrift store is having a 25% off sale.

5. Complete the table to show how much you would pay for items during the sale.

Original price, p (\$)	1	2	3	5	8	10	12	15
Sale price, s (\$)	0.75	1.50	2.25	3.75	6.00	7.50	9.00	11.25

6. Refer to the table.

- a What percent of the original price of an item would you pay during the sale?

75%

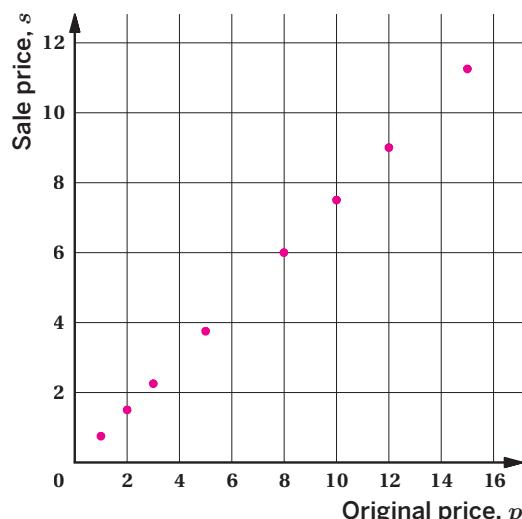
- b Write an equation that relates the sale price s to the original price p .

$s = 0.75 \cdot p$ (or equivalent)

7. Use the points in the table to create a graph that shows the relationship between p and s .

8. Lin says the variable p is the dependent value because it is used to calculate the value of s . Do you agree or disagree with Lin? Explain your thinking.

I disagree; Sample response: Because p is used to calculate the value of s , p is the independent variable.



Additional Practice | Answer Key

Unit 6 | Lesson 13

Name: _____ Date: _____ Period: _____

Additional Practice

6.13

For Problems 1–4, use the following information. A florist uses daisies and gardenias for a wedding. The florist currently has 500 daisies and 200 gardenias.

- Assuming the ratio of daisies to gardenias is always the same, complete the table.
- Refer to the table.
 - Write a fraction that represents the ratio of daisies to the total number of flowers.
 $\frac{5}{7}$
 - Write an equation that represents the relationship between the number of daisies d as the dependent variable and the total number of flowers t as the independent variable.
 $d = \frac{5}{7}t$
 - Write an equation that gives the number of daisies d if you know the number of gardenias.
 $d = \frac{5}{2}g$
- Use the points in the table to create a graph that shows the relationship between d and g .
- Shawn says the equation $y = \frac{5}{2}x$ will always describe the relationship between d and g , where d is the independent variable. Do you agree or disagree? Explain your thinking.
I disagree; Sample response: Shawn did not use the correct ratio in the equation. The equation Shawn should use when d is the independent variable is $g = \frac{2}{5}d$.

Daisies, d	Gardenias, g	Total flowers, t
5	2	7
40	16	56
100	40	140
250	100	350
500	200	700
875	350	1,225

Graph:

Unit 6 Lesson 13 173 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

For Problems 5–8, use the following information. A thrift store is having a 25% off sale.

- Complete the table to show how much you would pay for items during the sale.
- Refer to the table.
 - What percent of the original price of an item would you pay during the sale?
 75%
 - Write an equation that relates the sale price s to the original price p .
 $s = 0.75p$ (or equivalent)
- Use the points in the table to create a graph that shows the relationship between p and s .
- Lin says the variable p is the dependent value because it is used to calculate the value of s . Do you agree or disagree with Lin? Explain your thinking.
I disagree; Sample response: Because p is used to calculate the value of s , p is the independent variable.

Original price, p (\$)	Sale price, s (\$)
0.75	1.50
2.25	3.75
6.00	7.50
9.00	11.25

Graph:

Unit 6 Lesson 13 174 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.3.A
2	2	6.EE.C.9
3	2	6.EE.C.9, 6.RP.A.3.A
4	3	6.EE.C.9
5	1	6.RP.A.3.A
6	2	6.EE.C.9
7	2	6.EE.C.9, 6.RP.A.3.A
8	3	6.EE.C.9

Notes:

Additional Practice**6.14**

Han, Elena, and Clare are training for a bike race, and they bike at a constant speed. Use this information for Problems 1–4.

- 1.** Complete the table with the distances biked for certain amounts of time.

Time (hours), t	Han's distance (miles), h	Elena's distance (miles), e	Clare's distance (miles), c
0.25	3	2.5	3.75
0.5	6	5	7.5
2	24	20	30
3	36	30	45
4	48	40	60

- 2.** Refer to the table.

- a** How fast does each person ride, in miles per hour?

Han:

12 mph

Elena:

10 mph

Clare:

15 mph

- b** How long does it take each person to ride one mile?

Han:

 $\frac{1}{12}$ of an hour

Elena:

 $\frac{1}{10}$ of an hour

Clare:

 $\frac{1}{15}$ of an hour

- 3.** Write three equations that represent the distance d traveled, in miles, given the time t , in hours.

Han:

 $d = 12 \cdot t$

Elena:

 $d = 10 \cdot t$

Clare:

 $d = 15 \cdot t$

- 4.** For your equations for Problem 3, which is the dependent variable and which is the independent variable? Explain your thinking.

The time t is the independent variable and the distance d is the dependent variable.

Suppose Bard reads 35 pages in an hour. Use this information for Problems 5–8.

5. Assuming Bard reads at a constant rate, complete the table.

Time (hours), t	2	3.2	t	4	1.6	$\frac{p}{35}$
Pages, p	70	112	$35t$	140	56	p

6. Refer to the table.

- a Write an equation that relates the number of pages read p to the time t , in hours.

$$35 \cdot t = p$$

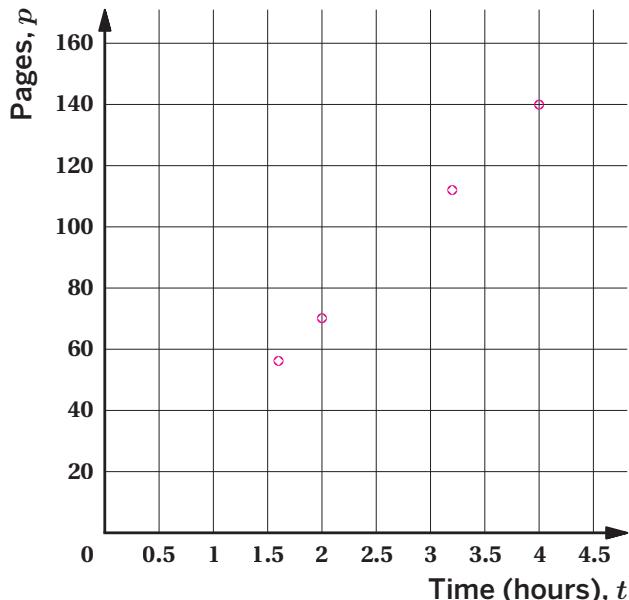
- b Identify the independent and dependent variables in your equation.

Time t is the independent variable. The number of pages read p is the dependent variable.

7. Use the points in the table to create a graph that shows the relationship between time t and the number of pages p Bard reads.

8. Write an equation that Bard can use to determine the time t it will take to read 91 pages.

$$t = \frac{1}{35} p$$



Additional Practice | Answer Key

Unit 6 | Lesson 14

Name: _____ Date: _____ Period: _____

Additional Practice

6.14

Han, Elena, and Clare are training for a bike race, and they bike at a constant speed. Use this information for Problems 1–4.

1. Complete the table with the distances biked for certain amounts of time.

Time (hours), t	Han's distance (miles), h	Elena's distance (miles), e	Clare's distance (miles), c
0.25	3	2.5	3.75
0.5	6	5	7.5
2	24	20	30
3	36	30	45
4	48	40	60

2. Refer to the table.

a. How fast does each person ride, in miles per hour?

Han:	Elena:	Clare:
12 mph	10 mph	15 mph

b. How long does it take each person to ride one mile?

Han:	Elena:	Clare:
$\frac{1}{12}$ of an hour	$\frac{1}{10}$ of an hour	$\frac{1}{15}$ of an hour

3. Write three equations that represent the distance d traveled, in miles, given the time t , in hours.

Han:	Elena:	Clare:
$d = 12 \cdot t$	$d = 10 \cdot t$	$d = 15 \cdot t$

4. For your equations for Problem 3, which is the dependent variable and which is the independent variable? Explain your thinking.
The time t is the independent variable and the distance d is the dependent variable.

Unit 6 Lesson 14 175 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Suppose Bard reads 35 pages in an hour. Use this information for Problems 5–8.

5. Assuming Bard reads at a constant rate, complete the table.

Time (hours), t	2	3.2	t	4	1.6	$\frac{p}{35}$
Pages, p	70	112	$35t$	140	56	p

6. Refer to the table.

a. Write an equation that relates the number of pages read p to the time t , in hours.
 $35 \cdot t = p$

b. Identify the independent and dependent variables in your equation.
Time t is the independent variable. The number of pages read p is the dependent variable.

7. Use the points in the table to create a graph that shows the relationship between time t and the number of pages p Bard reads.

8. Write an equation that Bard can use to determine the time t it will take to read 91 pages.
 $t = \frac{1}{35}p$

Unit 6 Lesson 14 176 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	6.RP.A.3.A
2	2	6.RP.A.3.B
3	2	6.EE.C.9
4	2	6.EE.C.9
5	1	6.RP.A.3.A
6	2	6.EE.C.9
7	2	6.EE.C.9, 6.RP.A.3.A
8	2	6.RP.A.3.A, 6.RP.A.3.B

Notes:

Additional Practice**6.15**

- 1.** Maria is making lemonade for a picnic with friends. The equation $w = l + 6$ represents the relationship between the amount of lemonade concentrate (in cups), l , and water (in cups), w . Which table represents the same relationship?

A.

l	w
8	2
10	4
12	6

B.

l	w
2	8
4	10
6	12

C.

l	w
10	4
8	2
6	0

D.

l	w
6	10
8	8
10	6

Problems 2–4: Sanjeev is buying limes for \$0.60 each.

2. Write an equation that represents how much money Sanjeev spends, m , for buying a number of limes, l .

$$m = 0.60l$$

3. Complete the table that represents this situation.

l	m
6	\$3.60
7	\$4.20
9	\$5.40
11	\$6.60

4. Explain what $l = 9$ and $m = \$5.40$ means in this situation.

Explanations vary. This means that if Sanjeev buys 9 limes, it would cost \$5.40.

5. Sanjeev spends \$9.00 on limes. How many limes did he purchase?

- A. 12 limes
- B. 13 limes
- C. 14 limes
- D. 15 limes

Additional Practice | Answer Key

Unit 6 | Lesson 15

Name: _____ Date: _____ Period: _____

Additional Practice

6.15

1. Maria is making lemonade for a picnic with friends. The equation $w = l + 6$ represents the relationship between the amount of lemonade concentrate (in cups), l , and water (in cups), w . Which table represents the same relationship?

A.

l	w
8	2
10	4
12	6

B.

l	w
2	8
4	10
6	12

C.

l	w
10	4
8	2
6	0

D.

l	w
6	10
8	8
10	6

Unit 6 Lesson 15 177 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

Problems 2–4: Sanjeev is buying limes for \$0.60 each.

2. Write an equation that represents how much money Sanjeev spends, m , for buying a number of limes, l .

$m = 0.60l$

3. Complete the table that represents this situation.

l	m
6	\$3.60
7	\$4.20
9	\$5.40
11	\$6.60

4. Explain what $l = 9$ and $m = \$5.40$ means in this situation.
Explanations vary. This means that if Sanjeev buys 9 limes, it would cost \$5.40.

5. Sanjeev spends \$9.00 on limes. How many limes did he purchase?

A. 12 limes
B. 13 limes
C. 14 limes
D. 15 limes

Unit 6 Lesson 15 178 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	6.NS.B.2, 6.NS.B.3
2	1	6.NS.B.2, 6.RP.A.3
3	1	6.NS.B.2, 6.RP.A.3
4	1	6.NS.B.2, 6.RP.A.3
5	1	6.NS.B.2, 6.RP.A.3

Notes:

Additional Practice**6.16**

- 1.** Select *all* the expressions that are equivalent to the expression $3a + 6a$.

A. $4a + 5a$

E. $9a$

B. $a(3 + 6)$

F. $18a$

C. $6a + 3a$

G. $3(a + 6a)$

D. $a \div \frac{1}{18}$

H. $a \div \frac{1}{9}$

- 2.** Determine the value of b . Show your thinking.

a 45% of b is 225.

500

b 300% of b is 12.

4

c 12% of b is 4.8.

40

- 3.** Solve each equation. Show your thinking.

a $180 = 15c$

$c = 12$

c $c - 17.34 = 29.2$

$c = 46.54$

b $3\frac{1}{5} + c = 7$

$c = 3\frac{4}{5}$

d $\frac{9}{8} = 2\frac{1}{2}c$

$c = \frac{9}{20}$

- 4.** Select *all* the expressions that are equal to $5 \cdot 5 \cdot 5 \cdot 5$.

A. $5 \cdot 4$

D. 4^5

B. $5^2 \cdot 5^2$

E. 5^4

C. $5^3 + 5$

F. $5 \cdot 5^3$

- 5.** Evaluate each expression. Show your thinking.

a $30 - 3^3$

3

b $5^3 + 16$

141

c $12^2 - 8^2$

80

d $8 \cdot \left(\frac{1}{2}\right)^3$

1 (or equivalent)

e $2^4 \cdot 2$

32

f $4^4 \div 4$

64

- 6.** Select *all* the expressions that are equivalent to the expression $4(3x - 6)$.

- | | |
|---|--|
| <input type="checkbox"/> A. $3(4x - 6)$ | <input checked="" type="checkbox"/> D. $6(2x - 4)$ |
| <input checked="" type="checkbox"/> B. $2(6x - 12)$ | <input checked="" type="checkbox"/> E. $12x - 24$ |
| <input type="checkbox"/> C. $8(2x - 3)$ | |

- 7.** Shawn separately baked 6 batches of pretzels, for a total of 72 minutes. Each batch of pretzels baked for b minutes. Select *all* the equations that represent this situation.

- | | |
|---|--|
| <input checked="" type="checkbox"/> A. $6 \cdot b = 72$ | <input type="checkbox"/> D. $6 \cdot 72 = b$ |
| <input type="checkbox"/> B. $b - 6 = 72$ | <input type="checkbox"/> E. $72 = b + 6$ |
| <input checked="" type="checkbox"/> C. $b = 72 \div 6$ | |

- 8.** Priya says the solution to the equation $\frac{6}{5}x = \frac{1}{3}$ is $\frac{2}{5}$. Is Priya correct? Explain your thinking.

No; Sample response: Priya did not multiply by the reciprocal of $\frac{6}{5}$.

The solution to the equation is $x = \frac{1}{3} \cdot \frac{5}{6} = \frac{5}{18}$.

Additional Practice | Answer Key

Unit 6 | Lesson 16

Name: _____ Date: _____ Period: _____

Additional Practice **6.16**

1. Select all the expressions that are equivalent to the expression $3a + 6a$.

A. $4a + 5a$
 B. $a(3 + 6)$
 C. $6a + 3a$
 D. $a \div \frac{1}{18}$

E. $9a$
 F. $18a$
 G. $3(a + 6a)$
 H. $a + \frac{1}{9}$

2. Determine the value of b . Show your thinking.

(a) 45% of b is 225.
 500

(b) 300% of b is 12.
 4

(c) 12% of b is 4.8.
 40

3. Solve each equation. Show your thinking.

(a) $180 = 15c$
 $c = 12$

(b) $3\frac{1}{5} + c = 7$
 $c = 3\frac{4}{5}$

(c) $c - 17.34 = 29.2$
 $c = 46.54$

(d) $\frac{9}{8} = 2\frac{1}{2}c$
 $c = \frac{9}{20}$

4. Select all the expressions that are equal to $5 + 5 + 5 + 5$.

A. $5 \cdot 4$
 B. $5^2 \cdot 5^2$
 C. $5^3 + 5$

D. 4^5
 E. 5^4
 F. $5 \cdot 5^3$

Unit 6 Lesson 16 **179** © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Evaluate each expression. Show your thinking.

(a) $30 - 3^3$
 3

(b) $5^3 + 16$
 141

(c) $12^2 - 8^2$
 80

(d) $8 \cdot \left(\frac{1}{2}\right)^3$
 1 (or equivalent)

(e) $2^4 \cdot 2$
 32

(f) $4^4 \div 4$
 64

6. Select all the expressions that are equivalent to the expression $4(3x - 6)$.

A. $3(4x - 6)$
 B. $2(6x - 12)$
 C. $8(2x - 3)$

D. $6(2x - 4)$
 E. $12x - 24$

7. Shawna separately baked 6 batches of pretzels, for a total of 72 minutes. Each batch of pretzels baked for b minutes. Select all the equations that represent this situation.

A. $6 \cdot b = 72$
 B. $b - 6 = 72$
 C. $b = 72 \div 6$

D. $6 \cdot 72 = b$
 E. $72 = b + 6$

8. Priya says the solution to the equation $\frac{6}{5}x = \frac{1}{3}$ is $\frac{2}{5}$. Is Priya correct? Explain your thinking.

No. Sample response: Priya did not multiply by the reciprocal of $\frac{6}{5}$. The solution to the equation is $x = \frac{1}{3} \cdot \frac{5}{6} = \frac{5}{18}$.

Unit 6 Lesson 16 **180** Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1*	1	6.EE.A.4
2*	1	6.RP.A.3.C
3*	1	6.EE.B.7
4*	1	6.EE.A.1
5*	1	6.EE.A.1, 6.EE.A.2.C
6*	2	6.EE.A.3, 6.EE.A.4
7*	2	6.EE.B.6
8*	3	6.EE.B.5

* Spiral review

Notes:

Additional Practice

2.01

Problems 1–5: The table shows an original mixture for orange paint, as well as four other mixtures.

1. Select *all* the mixtures that will create the same shade of orange as the original mixture.

- A. Mixture A
- B. Mixture B
- C. Mixture C
- D. Mixture D

Mixture	Yellow Paint (cups)	Red Paint (cups)
Original	9	6
Mixture A	6	8
Mixture B	6	4
Mixture C	3	2
Mixture D	12	18

2. Choose one mixture that creates the same shade of orange as the original. Explain your thinking.

Explanations vary. The original mixture is 3 times more paint than Mixture C but would create the same shade of orange because the ratios are the same.

3. Choose a mixture that does not have the same shade of orange as the original. Will it be a shade of orange that is more yellow or more red? Explain your thinking.

Explanations vary. Mixture A has a 3:4 ratio and the original mixture has a ratio of 3:2. Mixture A will be a “yellower” shade of orange because there is more yellow to red in this ratio.

4. How much red paint would you need to mix with 1 cup of yellow paint to make a mixture that has the same shade of orange as the original mixture? Explain your thinking.

$\frac{2}{3}$ of a cup of red paint. A 3:2 ratio is equivalent to a $\frac{3}{3} : \frac{2}{3}$ ratio or $1 : \frac{2}{3}$.

5. Complete the table to create a different mixture that will also have the same shade of orange as the original mixture.

Answers will vary. All answers must be in a 3:2 ratio.

Yellow Paint (cups)	Red Paint (cups)

6. Brenden mixed 4 cups of blue paint with 3 cups of yellow paint to make a perfect color green to paint his bedroom.

Complete the table to show several other ways to make this color.

Yellow Paint (cups)	Red Paint (cups)
3	4
9	12
12	16
15	20

7. Which ratios are equivalent to 3:4 ? Select *all* that apply.

- A. 50:100
- B. 18:24
- C. $\frac{1}{4} : \frac{1}{5}$
- D. 75:100
- E. 4:5
- F. $\frac{1}{3} : \frac{1}{4}$

Additional Practice | Answer Key

Unit 2 | Lesson 1

Name: _____ Date: _____ Period: _____

Additional Practice 2.01

Problems 1–5: The table shows an original mixture for orange paint, as well as four other mixtures.

1. Select all the mixtures that will create the same shade of orange as the original mixture.

A. Mixture A
 B. Mixture B
 C. Mixture C
 D. Mixture D

Mixture	Yellow Paint (cups)	Red Paint (cups)
Original	9	6
Mixture A	6	8
Mixture B	6	4
Mixture C	3	2
Mixture D	12	18

2. Choose one mixture that creates the same shade of orange as the original. Explain your thinking.
Explanations vary. The original mixture is 3 times more paint than Mixture C but would create the same shade of orange because the ratios are the same.

3. Choose a mixture that does not have the same shade of orange as the original. Will it be a shade of orange that is more yellow or more red? Explain your thinking.
Explanations vary. Mixture A has a 3:4 ratio and the original mixture has a ratio of 3:2. Mixture A will be a “yellower” shade of orange because there is more yellow to red in this ratio.

4. How much red paint would you need to mix with 1 cup of yellow paint to make a mixture that has the same shade of orange as the original mixture? Explain your thinking.
 $\frac{2}{3}$ of a cup of red paint. A 3:2 ratio is equivalent to a $\frac{3}{3} : \frac{2}{3}$ ratio or $1 : \frac{2}{3}$.

5. Complete the table to create a different mixture that will also have the same shade of orange as the original mixture.

Answers will vary. All answers must be in a 3:2 ratio.

Yellow Paint (cups)	Red Paint (cups)
3	4
9	12
12	16
15	20

6. Brenden mixed 4 cups of blue paint with 3 cups of yellow paint to make a perfect color green to paint his bedroom. Complete the table to show several other ways to make this color.

7. Which ratios are equivalent to 3:4? Select all that apply.

A. 50:100
 B. 18:24
 C. $\frac{1}{4} : \frac{1}{5}$
 D. 75:100
 E. 4:5
 F. $\frac{1}{3} : \frac{1}{4}$

Unit 2 Lesson 1 23 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

5. Complete the table to create a different mixture that will also have the same shade of orange as the original mixture.

Answers will vary. All answers must be in a 3:2 ratio.

Yellow Paint (cups)	Red Paint (cups)
3	4
9	12
12	16
15	20

6. Brenden mixed 4 cups of blue paint with 3 cups of yellow paint to make a perfect color green to paint his bedroom. Complete the table to show several other ways to make this color.

7. Which ratios are equivalent to 3:4? Select all that apply.

A. 50:100
 B. 18:24
 C. $\frac{1}{4} : \frac{1}{5}$
 D. 75:100
 E. 4:5
 F. $\frac{1}{3} : \frac{1}{4}$

Unit 2 Lesson 1 24 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	2	7.RP.A.
2	1	7.RP.A.
3	2	7.RP.A.
4	1	7.RP.A.
5	1	7.RP.A.
6	1	7.RP.A.
7	1	7.RP.A.1

Notes:

Additional Practice**2.02**

Problems 1–4: Complete the tables so that the relationship is proportional.

1.

<i>x</i>	<i>y</i>
16	4
20	5
36	9

2.

<i>x</i>	<i>y</i>
1	2.4
4	9.6
7.5	18

3.

<i>x</i>	<i>y</i>
12	36
1	3
0	0

4.

<i>x</i>	<i>y</i>
0.4	1
1	2.5
6	15

- 5.** DesKayaks rents one-person and two-person kayaks for a fee of \$10 an hour plus \$2.50 per person for gear. The table shows the cost for several groups of people. Is the relationship between the number of people renting kayaks and the fees charged a proportional relationship? Explain your thinking.

Explanations vary. This is not a proportional relationship because when I multiply 2 by the factor of 12.50 from the first row, I get 24, not 15.00.

Number of People in Group	Total Fees (\$)
1	12.50
2	15.00
3	27.50
4	30.00

- 6.** Sabaan's favorite smoothie shop charges \$6.20 for 12 ounces of the drink. Complete the table so that it shows a proportional relationship between ounces of a smoothie drink and the cost. Show or explain your thinking.

Explanations vary. I divided 6.2 by 12 to find the cost per ounce of smoothie, which was \$0.56. Then, I multiplied 18 by that number to find the cost of an 18 ounce smoothie. Then, I divided 13.20 by that number to find how many ounces of smoothie I can buy for \$13.20.

Smoothie (oz)	Cost (\$)
12	6.60
18	9.90
24	13.20

- 7.** At an airport in Mexico City, Sara exchanged 300 U.S. dollars to 6,156 Mexican pesos. Complete the table so that it shows a proportional relationship between the U.S. dollar and Mexican pesos. Show or explain your thinking.

Explanations vary. I divided 6,156 by 300 to find how many pesos \$1(US) was worth, which was 20.52. Then, I divided 100,260 pesos (and then 1 peso) by that number to find how many US dollars that was worth.

U.S. dollars	Mexican pesos
300	6,156
1	20.52
500	100,260
≈.05	1

Additional Practice | Answer Key

Unit 2 | Lesson 2

Name: _____ Date: _____ Period: _____

Additional Practice

2.02

Problems 1–4: Complete the tables so that the relationship is proportional.

1.

x	y
16	4
20	5
36	9

2.

x	y
1	2.4
4	9.6
7.5	18

3.

x	y
12	36
1	3
0	0

4.

x	y
0.4	1
1	2.5
6	15

5. DesKayaks rents one-person and two-person kayaks for a fee of \$10 an hour plus \$2.50 per person for gear. The table shows the cost for several groups of people. Is the relationship between the number of people renting kayaks and the fees charged a proportional relationship? Explain your thinking.

Explanations vary. This is not a proportional relationship because when I multiply 2 by the factor of 12.50 from the first row, I get 24, not 15.00.

Number of People in Group Total Fees (\$)

1	12.50
2	15.00
3	27.50
4	30.00

Unit 2 Lesson 2 25 © Amplify Education, Inc. and its licensors. Amplify Desmos Math is based on curricula from Illustrative Mathematics (IM).

Name: _____ Date: _____ Period: _____

6. Sabaan's favorite smoothie shop charges \$6.20 for 12 ounces of the drink. Complete the table so that it shows a proportional relationship between ounces of a smoothie drink and the cost. Show or explain your thinking.

Explanations vary. I divided 6.2 by 12 to find the cost per ounce of smoothie, which was \$0.56. Then, I multiplied that number by the cost of an 18 ounce smoothie. Then, I divided 13.20 by that number to find how many ounces of smoothie I can buy for \$13.20.

7. At an airport in Mexico City, Sara exchanged 300 U.S. dollars to 6,156 Mexican pesos. Complete the table so that it shows a proportional relationship between the U.S. dollar and Mexican pesos. Show or explain your thinking.

Explanations vary. I divided 6,156 by 300 to find how many pesos \$1 (US) was worth, which was 20.52. Then, I divided 100,260 pesos (and then 1 peso) by that number to find how many US dollars that was worth.

U.S. dollars	Mexican pesos
300	6,156
1	20.52
500	100,260
≈.05	1

Unit 2 Lesson 2 26 Additional Practice

Practice Problem Analysis

Problem	DOK	Standard(s)
1	1	7.RP.2
2	1	7.RP.2
3	1	7.RP.2
4	1	7.RP.2
5	2	7.RP.2.A
6	2	7.RP.2.B
7	2	7.RP.2.B

Notes: