TEKSING TOWARD STAAR

MATHEMATICS ®

GRADE 6

Student Book

Six Weeks 1
Lesson 1

Problem-Solving Model

Step	Description of Step
1	**Analyze the given information.** • Summarize the problem in your own words. • Describe the main idea of the problem. • Identify information needed to solve the problem.
2	**Formulate a plan or strategy**. • Draw a picture or diagram. • Guess and check. • Find a pattern. • Act it out. • Create or use a chart or table. • Work a simpler problem. • Work backwards. • Make an organized list. • Use logical reasoning. • Brainstorm. • Write a number sentence or an equation
3	**Determine a solution.** • Estimate the solution to the problem. • Solve the problem.
4	**Justify the solution.** • Explain why your solution solves the problem.
5	**Evaluate the process and the reasonableness of your solution.** • Make sure the solution matches the problem. • Solve the problem in a different way.

Problem-Solving Questions

Directions:

- **Work with a partner.**
- **Write your answers on notebook paper.**
- **Answer questions 1-3.**
- **Complete the solution to the problem(s).**
- **Answer questions 4-10.**

1. What is the main idea of this problem?

2. What are the supporting details in this problem?

3. What skills, concepts, and understanding of math vocabulary are needed to be able to answer this problem?

4. Did this problem involve mathematics arising in everyday life, society, or the work place?

5. What is a good problem solving strategy for this problem?

6. Can you explain how you used any math tools, mental math, estimation, or number sense to solve this problem?

7. Did this problem involve using multiple representations (symbols, diagrams, graphs, math language)?

8. Did you use any relationships to solve this problem?

9. How can you justify your solution to the problem?

10. How can you check for reasonableness of your solution to this problem?

Student Activity 1

Work with your partner to answer the following problems.

1. Complete the following statements by filling in the blank with an appropriate word or words.

   A group of objects or numbers is called a _____.

   A part of a set is called a _____.

   The set {0, 1, 2, 3, 4, 5, 6, …} is called the set of _____ _____.

   The set {…-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, …} is called the set of _____.

   The set of numbers that can be expressed as the ratio of two integers is the set of _____ numbers.

   The numbers -8 and 8 are called _____.

   The distance a number is from 0 on a number line is called the _____ value of the number.

2. Place a √ in each column that names a set the given number belongs to.

	Rational Number	Integer	Whole Number
-6			
0			
3.5			
$\frac{17}{4}$			
-4.3			
$-5\frac{2}{3}$			
1,250			
$0.\overline{12}$			

3. Name 3 integers that are NOT whole numbers.

   _____ _____ _____

4. Name 3 rational numbers that are NOT integers.

   _____ _____ _____

5. Name a rational number that would be between 3 and 3.5 on a number line.

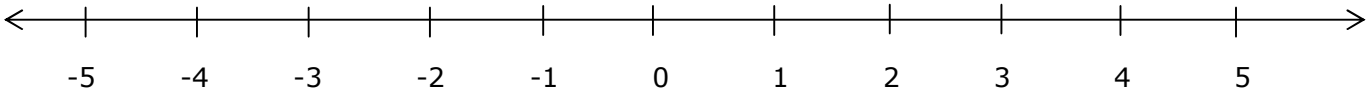
6. Draw a Venn diagram that shows the relationship among rational numbers, integers, and whole numbers.

7. Place the following numbers in the appropriate set on the Venn diagram you drew in Question 6.

$17 \qquad -43 \qquad 1.5 \qquad \frac{21}{3} \qquad 9 \qquad 125 \qquad 0.\overline{4} \qquad -2\frac{1}{2}$

8. Place and label the following rational numbers on the given number line.

$\frac{1}{2} \qquad 2\frac{1}{2} \qquad -4.5 \qquad 3\frac{1}{2} \qquad -\frac{1}{2} \qquad \frac{8}{2} \qquad -1\frac{1}{3} \qquad 0.\overline{3}$



9. Name 2 whole numbers that will be between 3 and 6.5 on a number line.

10. Using a W for whole numbers, I for integers, and R for rational numbers, identify all the sets of numbers that have members in the given set.

$\{-1, -6, -14, -13\}$_____

$\left\{\frac{22}{7}, 3.14, 4, 0\right\}$_____

$\left\{-20, -1.1, \frac{4}{3}, -3\right\}$_____

Student Activity 2

Work with your partner to answer the following problems.

1. In your own words, describe opposite numbers.

2. In your own words, describe absolute value.

3. Identify the following statements as True or Not True. Use T or NT.

   _____Only whole numbers have opposites.

   _____The absolute value of a negative number is a positive number.

   _____The opposite of an integer is a whole number.

   _____The opposite and absolute value of 0 is 0.

   _____The distance between 4 and the opposite of 4 is 8 units.

4. In golf, a score of 0 is considered par. A score under par, like -3, is a better golf score than a score above par, like 3 or $+3$.

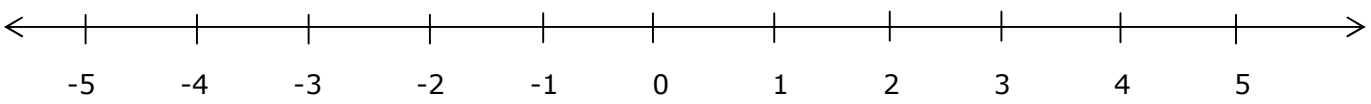
Golfer	Danny	Jim	Jose	Charlie
Score	-3	$+4$	$+1$	-1

   Which two golfers had opposite scores?

   Which golfers had scores that are whole numbers?

5. Graph and label the following numbers on the number line below.

   - A: the opposite of 4
   - B: the absolute value of $\frac{1}{2}$
   - C: the opposite of $-3\frac{1}{3}$



6. Give the opposite of each number below.

   8 _____ -4 _____ 0 _____ $-\frac{1}{2}$ _____

7. Give the value of each of the following.

$|-2|$ =_____ $|12|$ =_____ $|32|$ =_____ $|-0.25|$ =_____

8. Give the distance between each given number and its opposite.

2 _____ 5_____ −3_____ −10_____ 0 _____

9. Give the distance between each given number and its absolute value.

1 _____ 6_____ −8_____ −18_____ 100 _____

10. In each pair of numbers, circle the number that is farther from 0.

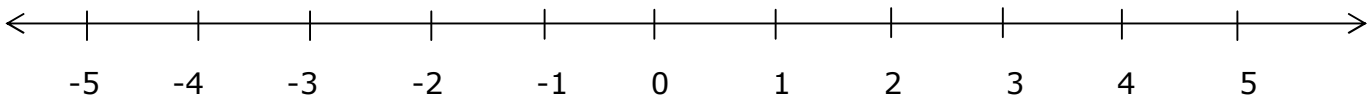
8 and −9 6 and −5 −10 and −11 3 and −2 14 and −13

11. Describe "the opposite of the opposite of a number".

Name the opposite of the opposite of each number.

3 −6 12 −100

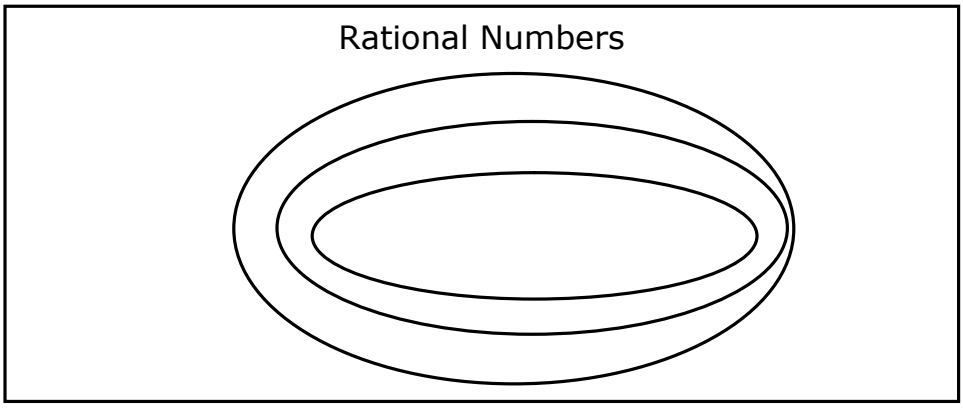
12. On the number line below, graph all numbers whose absolute value is less than or equal to 3.



NAME_____ DATE_____ SCORE ___/5

6.2A/6.2B Skills and Concepts Homework 1

1. Fill in the Venn diagram below showing the relationship of rational numbers, integers, and whole numbers.



2. Place a √ in each column that the given number belongs to.

	Rational Number	Integer	Whole Number
-22			
-3.1			
113			
$\frac{5}{8}$			
0.2			

3. Name 3 integers that are NOT whole numbers.

_____ _____ _____

4. Name 3 rational numbers that are NOT positive.

_____ _____ _____

5. Name a rational number that is located between 20.5 and 20.6 on a number line. How do you know it is rational?

NAME_____ DATE_____ SCORE ___/5

6.2A/6.2B Skills and Concepts Homework 2

1. Name the opposite and absolute value of the following numbers.

   30 Opposite: _____ Absolute value: _____

   $62\frac{3}{4}$ Opposite: _____ Absolute value: _____

   -2.3 Opposite: _____ Absolute value: _____

2. Fill in any missing values in the table below. If there are two possible answers for a column, fill in both answers.

Number	Opposite	Absolute Value
-1.5		
	-7	
	92	
		$\frac{5}{3}$
0.09		

3. Name 3 rational numbers (2 positive and 1 negative) that have absolute values larger than 200.

4. Name 3 rational numbers (2 positive and 1 negative) that have opposites that are less than 20.

5. Complete the following statements:

   $|-13| =$ _____

   The opposite of 64 is _____

   Both _____ and _____ have an absolute value of 15.

Six Weeks 1 Review

Six Weeks 1 Review

Lesson 1: 6.2A 6.2B

1. Place a √ in each column that the given number belongs to.

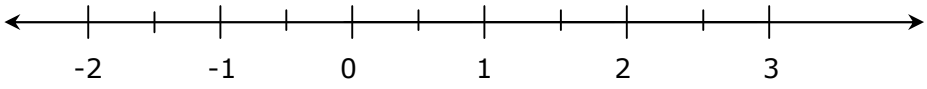
	Rational Number	Integer	Whole Number
-0.5			
-12			
113			
$\frac{5}{8}$			
$0.\overline{4}$			

2. Name 5 rational numbers that are integers.

3. What is the absolute value of -20? _____
   Are there any other numbers that have the same absolute value as -20? If so, name the number(s).

Lesson 2: 6.2C

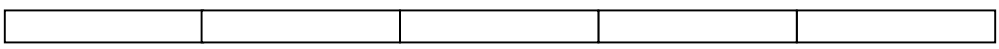
1. Locate and label the following numbers on the number line. $\{2,\ 2.5,\ -1,\ 0.75,\ -1.75\}$

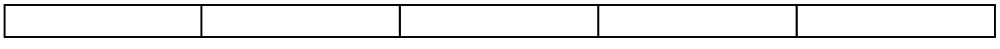


   List the numbers in the list from greatest to least:_____ _____ _____ _____ _____

Lesson 3: 6.4F 6.4E

1. Shade the strip diagrams to represent the indicated percents.

30% 

40% 

2. Represent the following percents as a fraction and as a decimal.

   40% fraction:_____ decimal:_____

   60% fraction:_____ decimal:_____

   75% fraction:_____ decimal:_____

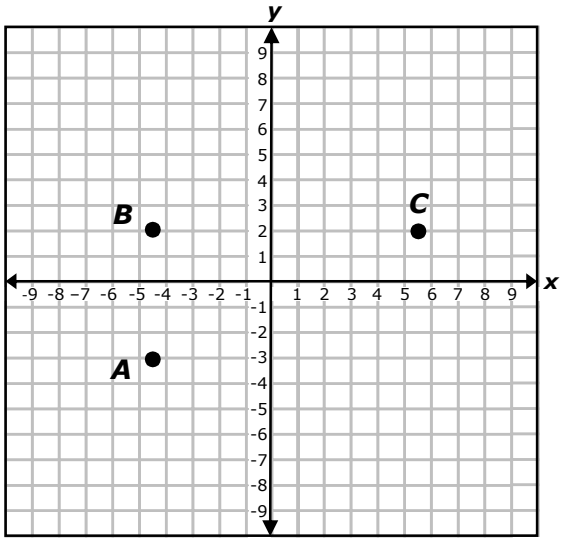
   12.5% fraction:_____ decimal:_____

Lesson 4: 6.11A

1. Identify which quadrant the following points will be when plotted on a coordinate grid.

   $(-3, 4)$_____ $(3, -4)$_____ $(-2, -5)$_____ $(2, 6)$ _____

2. On the grid below, plot the missing vertex *D* of rectangle *ABCD*. Identify the ordered pair for the missing point. (,)



Lesson 5: 6.3E 6.3B

1. A piece of rope is 42.6 feet long. Michael cuts the rope into 4 equal pieces. How long is each piece?

2. Circle the true statements below.

$12 \times \frac{3}{4} < 12$ $35 \times \frac{7}{5} < 35$ $42 \times \frac{9}{4} > 42$

Lesson 6: 6.7B 6.7C

1. A coin collection contains nickels and dimes. The collection contains 12 dimes. The number of dimes is 3 more than the number of nickels, *n*.
   Write an expression that represents the number of dimes in terms of *n*.

2. Model the expression: $2(x + 3) + 2$

   Using your model, write another expression that is equivalent to the given expression.

   _____

Lesson 7: 6.8A

1. What is the sum of the measures of the three angles of a triangle? _____

   Are 53°, 78° and 49° the measures of the angles of a triangle? _____ How do you know?

2. Can the lengths of the sides of a triangle be 2 units, 3 units, and 5 units? _____How do you know?

3. If you know the lengths of the sides of a triangle are 5 units, 8 units and 10 units, how do you know which angle to place them opposite on a sketch of the triangle?

Lesson 8: 6.10A 6.10B

1. Draw a model for the following equation: $x + 5 = 9$

   Solve the equation using your model.

2. Draw a model for the following inequality: $3x < 9$

Solve the inequality using your model.

3. Circle the values below that will satisfy $3x > 30$.

9 10 11 5 12 100 1.5 9.5

Lesson 9: 6.8C 6.8D

1. Write an equation to find the area of a rectangle with side lengths of 4 inches, 8 inches, 4 inches, and 8 inches.

2. A rectangle has an area of 42 square centimeters. The base of the rectangle is 5 centimeters. What is the height of the rectangle?

Lesson 10: 6.14D 6.14E 6.14F

1. Why is it important to have a positive credit rating?

2. What can you do to maintain a positive credit rating?

3. How long does information remain on your credit report?

4. Would you rather have a credit rating of 450 or 750? Explain your choice.

Six Weeks 3
Lesson 2

Student Activity 1

Work with your partner to answer the following questions.

Problem 1: If you look at a table, the _____ quantity will be located on the first row or column. The _____ quantity will be located on the second row or column.

On a graph, the _____ quantity will be located on the horizontal axis, and the _____ quantity will be located on the vertical axis.

Problem 2: Complete the table of values. Identify the independent and dependent quantities in the table below.

A stack of pennies contains 10 pennies.

Number of Stacks of Pennies	3	6		15
Number of Pennies			80	

- The independent quantity is _____.
- The dependent quantity is _____.

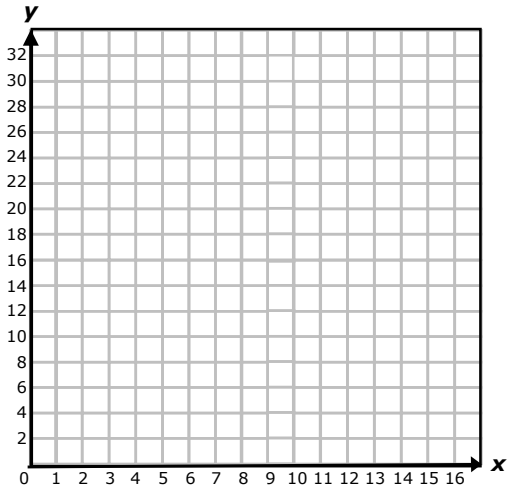
Problem 3: Mary has $10 more than Joan.
Complete the table below.

Joan's Money	$4	$6	$12	$17.50	$21
Mary's Money					

- The independent quantity in the table is _____.
- The dependent quantity in the table is _____.

List the ordered pairs from the table. (,) (,) (,) (,) (,)

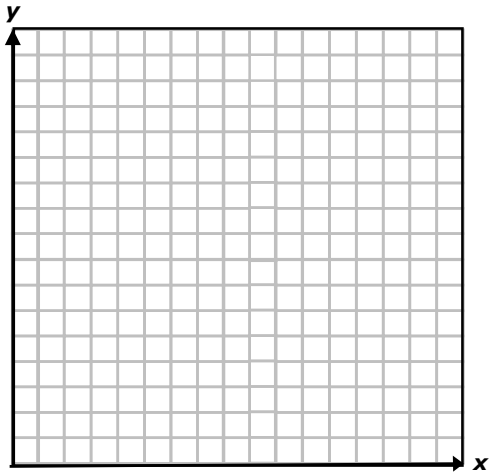
Label the axes and plot the points for this situation.



Problem 4: The cost of renting a movie is $3 per movie.

- What is the independent quantity in this situation? _____
- What is the dependent quantity in this situation? _____
- Create a table of values to represent a various number of movies rented. Label the rows appropriately for the table.

- Write the ordered pairs from the table. (,) (,) (,) (,)
- Create a graph of your data using the grid below. Label the axes appropriately and chose a scale to use.



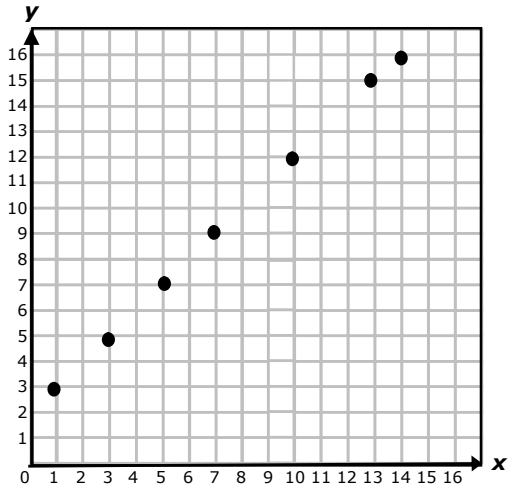
Problem 5: Look at the table below. Describe a possible situation the table could represent. Describe the independent and dependent variables in the situation.

Independent variable, x	1	2	3	4
Dependent variable, y	4	8	12	16

Problem 6: Look at the table below. Describe a possible situation the table could represent. Describe the independent and dependent variables in the situation.

Independent variable, x	3	5	6	8
Dependent variable, y	9	11	12	14

Problem 7: The graph below shows a relationship between two variables. Describe a possible situation the graph could represent. Describe the dependent and independent quantities.

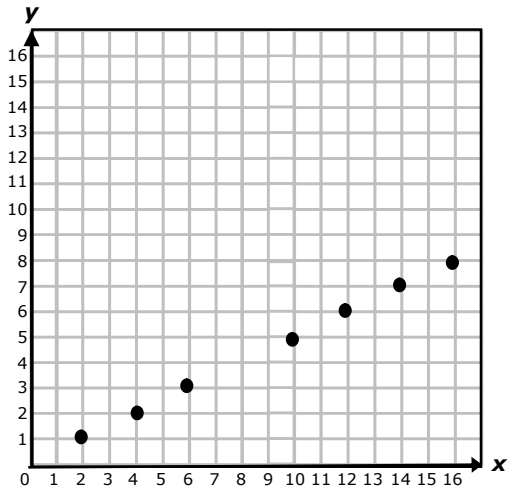


Situation:

Independent variable:

Dependent variable:

Problem 8: The graph below shows a relationship between two variables. Describe a possible situation the graph could represent. Describe the dependent and independent quantities.



Situation:

Independent variable:

Dependent variable:

Student Activity 2

Work with your partner to answer the following problems.

Problem 1: In your own words, explain how to decide if the equation that represents a table of values will be of the form $y = ax$.

Problem 2: In your own words, explain how to decide if the equation that represents a table of values will be of the form $y = x + a$.

Problem 3: If you subtract x from y for the values in a table and you get a constant difference of −3, what will be the equation?

Problem 4: If you find the common ratio of y to x in a table of values is 3:4, what will be the equation?

Problem 5: Give the equation that represents the values in the table.

Number of Games Purchased, *x*	1	2	3	4	5
Cost of the Games $, *y*	12	24	36	48	60

Equation: _____

Problem 6:
Give the equation that represents the values in the table.

First Number, *x*	4	5	6	8	15
Second Number, *y*	−1	0	1	3	10

Equation: _____

Problem 7:
Give the equation that represents the values in the table.

First Number, *x*	4	5	6	10	13
Second Number, *y*	2	2.5	3	5	6.5

Equation: _____

Problem 8: Fill in the table so that it will represent $y = x - 2$

First Number, x	0	1	4	8	23	30
Second Number, y						

Problem 9: Fill in the table so that it will represent $y = 1.5x$

First Number, x	0	1	4	10	22	30
Second Number, y						

Problem 10: Fill in the table so that it will represent $y = \frac{2x}{3}$

First Number, x	0	1	3	9	33	36
Second Number, y						

Problem 11: James is playing a game where he receives the same number of points per win. He won 12 times and got 48 points. He won 15 times and got 60 points. Write an equation that represents the relationship between x, the number of times he won, and y, the number of points he earned.

- Make a table of values:

x		
y		

- Check for a common ratio or a common difference.

- Write the equation.

Student Activity 3

MATERIALS: Per Group of 4: 1 set of equation cards; 1 set of table cards; 1 set of situation cards.

PROBLEMS:
- How can you determine the equation that represents the data in a table of values?

PROCEDURE:
- You will work in groups of 4 for Student Activity 3. Your teacher will number you 1, 2, 3, or 4. 1 and 2 will work together and 3 and 4 will work together.

- The set of equations are to be placed face down on the desk top. The set of tables and the set of situations are left face up on the table.

Part 1:

Round 1: Students 1 and 2 randomly select an equation card. They turn the card over. They will look for the situation card that matches the equation. Students 3 and 4 will look for the table of values that matches the equation card. When both cards have been selected, they show the other pair their card. Together the 4 students decide if all three cards represent each other. If they don't agree, they discuss until they come to an agreement. Place the three cards to the side away from the other cards. Fill in the chart below for the equation number selected.

Round 2: Students 3 and 4 randomly select an equation card. They turn the card over. They will look for the situation card that matches the equation. Students 1 and 2 will look for the table of values that matches the equation card. When both cards have been selected, they show the other pair their card. Together the 4 students decide if all three cards represent each other. If they don't agree, they discuss until they come to an agreement. Place the three cards to the side away from the other cards. Fill in the chart below for the equation number selected.

Round 3: Repeat the steps in Round 1.

Round 4: Repeat the steps in Round 2.

Round 5: Repeat the steps in Round 1.

Round 6: Repeat the steps in Round 2.

Equation/Situation/ Table Chart

Equation Card #	Independent Variable	Dependent Variable	Situation Card #	Table Card #
1				
2				
3				
4				
5				
6				

Part 2:

1. Which table cards had a common ratio?

   Which table cards had a common difference?

2. Which type card did you prefer to use to match the equation? Why?

3. Were there any equations that all 4 of you had to discuss because you didn't agree with the choice of matching cards?

   If so, was the discussion able to convince all 4 of you of the correct choice?

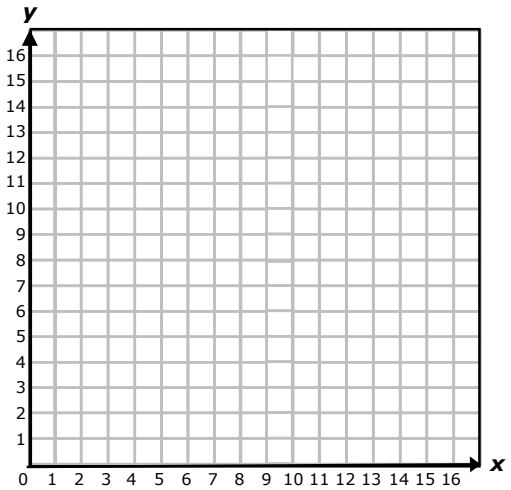
4. Write the equation from Equation card #1. _____

   How did you decide which quantity was the dependent quantity?

5. List another set of values that would belong to Table #2.

   List another set of values that would belong to Table #4.

6. Draw a graph for the equation on Equation card #3. Plot the points from the table and any other appropriate ones you want.



NAME_____ DATE_____ SCORE ___/5

6.6A/6.6B Skills and Concepts Homework 1

1. Explain a dependent variable.

   Give an example of a situation and identify the dependent variable.

2. Look at table below.

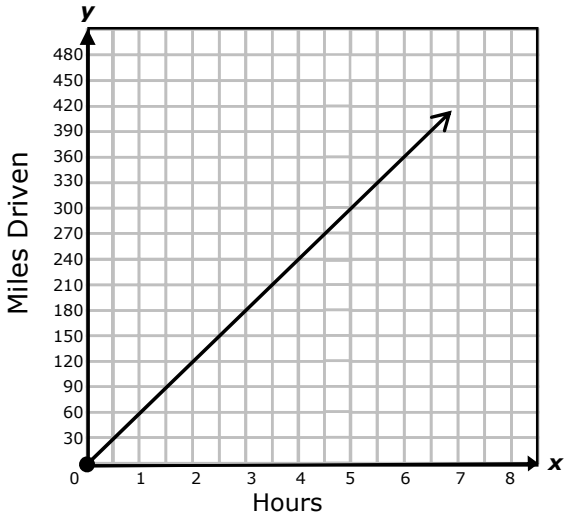
Number of Red Beads	3	5	7	9
Number of Blue Beads	8	10	12	14

   What is the independent variable?_____

   What is the dependent variable? _____

3. Look at the graph below. Identify the independent variable. _____

   Identify the dependent variable. _____



4. Identify the independent variable in each table.

_____

Hours	2	4	8	10
Earnings	$20	$40	$80	$110

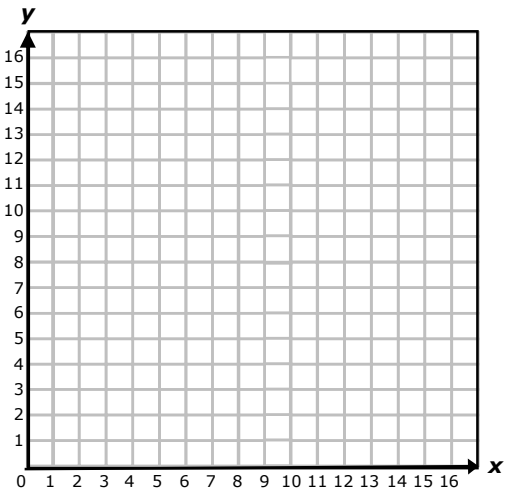
_____

Beth's age	2	4	8	10
Joes' age	12	14	18	20

5. Create a graph to represent the following situation:

   Mary and Brandy walked to the mall from their homes. Mary walked 8 more blocks than her friend Brandy walked.

   Label the axes appropriately.



   The dependent variable is _____ and is labeled on the _____ axis.

NAME_____ DATE_____ SCORE ___/5

6.6A/6.6B Skills and Concepts Homework 2

Write an equation to represent the data in the tables below. Show any work you use to determine your answer.

1.

Width of a Rectangle, *x*	2	9	11	15	23	28	32
Length of a Rectangle, *y*	11	18	22	26	34	39	43

Equation: _____

2.

Number of Bags of Cookies, *x*	2	3	5	8	10	11	12
Number of Cookies, *y*	48	72	120	192	240	264	288

Equation: _____

3.

Number of Tickets, *x*	3	4	6	7	8	10	11
Cost *$*, *y*	18	24	36	42	48	60	66

Equation: _____

4.

Base of a Triangle *(in.)*, *x*	22	26	30	32	40	44	50
Height of a Triangle *(in.)*, *y*	18	22	26	28	36	40	46

Equation: _____

5.

Billy's age, *x*	2	3	5	7	9	11	12
Brad's age, *y*	5	6	8	10	12	14	15

Equation: _____

Six Weeks 3 Review

Six Weeks 3 Review

Lesson 1: 6.4A

1. What will be different between the graphs of $y = x + 3$ and $y = 3x$?

2. Complete the table for the missing values using the multiplicative relationship: $y = 4x$

x	3		6	
y		20		28

3. Does the table below represent an additive relationship or a multiplicative relationship?

x	3	5	6	25
y	6	8	9	28

The table represents a(n) _____relationship because

_____.

Lesson 2: 6.6A/6.6B

1. What is the independent quantity in the table below?

Side length of Square, in., *x*	2	5	6	11
Perimeter of Square, in., *y*	8	20	24	44

2. Write the equation that shows the relationship between *x* and *y* in the table above.

Lesson 3: 6.5A

1. A map is drawn with a centimeter representing 30 miles. If the distance between two towns is 4.5 centimeters on the map, what is the actual distance between the two towns?

2. A triangle has side lengths of 8 centimeters, 9 centimeters, and 14 centimeters. The triangle is to be enlarged by a scale factor of 2.5. What will be the length of the longest side in the enlarged triangle?

3. Based on the table below, what is the constant rate in miles per hour?

Hours, *h*	2	5	6
Miles Driven, *m*	110	275	330

Lesson 4: 6.6C

1. Write an equation and a verbal description for a situation that is represented in the table below.

Width of a Rectangle, *x*	2	4	5	6
Length of a Rectangle, *y*	8	10	11	12

Equation: _____

Verbal Description: _____

_____.

2. For William's birthday party, his mother put balloons on each table. The relationship between the number of balloons and the number of tables decorated is shown in the table below.

Number of Tables	2	4	5
Number of Balloons	8	16	20

Describe the relationship between the number of balloons used and the number of tables decorated.

Lesson 5: 6.7A/6.7C/6.7D

1. In your own words, explain the order of operations rule.

2. Simplify $3+5\times6\div2+2^3$

3. What is a prime number?

4. Circle the prime numbers in the list below.

5 6 9 11 2 3 21 23 25 29 7 17 19

5. Write 100 in prime factorization.

6. $2^2 \times 3 \times 5^2 \times 7$ is the prime factorization for _____.

7. Describe the Commutative Property of Addition.

8. What is the identity number of addition?_____ What is the Identity Property of Addition?

9. What is another name for multiplicative inverse? _____

10. Write an expression that is equivalent to $3(x + 6)$ using the:

    Distributive Property. _____

    Commutative Property of Addition _____

Lesson 6: 6.9A/6.9B

Write an equation or inequality to represent the following situations.

1. The base of a rectangle is 8 units more than the height of the rectangle. The base is 12 units.

2. There are 10 dimes in a collection. The number of dimes is 5 more than the number of nickels in the collection.

3. In a bag, the number of blue tiles is 8 more than the number of red tiles. There are more than 20 blue tiles in the bag.

Lesson 7: 6.8B/6.8C/6.8D

1. A parallelogram has a base of 20 units and a height of 8 units. What is the area of the parallelogram?

2. A trapezoid has bases of 5 inches and 9 inches. The height of the trapezoid is 6 inches. What is the area of the trapezoid?

3. A parallelogram has an area of 50 square inches. The height of the parallelogram is 12 inches. Write an equation that can be used to find the base of the parallelogram.

4. A trapezoid has an area of 300 square units. The bases of the trapezoid are 18 inches and 12 inches. What is the height of the trapezoid?

Lesson 8: 6.12A/6.12B/6.13A

1. Represent the following data in a stem-and-leaf plot.

23, 26, 32, 21, 34, 42, 48, 32, 33, 27, 28, 27, 29, 20, 23

2. What is the center, spread, and shape of the data in the stem-and-leaf plot above?

3. About what percent of the data points in the stem-and-leaf plot were less than 30?

4. Write another question that can be answered using the stem-and-leaf plot.

Lesson 9: 6.12C

Using the data set 6, 8, 5, 11, 12, 8, 6, answer the following questions.

1. What is the range of the data set?

2. What is the median of the data set?

3. What is the mean of the data set?

4. What is the lower quartile?

5. What is the upper quartile?

6. What is the IQR of the data set?

Lesson 10: 6.12C

1. How do you balance a check register?

2. Decide if the following amounts would be added or subtracted from the current balance of a check register. Write Add or Subtract in the blank.

_____ Check #21 written for $42 to gas station

_____ Transferred $100 from savings account into checking account

_____ Used debit card at ATM to withdraw $50 cash

_____Automatic deposit of $2,512 from employer

_____Automatic payment of $343 to Ford Motor Company

3. Justin has a checking account balance of $2,100. He writes checks for $53, $25.75, and $48. What will be his checking account balance be after writing the checks?