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Mathematics

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Guided Practice Name: _____

3.N.2.1 Represent multiplication facts by modeling a variety of approaches (e.g., manipulatives, repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line, skip counting).

Real-World Connections

At the car lot, there are 5 rows of 8 cars. You are going to help your dad by washing the windows of each car. You draw an array with 5 rows and 8 columns. You count the total cars and learn there are 40 cars at the car lot.

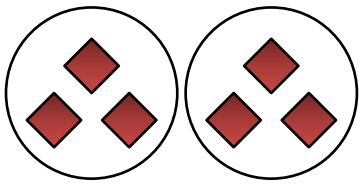
Vocabulary

multiplication	a mathematical operation where a number is added to itself a specified number of times
repeated addition	the process of repeatedly adding the same number; used as a strategy for introducing multiplication
equal-sized groups	having the same amount or value
array	an orderly arrangement of objects into a rectangular configuration
area models	a model using area to show multiplication
skip counting	counting forward or backward in a given order

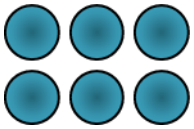
Example:

- $2 \times 3 = 6$
- Repeated addition

  $3 + 3 = 6$
- Equal-sized groups

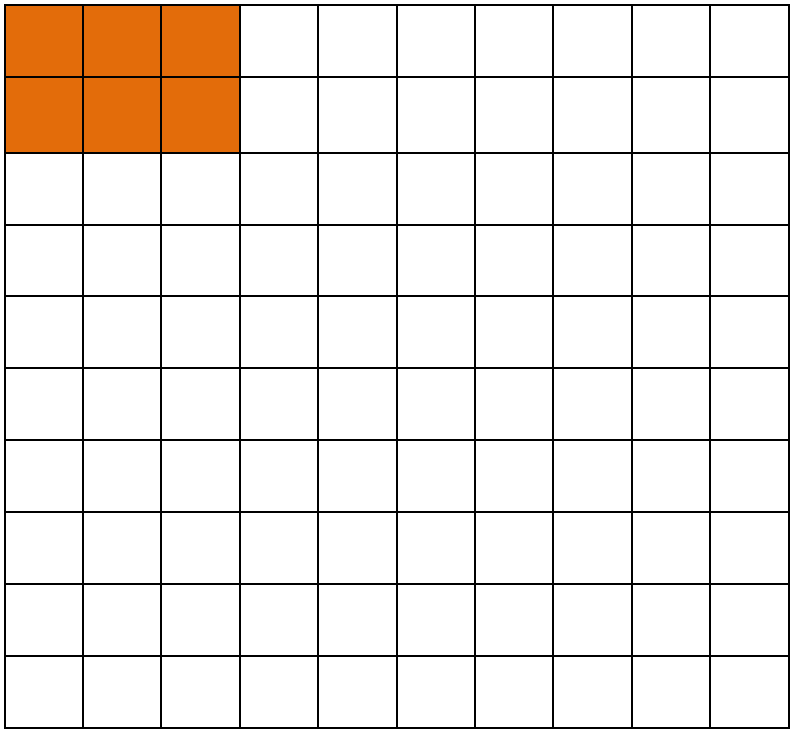


- Array

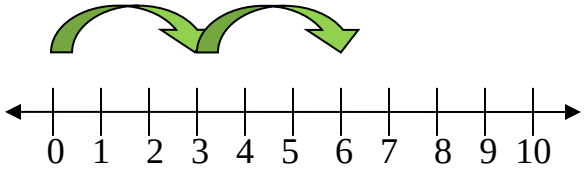


Guided Practice (3.N.2.1) Name: _____

- Area Model



- Equal size jumps on a number line



- Skip counting

  3, 6

Please note: The symbol used for multiplication can be seen in a variety of ways, including the times sign (×), the asterisk (*), and the dot operator (·). All three symbols signify multiplication.

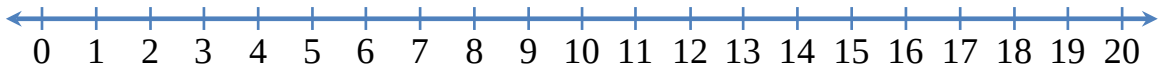
For example, 5 × 3 is the same as 5 * 3 and the same as 5 · 3. The answer to all is 15.

Guided Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

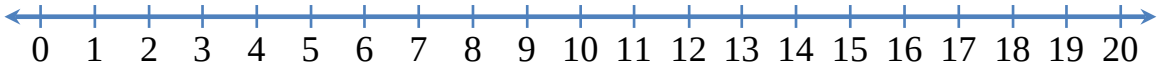
1. $4 \times 3 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**
Number Line	



2. $4 \times 6 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**
Number Line	

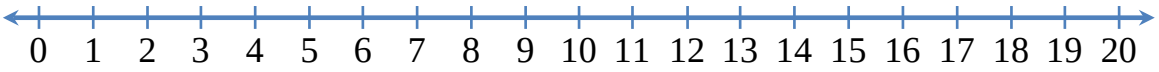


Guided Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

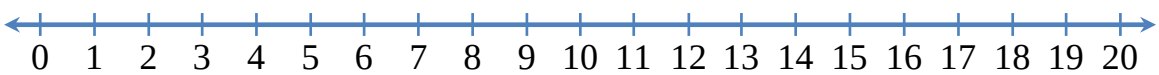
3. $5 \times 2 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**
Number Line	



4. $6 \times 3 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**
Number Line	



Guided Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

5. $8 \times 2 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

6. Skip count by 5s to 50.

_____

7. Skip count by 2s to 20.

_____

8. Skip count by 4s to 40.

_____

9. Skip count by 7s to 70.

_____

10. Skip count by 9s to 90.

_____

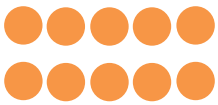
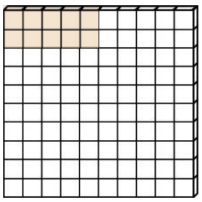
Independent Practice Name: _____

3.N.2.1 Represent multiplication facts by modeling a variety of approaches (e.g., manipulatives, repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line, skip counting).

Illustrate each multiplication fact. Solve.

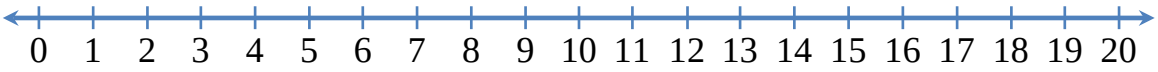
Example:

2 × 5 = 10

Array	**Area Model**
	
Equal-sized groups	**Repeated Addition**
	5 + 5= 10

1. 7 × 2 = _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**
Number Line	



Independent Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

2. $8 \times 3 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

3. $3 \times 5 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

Independent Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

4. $3 \times 9 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

5. $4 \times 4 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

Independent Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

6. $2 \times 8 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

7. $7 \times 1 =$ _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

Independent Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

8. 3 × 3 = _____

Array	**Area Model**
Equal-sized groups	**Repeated Addition**

Illustrate each multiplication fact. Solve.

Example:

Skip count by 2s ten times, beginning with the number given.

2 **4, 6, 8, 10, 12, 14, 16, 18, 20, 22**

Skip count by 3s ten times, beginning with the number given.

9. 3 _____

Skip count by 6s ten times, beginning with the number given.

10. 6 _____

Skip count by 8s ten times, beginning with the number given.

11. 8 _____

Independent Practice (3.N.2.1) Name: _____

Illustrate each multiplication fact. Solve.

Skip count by 10s ten times, beginning with the number given.

12. 10

_____

Skip count by 4s ten times, beginning with the number given.

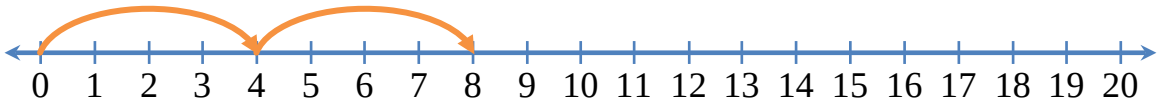
13. 4

_____

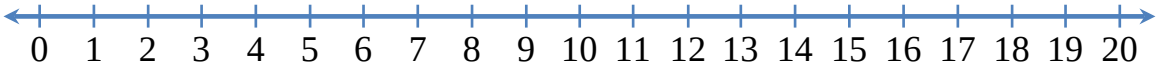
Use equal size jumps to illustrate the multiplication fact given. Solve.

Example:

2 × 4 = 8



14. 3 × 4 = _____



15. 5 × 2 = _____

16. 2 × 6 = _____

Independent Practice (3.N.2.1) Name: _____

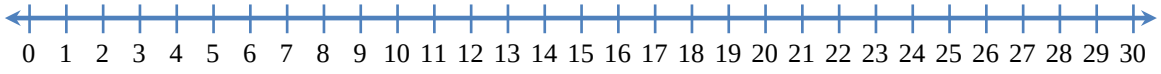
Use equal size jumps to illustrate the multiplication fact given. Solve.

17. $7 \times 3 =$ _____

18. $4 \times 5 =$ _____

19. $6 \times 3 =$ _____

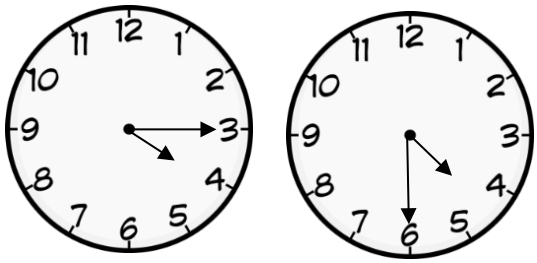
20. $3 \times 8 =$ _____



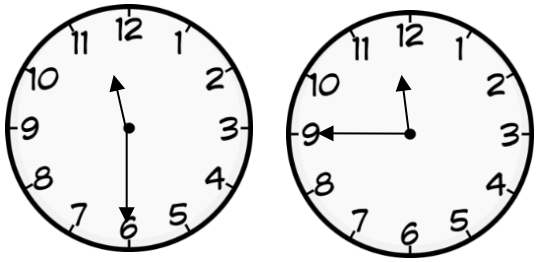
Continuous Review (3.N.2.1) Name: _____

Write the amount of time passed between the two times shown on the clocks.

1. _____

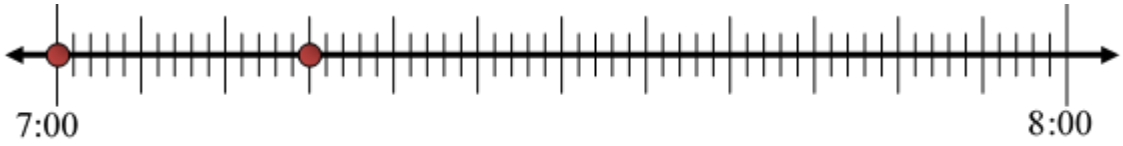


2. _____

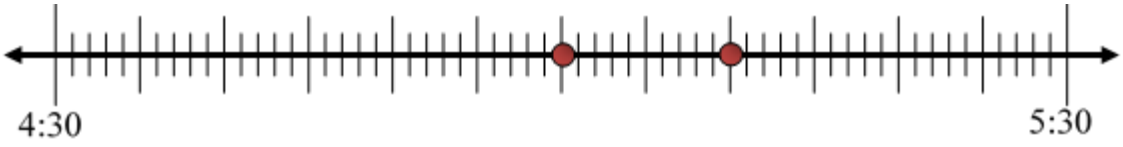


Determine the amount of time that has passed between the two times marked by red dots on the number line diagram.

3. _____



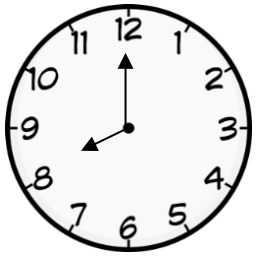
4. _____



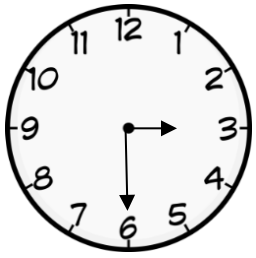
Continuous Review (3.N.2.1) Name: _____

Write the time shown on the clock.

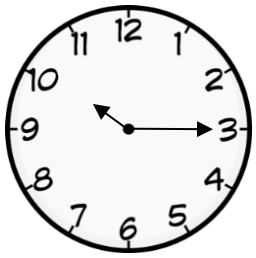
5. _____



6. _____



7. _____



Use keywords to decide if you should add or subtract. Solve, then use the opposite operation to check your answer.

8. Bobby has 627 basketball cards in his collection. Rylee had 403 cards. How many more cards does Bobby have than Rylee?

Check your work.

Continuous Review (3.N.2.1) Name: _____

Solve.

Keywords	Solve	Check
9. in all	823 ☐ 641 = ____	

Place the numbers in order from least to greatest.

10. 5,621; 5,038; 4,621; 4,842

_____

5.N.3.2 Illustrate addition and subtraction of fractions with like and unlike denominators, mixed numbers, and decimals using a variety mathematical models (e.g., fraction strips, area models, number lines, fraction rods).

Real-World Connections

Most people eagerly anticipate eating their favorite food. However, did you know that cooking involves understanding fractions? Recipes require precise ingredient measurements, often involving fractions, mixed numbers, and decimals. Many different professions use fractions, such as chefs, carpenters, seamstresses, engineers, and construction workers. In this lesson, you will learn how to add and subtract fractions, mixed numbers, and decimals.

Vocabulary

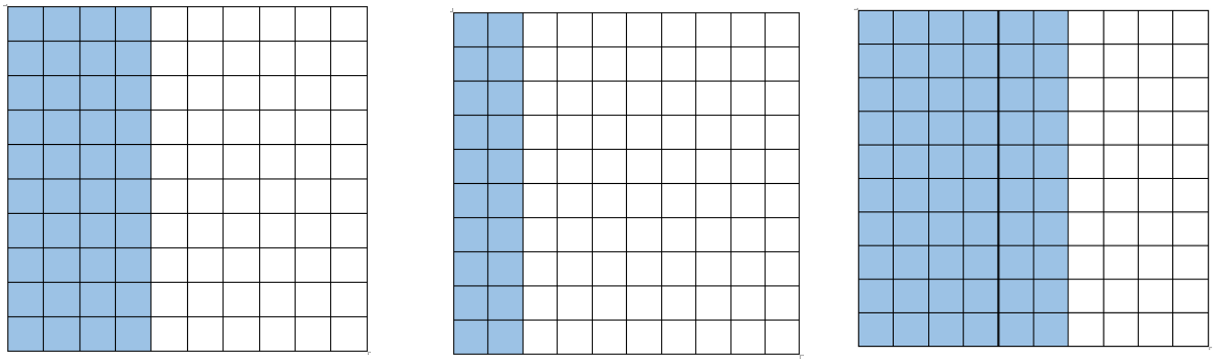
addition	the process of combining two or more addends together to find the total or sum
subtraction	the process of finding the difference between two numbers
area models	models using area to show multiplication
number line	a line in which numbers are marked at intervals
like fractions	fractions that have the same denominators
denominator	the bottom number of a fraction that tells how many equal parts are in a whole
numerator	the top number of a fraction that tells how many parts of a whole are being considered
least common multiple	the least common number other than zero that is a multiple of two or more given numbers (LCM)
least common denominator	the least common multiple of two or more denominators (LCD)
improper fractions	a fraction in which the numerator is greater than or equal to the denominator

Guided Practice (5.N.3.2) Name: _____

Illustrating the addition of decimals:

Example:

0.4 + 0.2 = 0.6

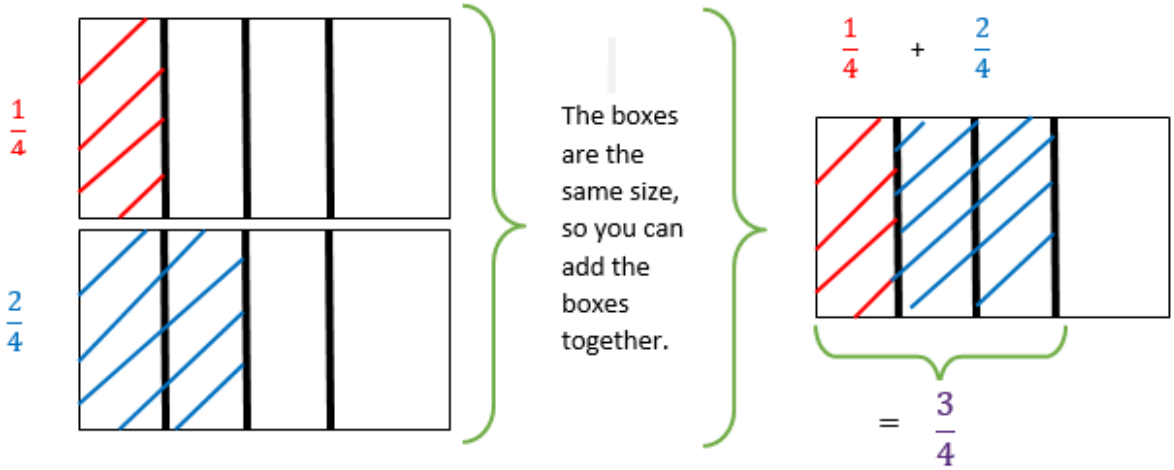


You can use area models to demonstrate the addition of fractions and mixed numbers.

Adding Fractions with the Same Denominator

Example: $\frac{1}{4} + \frac{2}{4} =$

To divide the boxes into equal parts, draw one line less than the number of needed parts. For instance, if you need to divide the box into 4 parts, you should draw 3 lines. Model each of the fractions by drawing the lines in the same direction. It's important to draw the lines in the same direction because the denominator is the same.

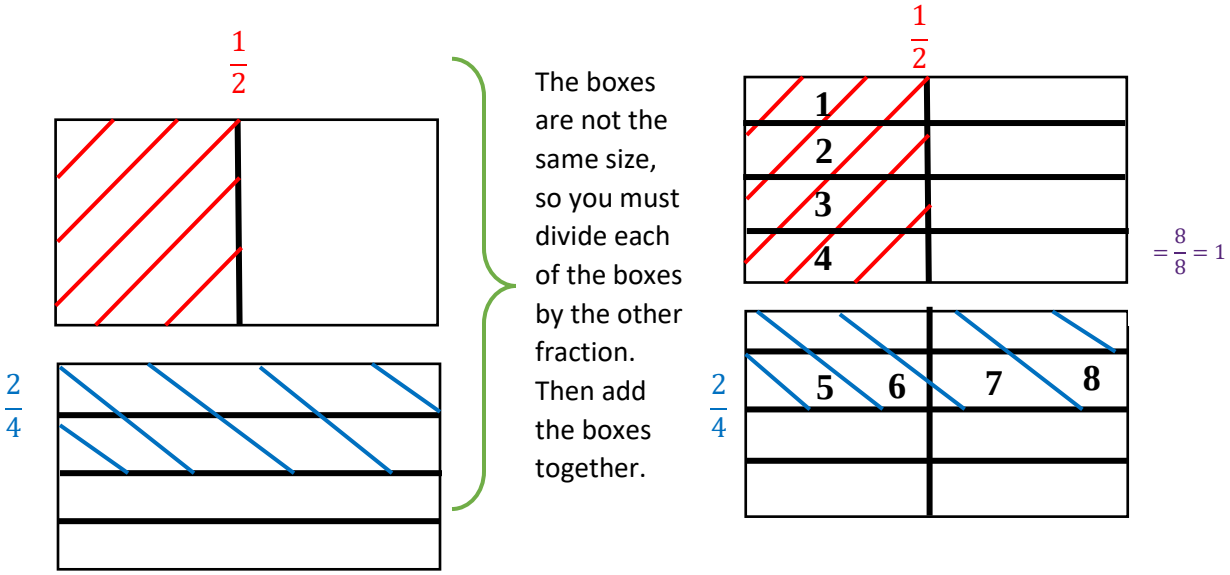


Guided Practice (5.N.3.2) Name: _____

Adding Fractions with Different Denominators

Example: $\frac{1}{2} + \frac{2}{4} =$

Draw lines in different directions to model fractions with different denominators.



Guided Practice (5.N.3.2) Name: _____

Subtracting Fractions with the Same Denominator

Example: $\frac{3}{4} - \frac{1}{4} =$

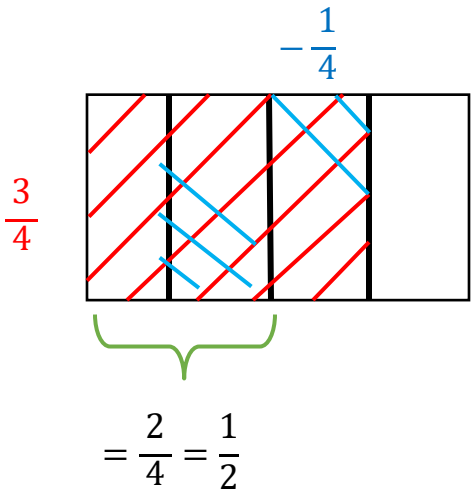
To solve a fraction problem, follow these steps:

1. Model the first fraction by dividing the box by the number in the denominator. Then, shade the boxes by the number in the numerator.

2. Next, subtract the second fraction by marking the number of boxes in the numerator.

3. Count the remaining shaded boxes to find the answer's numerator. The denominator stays the same.

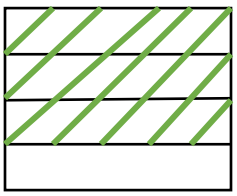
4. Sometimes, you can simplify or reduce the fraction. For example, if half of the box is shaded, the fraction can be simplified. This means $\frac{2}{4} = \frac{1}{2}$.



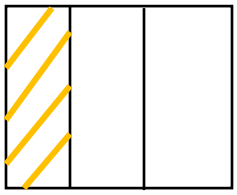
Subtracting Fractions with Different Denominators

Example: $\frac{3}{4} - \frac{1}{3} =$

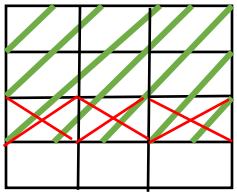
To model fractions, start by dividing boxes and shading them. Draw horizontal lines for one fraction and vertical lines for the other. Then, redraw the boxes for each fraction and divide them by a common denominator (which is the denominator of the other fraction). Finally, subtract the fractions by marking out the boxes you need to subtract.



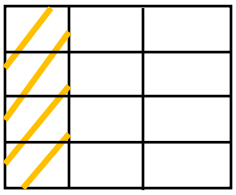
$\frac{3}{4} - \frac{1}{3}$



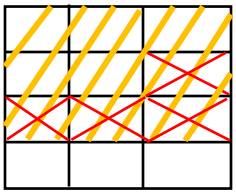
take away



$\frac{9}{12} - \frac{4}{12}$



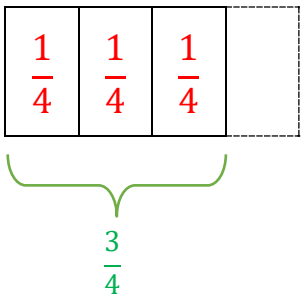
There are $\frac{5}{12}$ remaining.



Guided Practice (5.N.3.2) Name: _____

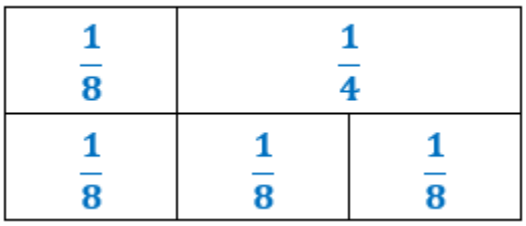
Using Fractions Bars

Breakdown of how to read $\frac{3}{4}$:



Example: Using fraction bars to model addition of fractions.

Add $\frac{1}{8} + \frac{1}{4}$



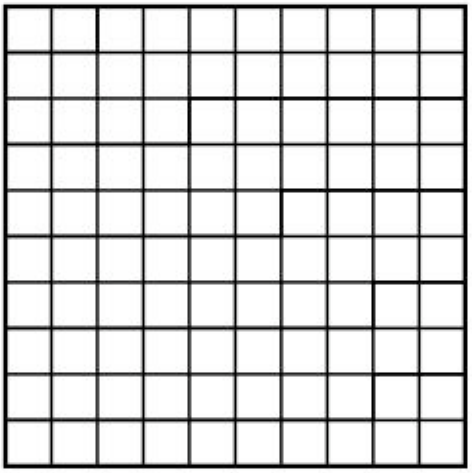
$\frac{1}{8} = \frac{1}{8}$ $\frac{1}{4}$ *is equal to* $\frac{2}{8}$

$$\frac{1}{8} + \frac{1}{4} = \frac{3}{8}$$

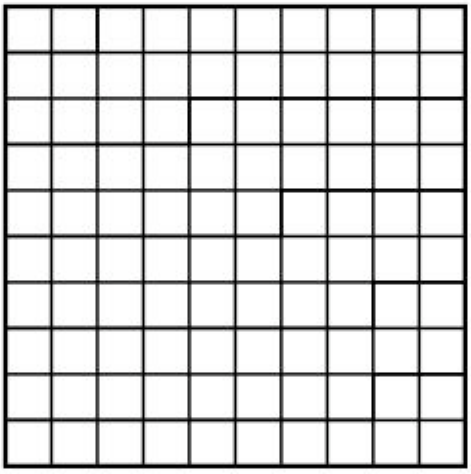
Guided Practice (5.N.3.2) Name: _____

Answer the following problems.

1. Illustrate/shade how you would solve 0.9 – 0.5= _____



2. Illustrate/shade how you would solve 0.23 + 0.58= _____

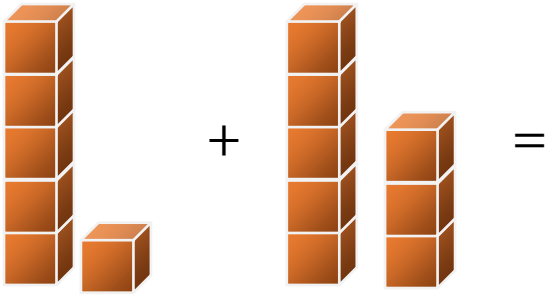


Use area models to demonstrate adding and subtracting fractions. Then, write down the answer in its simplest form.

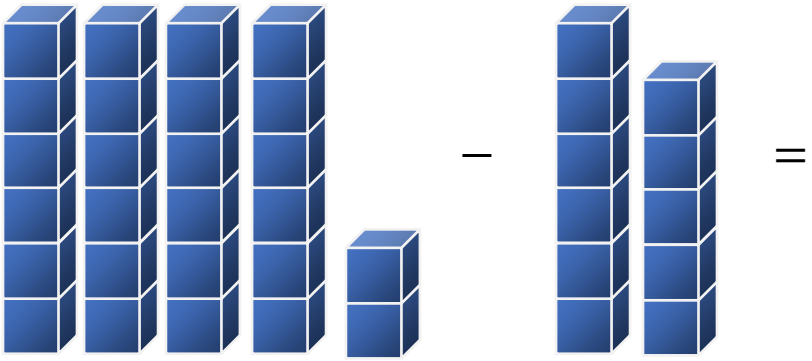
3. $\frac{1}{4} + \frac{6}{8} =$ ☐ + ☐ = ☐

4. $\frac{2}{3} - \frac{1}{4} =$ ☐

5. Add $1\frac{1}{5}$ and $1\frac{3}{5}$ using fraction rods.



6. Use fraction rods to solve the following equation: $4\frac{2}{6} - 1\frac{5}{6} =$ _____. Write your answer in its simplest form.



Use number lines to show adding and subtracting fractions. Write the answer in simplest form.

7. Add $\frac{2}{10} + \frac{5}{10}$. Illustrate your answer on the number line.

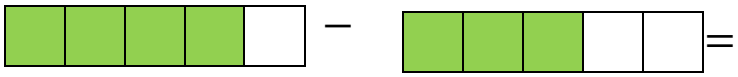
8. Subtract $6\frac{3}{8} - 2\frac{1}{2}$. Illustrate your answer on the number line.

Guided Practice (5.N.3.2) Name: _____

Use fraction strips to show adding and subtracting fractions. Write the answer in its simplest form.

9. $\frac{1}{6} + \frac{3}{6} =$ _____

10. $\frac{4}{5} - \frac{3}{5} =$_____

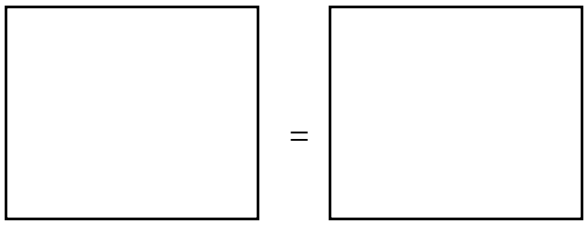


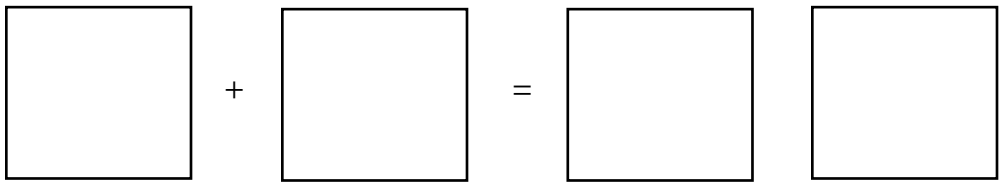
Independent Practice Name: _____

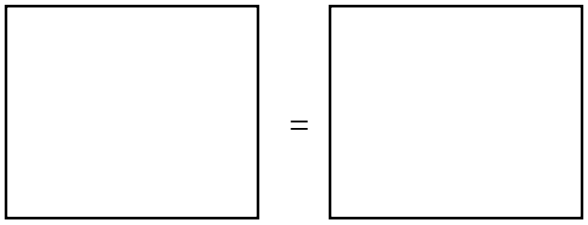
5.N.3.2 Illustrate addition and subtraction of fractions with like and unlike denominators, mixed numbers, and decimals using a variety mathematical models (e.g., fraction strips, area models, number lines, fraction rods).

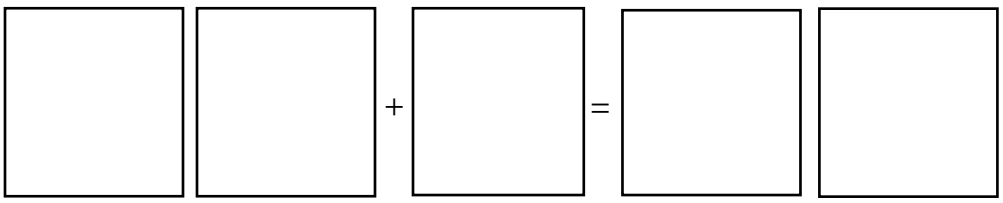
Use area models to show adding and subtracting fractions. Write the answer in its simplest form.

1. $\frac{1}{4}+\frac{3}{4}=$ 

2. $\frac{5}{6}-\frac{2}{6}=$ 

3. $\frac{4}{6}+\frac{2}{3}=$ 

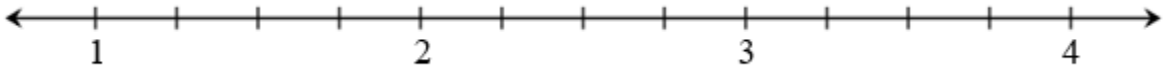
4. $\frac{3}{4}-\frac{2}{6}=$ 

5. $1\frac{1}{2}+\frac{1}{4}=$ 

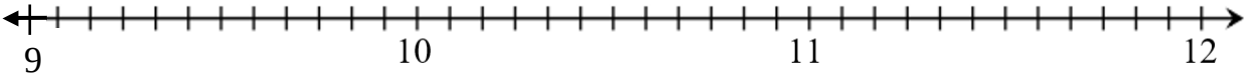
Independent Practice (5.N.3.2) Name: _____

Use number lines to show adding and subtracting fractions. Write the answer in its simplest form.

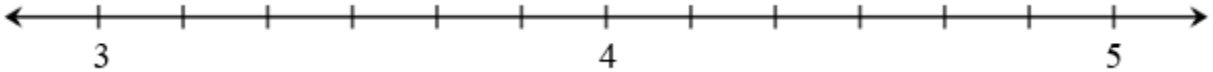
6. $1\frac{1}{4} + 2\frac{1}{2} =$ _____



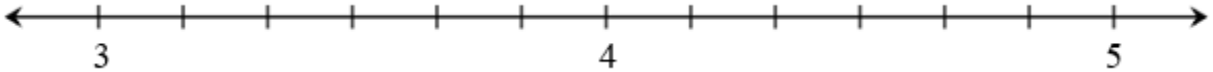
7. $9\frac{10}{12} + 1\frac{5}{6} =$_____



8. $3\frac{5}{6} + \frac{2}{3} =$_____



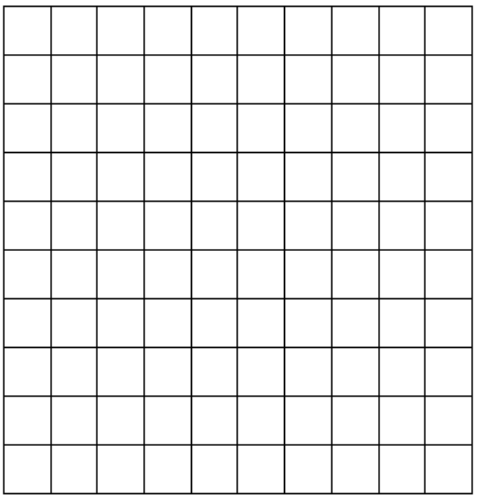
9. $4\frac{2}{3} - 1\frac{1}{6} =$_____



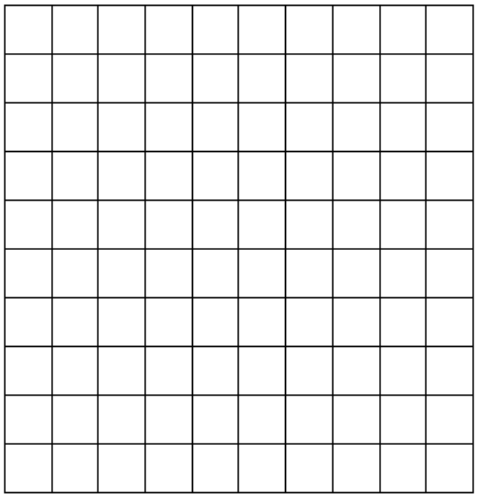
Independent Practice (5.N.3.2) Name: _____

Illustrate and solve:

10. Illustrate/shade 0.75 + 0.25 =



11. Illustrate/shade 0.82 − 0.43 =



Illustrate and solve:

12. $\frac{7}{8} + \frac{1}{8} =$ _____

Independent Practice (5.N.3.2) Name: _____

Illustrate and solve:

13. $\frac{3}{5} + \frac{1}{3} =$ _____

14. $1\frac{3}{6} + 1\ \frac{1}{5} =$ _____

15. $1\frac{2}{3} - 1\frac{2}{5} =$ _____

16. $\frac{1}{2} + \frac{2}{6} =$ _____

17. $\frac{9}{10} - \frac{3}{10} =$ _____

18. $\frac{11}{12} - \frac{2}{3} =$ _____

19. $\frac{1}{4} + \frac{3}{6} =$ _____

20. $4\frac{3}{4} + 3\frac{3}{12} =$ _____

Continuous Review (5.N.3.2) Name: _____

Estimate to the **greatest** place value and solve.

1. $98 \div 12 \approx$

2. The local grocery store is selling candy for $0.97 each. How many pieces of candy can you buy for $20?

Write decimal in written form.

3. Standard Form: 6.31
   Expanded Form: 6 + 0.3 + 0.01
   Written Form: _____

4. Put in order from **least** to **greatest** $0.7, \frac{1}{2}, \frac{2}{5}, 0.3$ _____

Identify the pattern in the sequence.

5. 3, 6, 4, 8, 6, 12, 10

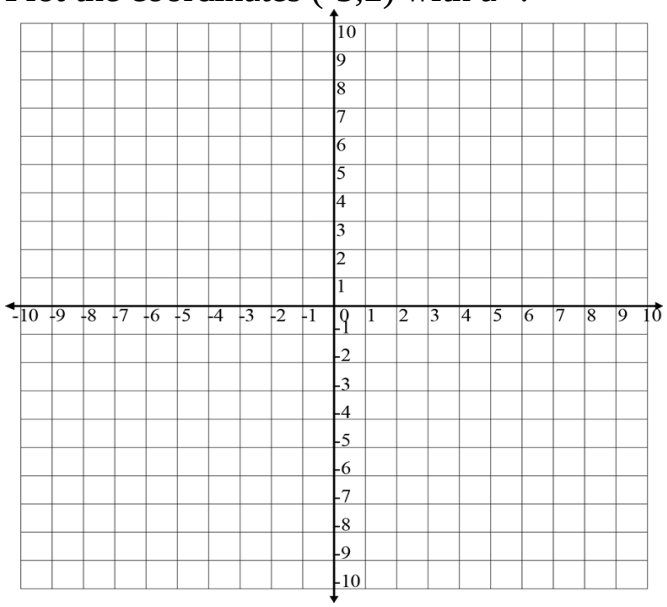
   What is the rule used in the sequence? _____

Estimate and solve.

6. $\frac{11}{12} + \frac{5}{8} \approx$

Continuous Review (5.N.3.2) Name: _____

7. Plot the coordinates (-5,2) with a •:



8. Which decimal is equivalent to $\frac{4}{10}$?

   A 0.04

   B 0.004

   C 4.0

   D 0.4

9. True or False 0.08 < 0.008 _____

Solve by using order of operations.

10. (2 • 7) + 30 ÷ 2 - 1 = _____

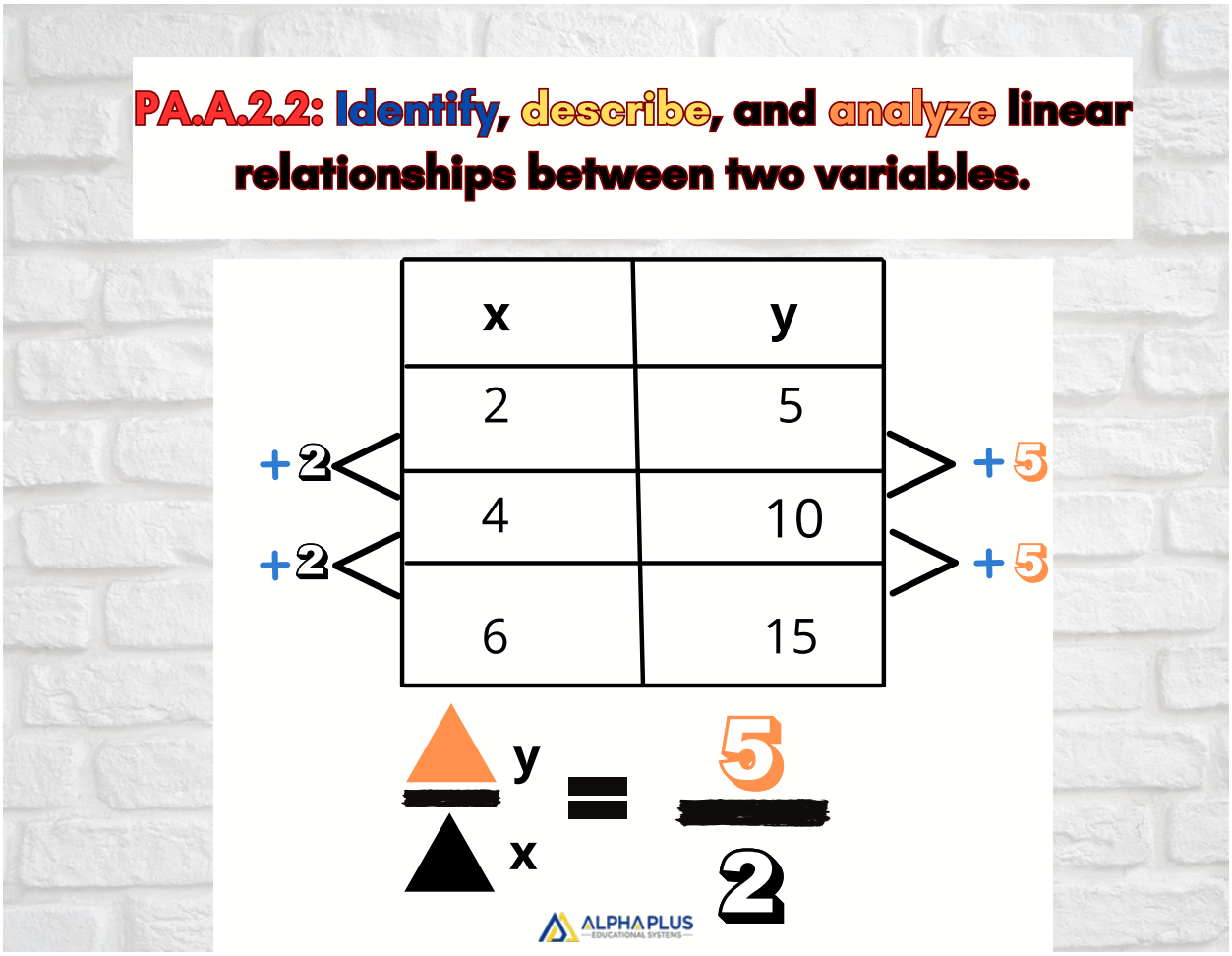
PA.A.2.2 Identify, describe, and analyze linear relationships between two variables.

Real-World Connections

Linear relationships have a constant rate of change, like the speed at which an object travels. For example, if a vehicle is traveling at 25 miles per hour, you can calculate either the time it would take to travel a given distance or the distance traveled in each amount of time. Another way to understand the linear relationship is if you know the distance traveled and the time it took, you can calculate the speed. When analyzing a linear relationship, you divide the dependent variable (distance in the above scenario) by the independent variable (time in the above scenario) to find the constant rate of change (speed in the above scenario).

Vocabulary

variable	quantity that can change or take on different values, represented by a letter or symbol



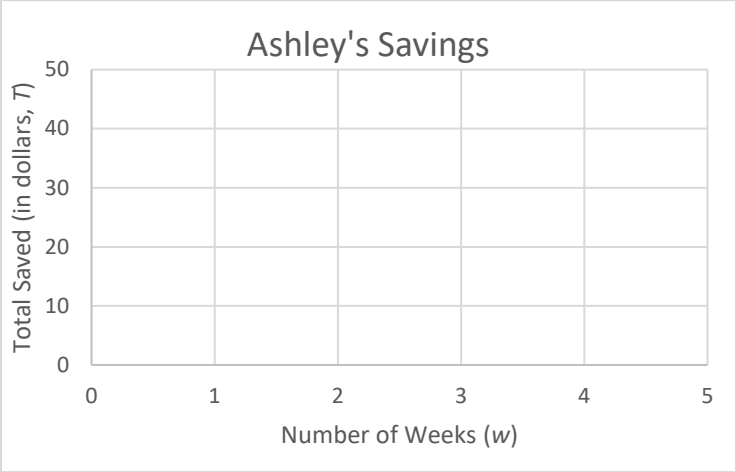
Guided Practice (PA.A.2.2) Name _____

Analyze the relationship of the two variables in the given scenario and answer the following questions.

Ashley wants to save money for the purchase of a new tablet. The equation $T = 7w + 15$ represents the total amount of money, in dollars, Ashley can save after w weeks.

1. Using the equation, make a table representing the relationship between the number of weeks and the total amount of money saved, and then graph your data.

Number of Weeks (w)	Total Saved (in dollars, T)



Analyze the relationship of the two variables in the given scenario and answer the following questions.

2. What is the dependent and independent variable in this scenario?

_____

3. What does the 15 represent in the given equation?

_____

4. How does the total amount saved change in relation to the number of weeks?

_____

5. How does the equation show the relationship between the total amount saved and the number of weeks?

_____

6. How would the equation and graph change if Ashley had $25 when she began saving?

_____

7. How would the equation and graph change if Ashley were able to save $10 each week?

_____

Guided Practice (PA.A.2.2) Name _____

Use the following graph to answer questions 8-10.

8. What are the dependent and independent variables in this scenario?

_____

9. Describe the linear relationship between hours 1 and 2.

_____

10. Describe the linear relationship between hours 4 and 5.

_____

Independent Practice Name _____

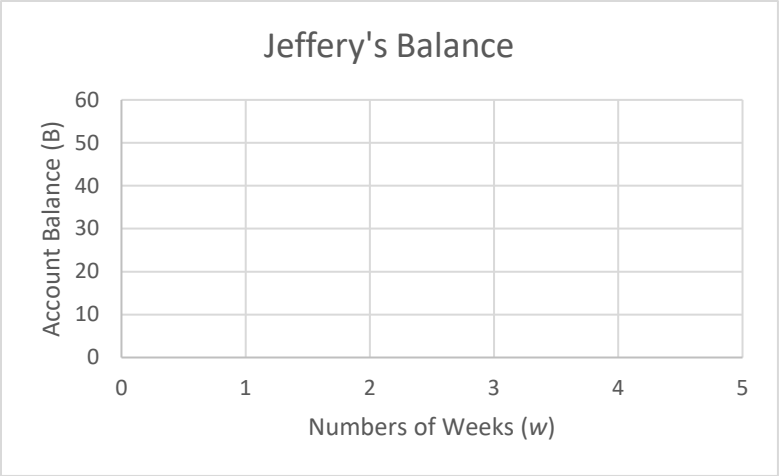
PA.A.2.2 Identify, describe, and analyze linear relationships between two variables.

Analyze the relationship of the two variables in the given scenario and answer the following questions.

Jeffrey's mom wants to keep track of Jeffrey's account balance for lunch at school. The equation $B = 50 - 10w$ represents the balance, in dollars, Jeffrey has remaining on his account after w weeks.

1. Using the equation, make a table representing the relationship between the number of weeks and the total amount of money saved, and then graph your data.

Number of Weeks (w)	Account Balance (in dollars, B)



2. What is the dependent and independent variable in this scenario?

_____

3. What does the 50 represent in the given equation?

_____

4. How does the account balance change in relation to the number of weeks?

_____

Independent Practice (PA.A.2.2) Name _____

Use the information on the previous page to answer these questions.

5. How does the equation show the relationship between the account balance and the number of weeks?

_____

6. How would the equation and graph change if Jeffrey's mom made an original deposit of $100?

_____

7. How would the equation and graph change if Jeffrey spent $5 each week?

_____

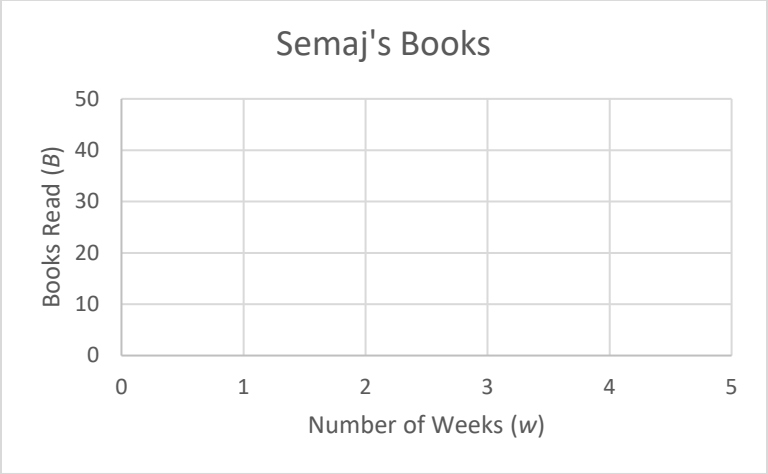
Independent Practice (PA.A.2.2) Name _____

Analyze the relationship of the two variables in the given scenario and answer the questions that follow.

Mrs. Huskey tells her students to keep track of the books they have read. The equation $B = 5w + 20$ represents the number of books Semaj has read after w weeks.

8. Using the equation, make a table to represent the relationship between the number of weeks and the total amount of money saved, and then graph your data.

Number of Weeks (w)	Books Read (B)



9. What is the dependent and independent variable in this scenario?

_____

10. What does the 20 represent in the given equation?

_____

11. How does the number of books read change in relation to the number of weeks?

_____

12. How does the equation show the relationship between the number of books read and the number of weeks?

_____

Independent Practice (PA.A.2.2) Name _____

Use the information on the previous page to answer these questions.

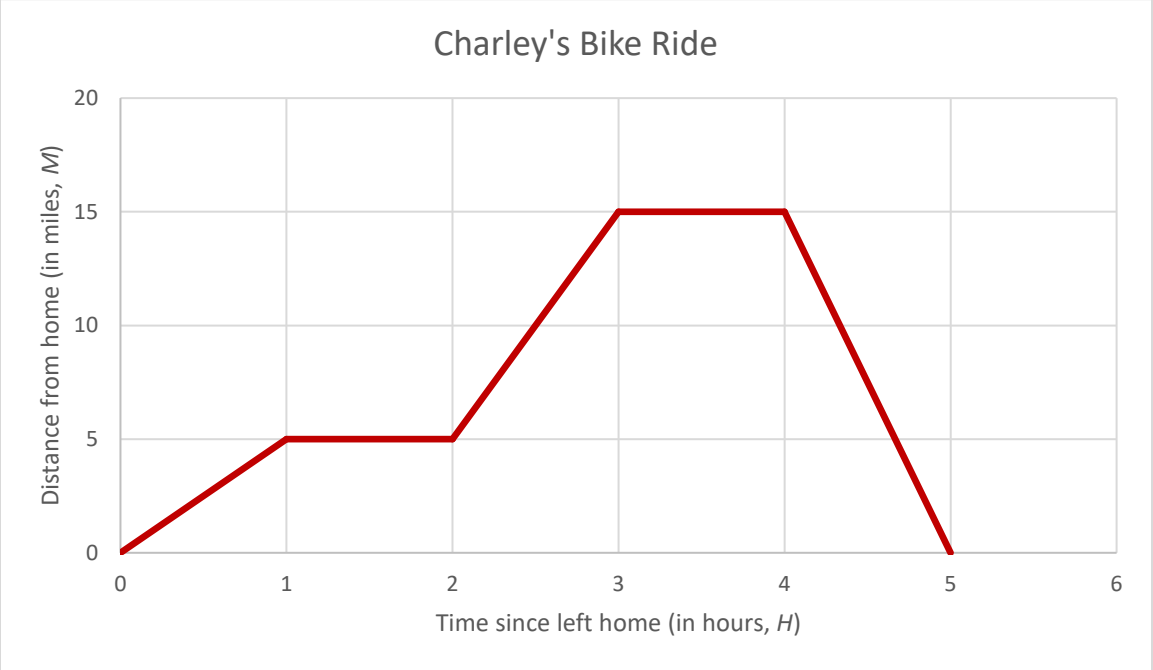
13. How would the equation and graph change if Semaj had only read 15 books when Mrs. Huskey made the assignment?

_____

14. How would the equation and graph change if Semaj read 8 books each week?

_____

Use the following graph to answer questions 15-20.



15. What are the dependent and independent variables in this scenario?

_____

16. Complete the data table based on the graph. Label each row.

	1	2	3	4	5

Independent Practice (PA.A.2.2) Name _____

Use the graph on the previous page to answer these questions.

17. Describe the linear relationship between hours 1 and 2.

_____

18. Describe the linear relationship between hours 2 and 3.

_____

19. Describe the linear relationship between hours 4 and 5.

_____

20. Does the negative slope in question 19 mean that Charley drove slower than zero miles per hour? Why or why not?

_____

Continuous Review (PA.A.2.2) Name _____

Write to one power, then solve.

1. $\frac{3^4}{3^6}$ =

_____

2. $4^{-4} \cdot 4^7$=

_____

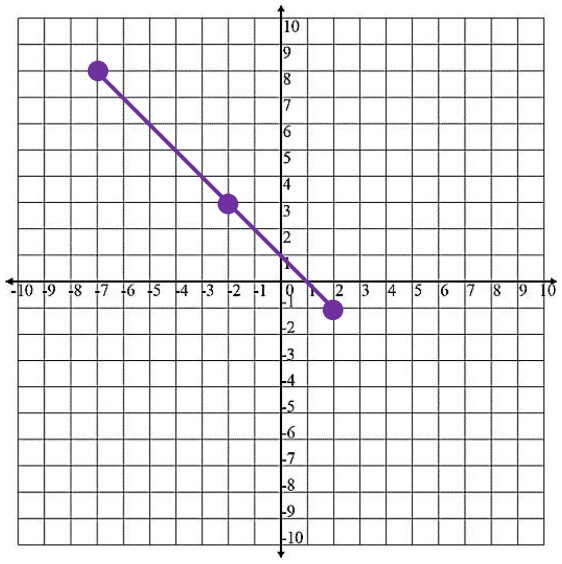
Identify each number as rational or irrational, and then put the numbers in order from **least** to **greatest**.

3. $4^2, \sqrt{275}, 5\pi$

_____

Identify the graph as linear or nonlinear.

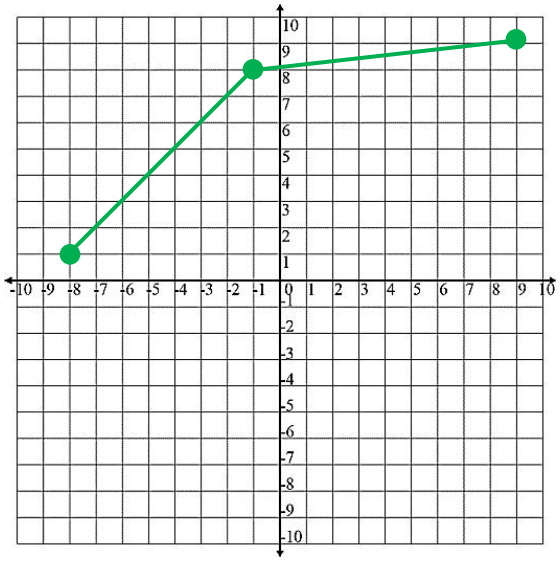
4.



_____

Continuous Review (PA.A.2.2) Name _____

Identify the graph as linear or nonlinear.

5. 

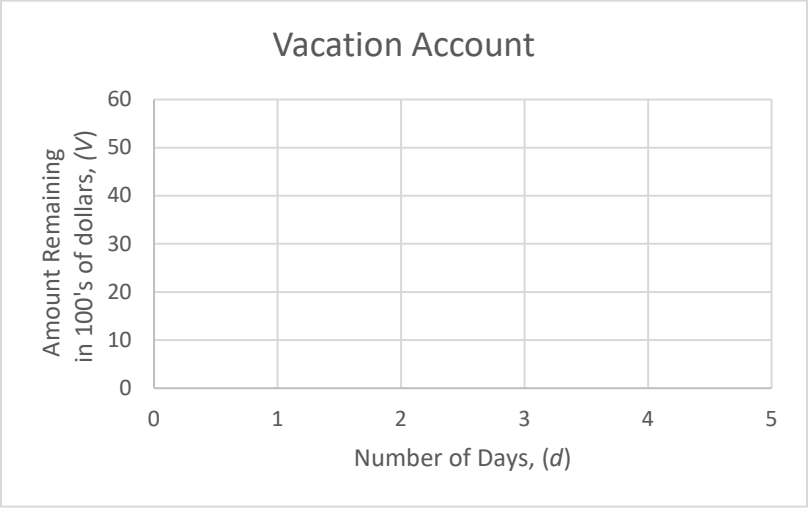
_____

Analyze the relationship of the two variables in the given scenario and answer the following questions.

Xavier is going on vacation with his family to Little Sahara. Xavier uses what he learned in math class to write an equation $V = 5{,}000 - 325d$ that represents the amount left in their vacation account (V) after a certain number of days (d) have passed.

6. Using the equation, create a table representing the relationship between the number of weeks and the total amount of money saved, and then graph your

Number of Days, (d)	Amount Remaining in 100's of dollars, (V)



Continuous Review (PA.A.2.2) Name _____

Use the information on the previous page to answer these questions.

7. What are the dependent and independent variables in this scenario? What does 5,000 represent in the given equation?

_____

8. How does the amount remaining in the account change in relation to the number of days?

_____

9. How does the equation show the relationship between the amount remaining in the account and the number of days?

_____

10. How would the equation and graph vacation account change if it started with $3,500? How would the equation and graph change if the daily expenditure was $275?

_____