



DISTANCE LEARNING PACKET

8TH GRADE

MATH

Eighth-Grade Math

Please Show Your Work Where Required.

If you would like more practice, you may use MobyMax, Study Island, and IXL.

| Day | Cumulative Review | Check When Completed | Review of Concept | Check When Completed | Practice | Check When Completed |
|-----|--|----------------------|--------------------------------------|----------------------|---------------------------|----------------------|
| 1 | transformations angles, triangles, exponents | | Rate of Change | | Rate of Change | |
| 2 | Order of operations Equations, | | Slope of a Line | | Slope of a line | |
| 3 | equations, transformations angles, triangles | | Equations Variables on both sides | | Equations V/both sides | |
| 4 | Equations, transformations | | Special solution Eq. | | Sp. solution | |
| 5 | Equ. Transformations | | Linear/Nonlinear | | Linear/Non | |
| 6 | Volume, slope Pythagorean Theorem | | Eval. Functions | | Ev. Function | |
| 7 | Slope, volume, functions | | Pyth. Th. Converse | | Pyth. Con. | |
| 8 | Linear equations | | Pyth. Theorem | | Pyth. Th. | |
| 9 | Linear functions | | Equations Dis. Prop. | | Equations | |
| 10 | Transformations Angles, sci. notation | | Scientific Notation | | Sci. Notation | |
| 11 | External angles, sci. no. Real numbers | | Translations | | Translations | |
| 12 | Transversals, sci. no. roots | | Reflections | | Reflections | |
| 13 | Sci. notation, est. roots Angles, exponents | | Real Numbers | | Real No. | |
| 14 | Functions Transformations | | Sq. & Cube Roots | | Sq./Cube | |
| 15 | Pythagorean Theorem volume | | Solving Eq. Roots | | Eq. Roots | |
| 16 | Transformations angles | | Rotations | | Rotations | |
| 17 | Functions | | Dilations | | Dilations | |
| 18 | Properties of exponents | | Writing Eq./Graph | | Eq/Graph | |
| 19 | Pythagorean Theorem volume | | Comparing Function | | Com. Fun. | |
| 20 | Comparing using Sci. notation | | Triangle Sum Th. | | Transversals | |
| | | | | | | |

Below are formulas you may find useful as you work the problems. However, some of the formulas may not be used. You may refer to this page as you take the test.

Circumference

$$C = \pi d \text{ or } C = 2\pi r \quad \pi \approx 3.14$$

Area

Rectangle $A = bh$ or $A = lw$

Triangle $A = \frac{1}{2}bh$

Circle $A = \pi r^2$

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

Mean

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$$

Mean Absolute Deviation

$$\frac{\text{Total Distance (of all values from the mean value)}}{\text{Number of values}}$$

Interquartile Range: the difference between the first quartile and third quartile of a set of data

Volume

Right Prism $V = (\text{area of base}) \times (\text{height})$

Cylinder $V = \pi r^2 h$

Sphere $V = \frac{4}{3}\pi r^3$

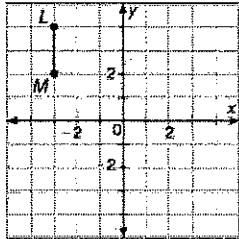
Cone $V = \frac{1}{3}\pi r^2 h$

Name:

Class: 8th Grade Cumulative Review Day1

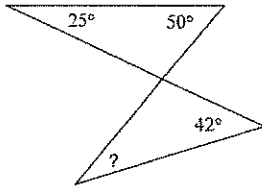
Day 1

Identify the transformation:

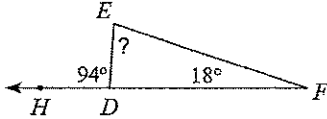


If \overline{LM} is reflected across the x-axis and then translated $(x,y) \rightarrow (x + 4, y + 1)$ in which quadrant is the final image?

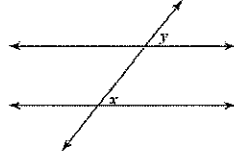
Find the missing angle:



Find the missing angle:



Identify the relationship of the indicated angles:



Simplify using exponent rules

$5^8 \cdot 5^2$ _____ $\frac{6^{11}}{6}$ _____

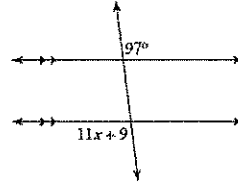
$(3^2)^3$ _____ 8^{-2} _____

Simplify using exponent rules

$x^2 \cdot x^3$ _____ $\frac{x^8}{x^2}$ _____

$(x^8)^3$ _____ $\left(\frac{1}{2}\right)^1$ _____

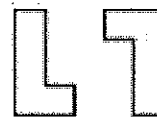
Day 1



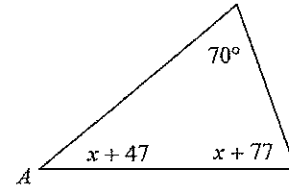
Find the value of x.

The endpoints of \overline{MN} are $M(2, 5)$ and $N(8, -1)$.
What are the new endpoints of \overline{MN} if it is translated with the rule $(x,y) \rightarrow (x + 6, y - 3)$?

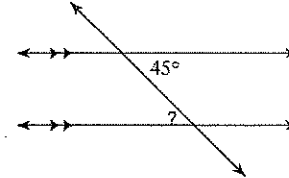
Identify the transformation:



Find the measure of $\angle A$:



Determine the missing angle:



Simplify using exponent rules

$2^3 \cdot 2^5$ _____ $\frac{3^8}{3^3}$ _____

$(2^3)^5$ _____ 2^{-1} _____

Simplify using exponent rules

$5^{11} \cdot 5^2$ _____ $\frac{5^{90}}{5^3}$ _____

$(3^5)^3$ _____ $\left(\frac{1}{2}\right)^3$ _____

Name: _____ Class: _____ Date: _____

Day 1

Rate of Change

Rate of Change - $ROC = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{rise}}{\text{run}} = \text{slope} = m$

Example 1: Determine the rate of change of the linear function represented by each table.

a)

| x | y |
|---|---|
| 1 | 3 |
| 2 | 5 |
| 3 | 7 |
| 4 | 9 |

+1 +2
+1 +2
+1 +2

$$ROC = \frac{\text{change in } y}{\text{change in } x} = \frac{2}{1} = 2$$

b)

| x | y |
|----|-----|
| 2 | 10 |
| 6 | -4 |
| 8 | -11 |
| 12 | -25 |

$$ROC = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - 10}{6 - 2} = \frac{-14}{4} = -\frac{7}{2}$$

c)

| x | y |
|---|---|
| 4 | 9 |
| 4 | 8 |
| 4 | 7 |
| 4 | 6 |

no change in x-values

ROC = undefined

Try: Determine the rate of change of the linear function represented by each table.

a)

| x | y |
|---|----|
| 0 | 14 |
| 3 | 8 |
| 6 | 2 |
| 9 | -4 |

b)

| x | y |
|----|----|
| 0 | 0 |
| 10 | 8 |
| 15 | 12 |
| 25 | 20 |

c)

| x | y |
|----|-----|
| 2 | -10 |
| 8 | -6 |
| 14 | -2 |
| 20 | 2 |

d)

| x | y |
|----|---|
| -1 | 2 |
| 3 | 2 |
| 7 | 2 |
| 11 | 2 |

e)

| x | y |
|----|-----|
| 1 | 5 |
| 5 | -1 |
| 9 | -7 |
| 13 | -13 |

f)

| x | y |
|----|----|
| -1 | 5 |
| -1 | 3 |
| -1 | 0 |
| -1 | -2 |

Steps for Finding Rate of Change from a Scenario:

- 1) Identify the two variables. Classify each as independent or dependent.
- 2) Write two coordinates.
- 3) Find the slope of the line that would pass through those two points.
- 4) Include labels.

Example 2: Determine the rate of change.

- a) In 2011 the Drama Club had 72 members. By 2017 membership had risen to 150. Determine the annual rate of change.

$$(2011, 72) (2017, 150)$$
$$m = \frac{150 - 72}{2017 - 2011} = \frac{78}{6} = 13$$

13 more members per year

- b) Initially there were 120 cookies on display at the bakery. There were only 84 cookies left four hours later. Determine the rate of change.

$$(0, 120) (4, 84)$$
$$m = \frac{84 - 120}{4 - 0} = \frac{-36}{4} = -9$$

9 less cookies per hour

Try: Determine the rate of change.

- a) Initially the outdoor temperature was 83°F. 5 hours later the temperature had decreased to 68°F. Determine the rate of change.

- b) In 1997 there were about 90 available cable channels. There were about 190 cable channels available by 2017. Determine the annual rate of change.

Name: _____ Class: _____ Date: _____

Day 1

Rate of Change
Practice

For 1-9, determine the rate of change of the linear function represented by each table.

1)

| x | y |
|---|----|
| 1 | 10 |
| 2 | 7 |
| 3 | 4 |
| 4 | 1 |

2)

| x | y |
|---|----|
| 1 | 0 |
| 2 | 4 |
| 3 | 8 |
| 4 | 12 |

3)

| x | y |
|---|----|
| 2 | 4 |
| 4 | 1 |
| 6 | -2 |
| 8 | -5 |

4)

| x | y |
|---|---|
| 3 | 3 |
| 3 | 5 |
| 3 | 7 |
| 3 | 9 |

5)

| x | y |
|----|----|
| 4 | -1 |
| 8 | 1 |
| 12 | 3 |
| 16 | 5 |

6)

| x | y |
|----|----|
| 6 | 9 |
| 14 | 3 |
| 22 | -3 |
| 30 | -9 |

7)

| x | y |
|----|----|
| 1 | 2 |
| 5 | 10 |
| 6 | 12 |
| 10 | 20 |

8)

| x | y |
|----|----|
| -5 | -4 |
| -2 | -4 |
| 0 | -4 |
| 4 | -4 |

9)

| x | y |
|----|----|
| -4 | -7 |
| 2 | -4 |
| 8 | -1 |
| 14 | 2 |

For 10-13, determine the rate of change.

10) In 2015 the basketball team had 48 players tryout. By 2017 the number of players that tried out dropped to 42. Determine the annual rate of change.

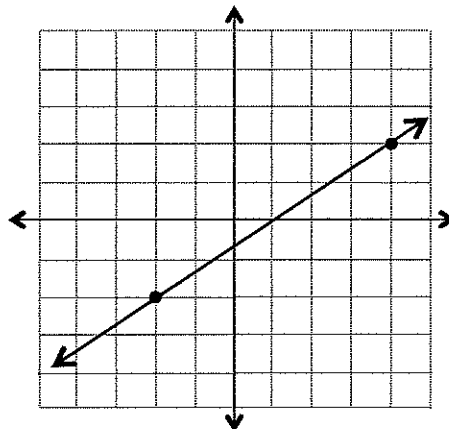
11) Initially there were 8 boxes of pizza at the party. After 30 minutes, there were four boxes left. Determine the rate of change.

12) A manufacturing company can produce 2,400 glassware items in 8 hours and 3,600 items in 12 hours. Determine the rate of change.

13) In 2009 a dog grooming business had 22 clients. By 2017 that number had grown to 110. Determine the annual rate of change.

14) Find the rate of change of the function in the table and the function in the graph. Consider the process and the result. Identify a similarity and a difference.

| x | y |
|----|----|
| -6 | -2 |
| -3 | 0 |
| 0 | 2 |
| 3 | 4 |



Name:

Class:

8th Grade Cumulative Review Day 2

Day 2

Day 2

Janet has \$120. If she saves \$20 per week, in how many days will she have \$500?

Solve the following:

$$27 - 4x = -7(1 + 3x)$$

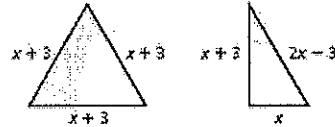
Simplify:

$$12 - 15 \div 3 - 3$$

7 times a number equals 3 less than 5 times that number. What is the number?

Two less than 2 times a number is the same as the number plus 64. What is the number?

These two triangles have the same perimeter. Solve for x.



Solve the following:

$$-7x + 5 = 8x - 25$$

3 packs of soda cost \$10 less than 5 packs of soda. Write an equations that models this.

Solve the following:

$$2(6x + 5) = 94$$

Solve the following:

$$2x - 2 = 4x + 6$$

Solve the following:

$$328 = 8(5 - 6x)$$

Solve the following:

$$-7(1 - 8x) = 105$$

Solve the following:

$$-3x + 7(x + 5) = 5x + 38$$

Solve the following:

$$-(5x + 7) + 1 = -5x - 5$$

Solve the following:

$$-3(x - 8) + 7x = 12$$

Solve the following:

$$-4x - 2 = -2(1 - 4x)$$

Name: _____ Class: _____ Date: _____

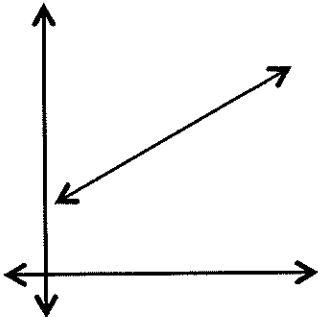
Day 2

Slope of a Line

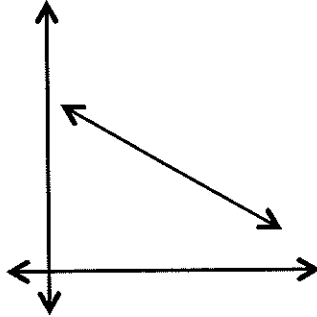
Slope - a ratio that represents the steepness and direction of a line, represented by "m"

On a graph use: $\frac{\text{Rise}}{\text{Run}}$

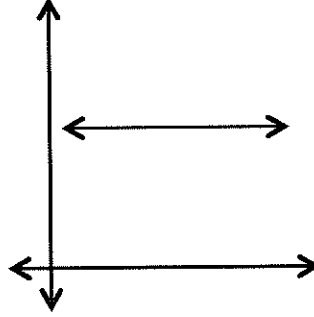
Positive Slope



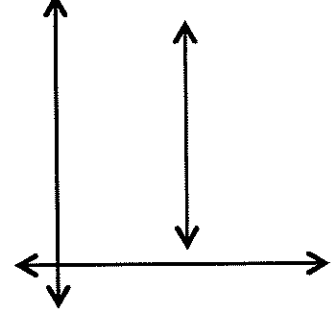
Negative Slope



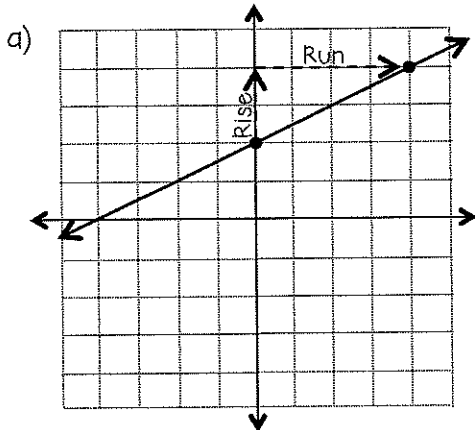
Zero Slope



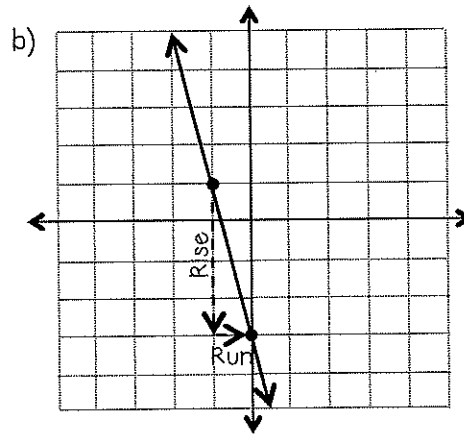
Undefined Slope



Example 1: Determine the slope of the line.

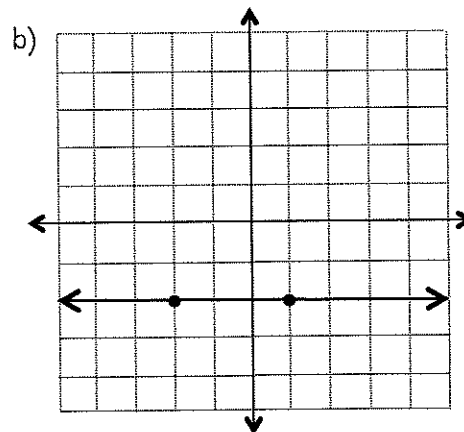
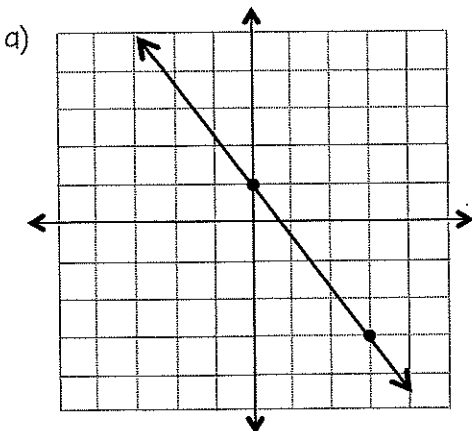


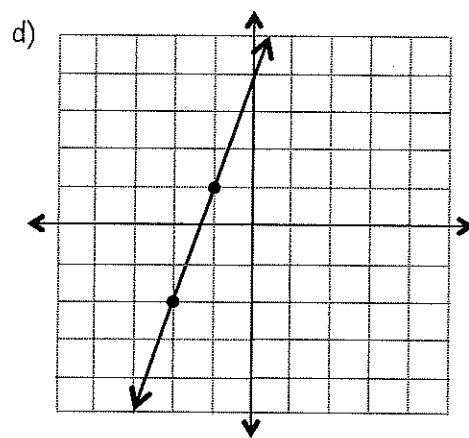
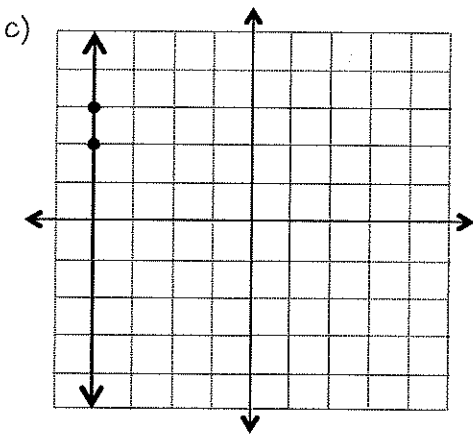
$$m = \frac{\text{Rise}}{\text{Run}} = \frac{2}{4} = \frac{1}{2}$$



$$m = \frac{\text{Rise}}{\text{Run}} = \frac{-4}{1} = -4$$

Try: Determine the slope of the line.





Slope Formula:

$$m = \frac{y_2 - y_1}{x_2 - x_1} \text{ given points } (x_1, y_1) \text{ and } (x_2, y_2)$$

Example 2: Determine the slope of the line that passes through the given points.

a) (5, 4) and (7, 0)

b) (3, 5) and (3, -1)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 4}{7 - 5} = \frac{-4}{2} = -2$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 5}{3 - 3} = \frac{-6}{0} = \text{undefined}$$

Try: Determine the slope of the line that passes through the given points.

a) (3, -1) and (4, 3)

b) (5, 6) and (-1, 12)

c) (4, -2) and (0, -2)

d) (-3, -4) and (3, 0)

e) (-2, -5) and (8, -11)

f) (1, 8) and (1, 5)

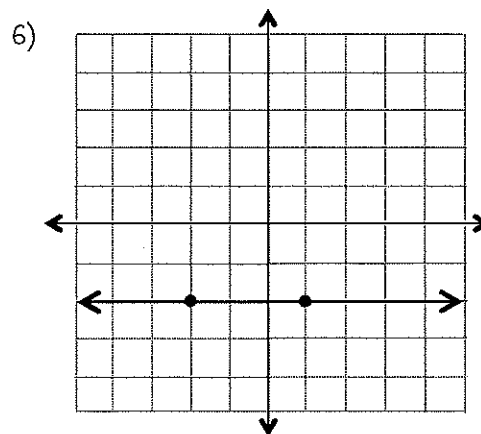
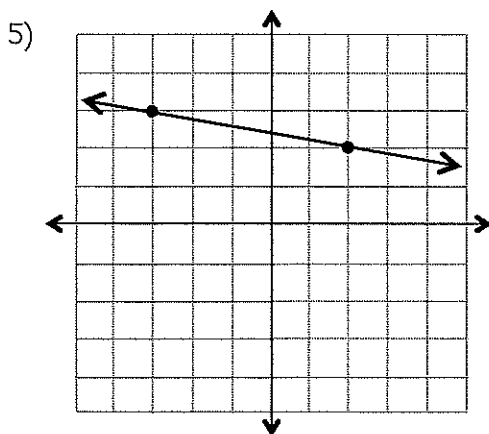
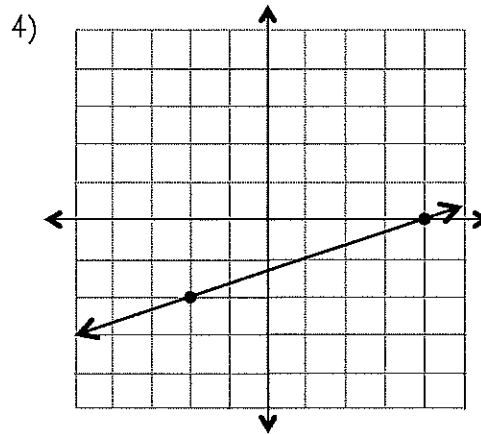
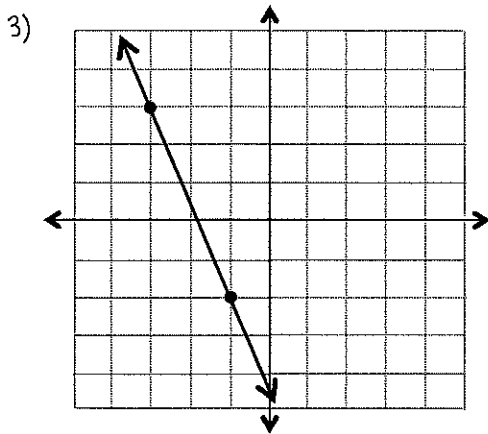
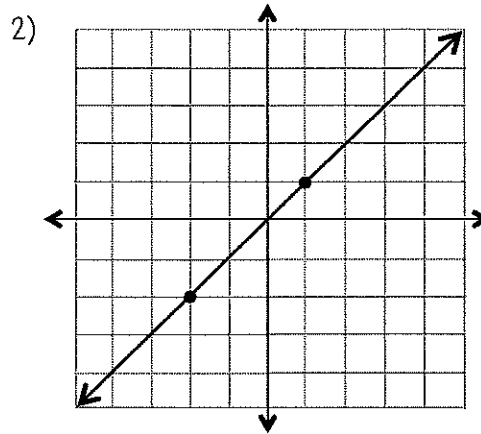
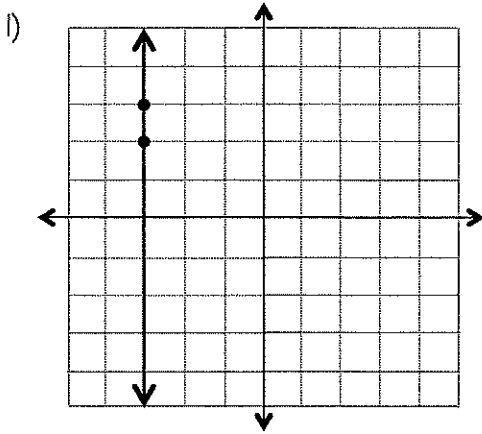


Name: _____ Class: _____ Date: _____

Day 2

Slope of a Line
Practice

For 1-6, determine the slope of the line.



For 7-14, determine the slope of the line that passes through the given points.

7) $(-3, -1)$ and $(1, 1)$

8) $(2, 5)$ and $(-2, 5)$

9) $(-3, -1)$ and $(-2, -6)$

10) $(-1, 0)$ and $(3, 5)$

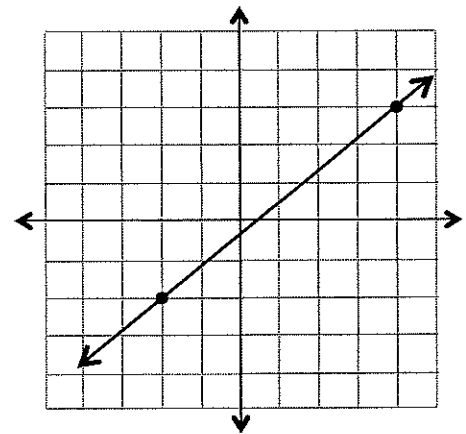
11) $(0, 0)$ and $(3, -7)$

12) $(-3, 2)$ and $(-3, 10)$

13) $(-2, 1)$ and $(2, -5)$

14) $(-5, -3)$ and $(-2, 6)$

15) Jenny says the slope of the line is 1. Mark says the slope of the line is $\frac{6}{5}$. Is either student correct? Explain any error(s).



16) Find the value for x that makes the statement true:

The slope of the line that passes through $(3, 4)$ and $(5, x)$ is 0.



Day 3

Day 3

The average of Johnny's two tests is a 92. What must he get on a 3rd test to raise his average to a 94?

A car needs fixing and Abe can fix it for \$70 per hour with a \$130 part, but Gabe can fix it for \$80 an hour with a \$40 part. How long will it take for both Abe and Gabe to cost the same amount?

How many solutions does the equation have?
 $-10(x - 1) = 10 - 10x$

Solve the equation for x:
 $16 = 2(x + 1)$

What kind of transformation is depicted in the pictures below?



Give the vertices of a triangle that dilated twice as big as $\triangle ABC$ if $A(0, 0)$, $B(8, 2)$, and $C(12, 5)$ (centered at the origin).

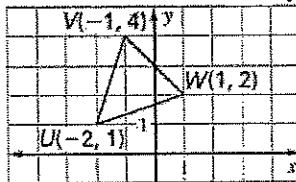
Solve the equation for y:

$$x = 2y - 3$$

Solve the equation for w:

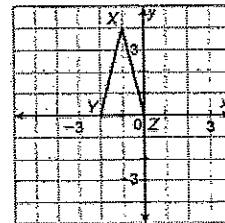
$$4 - \frac{2}{7}w = 18$$

Reflect $\triangle UVW$ over the y-axis

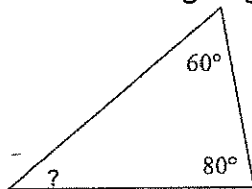


Point $F(-17, 8)$ is rotated 180° about the origin. What are the coordinates of image F' ?

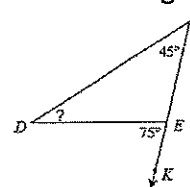
If $\triangle XYZ$ is dilated by a factor of 3, what would be the area of the $\triangle X'Y'Z'$?



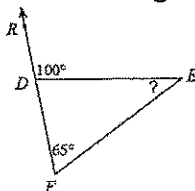
Find the missing angle.



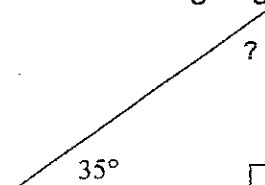
Find the missing angle.



Find the missing angle.



Find the missing angle.



Name: _____ Class: _____ Date: _____

Day 3

Solving Equations with the Variable on Each Side

Steps for Solving an Equation with the Variable on Each Side:

- 1) If able, distribute and/or combine like terms.
- 2) Add or subtract an "x" term to move it to the other side.
- 3) Continue to solve.

Example 1: Solve each equation. Show your work.

a) $2x + 3 = x - 7$

$$\begin{array}{r} \underline{-x} \quad \underline{-x} \\ x + 3 = -7 \\ \underline{-3} \quad \underline{-3} \\ x = -10 \end{array}$$

b) $5x + 1 = 2x - 5$

$$\begin{array}{r} \underline{-2x} \quad \underline{-2x} \\ 3x + 1 = -5 \\ \underline{-1} \quad \underline{-1} \\ 3x = -6 \quad x = -2 \\ 3 \quad 3 \end{array}$$

c) $4x + 9 = -2x - 15$

$$\begin{array}{r} \underline{+2x} \quad \underline{+2x} \\ 6x + 9 = -15 \\ \underline{-9} \quad \underline{-9} \\ 6x = -24 \quad x = -4 \\ 6 \quad 6 \end{array}$$

d) $-2(4x + 1) = 3(x + 3)$

$$\begin{array}{r} -8x - 2 = 3x + 9 \\ \underline{+8x} \quad \underline{+8x} \\ -2 = 11x + 9 \\ \underline{-9} \quad \underline{-9} \\ -11 = 11x \quad -1 = x \\ 11 \quad 11 \end{array}$$

Try: Solve each equation. Show your work.

a) $2x - 1 = 3x + 8$

b) $6x + 3 = 2x - 9$

c) $3x - 2 = -3x + 1$

d) $3(2x - 5) = -(x + 1)$

Example 2: Use the Five-Step Method to solve each word problem.

- a) Joanne designs and sells t-shirts through an online forum. She paid \$80 for general supplies. It costs her \$2 to make each t-shirt. She charges \$6 per shirt. Determine how many t-shirts Joanne needs to sell in order to break even.

n = number of t-shirts to break even

$$80 + 2n = 6n$$

$$n = 20$$

She will need to sell 20 t-shirts to break even.

$$80 + 2(20) \stackrel{?}{=} 6(20)$$

$$120 = 120$$

Five-Step Method

D Define the variable.

E Write the equation.

S Solve the equation.

A Answer the question.

C Check your answer.

- b) The greater of two consecutive even integers is eleven more than half the lesser. Determine the integers.

n = lesser even integer

$n + 2$ = greater even integer

$$n + 2 = \frac{1}{2}n + 11$$

$$n = 18$$

The integers are 18 and 20.

$$18 + 2 \stackrel{?}{=} \frac{1}{2}(18) + 11$$

$$20 = 20$$

Try: Kyle and Michael run a lap around a track. Kyle gets a 50 meter head start and runs 3 meters per second. Michael runs at a speed of 4 meters per second. How long will it take for Michael to reach Kyle?

Name: _____ Class: _____ Date: _____



Solving Equations with the Variable on Each Side Practice

For 1-9, solve each equation. Show your work.

1) $5e + 1 = 3e + 5$

2) $4a - 2 = 3a - 7$

3) $j - 6 = 2j + 3$

4) $-3b + 2 = 4b - 12$

5) $f - 8 = -3f$

6) $c + 3c + 2 = 5c - 1$

7) $3(d + 1) = 2(3d - 9)$

8) $h = 5(h - 4)$

9) $\frac{1}{2}(2g - 8) = -4(g + 1)$

For 10-11, use the 5-Step Method to solve.

10) Leah is running a bake sale for her crew team. She pays \$45 for supplies to get started. In addition, it costs about \$0.50 to make each item. If baked good items sell for \$2 each, determine how many items Leah and her team will need to sell in order to break even.

11) The greater of two consecutive integers is seven less than one-third the smaller integer. Find the integers.

12) Select the equation that does not belong.

a. $x + 1 = -2x + 4$

b. $3x - 2 = -5x + 14$

c. $2x + 5 = 4x - 3$

d. $2x + 5 = -3x - 5$

13) Identify the error. Then solve the equation correctly.

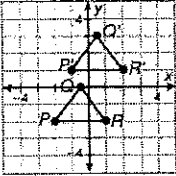
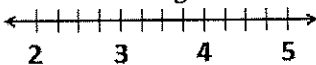
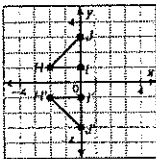
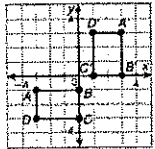
$$\begin{array}{r} 3x + 4 = 8x - 11 \\ +3x \quad +3x \\ \hline 4 = 11x - 11 \\ +11 \quad +11 \\ \hline 15 = 11x \\ 11 \quad 11 \\ \hline \frac{4}{11} = x \end{array}$$



Name:

Class:

8th Grade Cumulative Review Day 4

| Day 4 | Day 4 |
|--|--|
| <p>Fill in the blank:</p> <p>A _____ (or flip) is a transformation over a line</p> <p>A _____ is a transformation about (or around) a point</p> | <p>Is the following a rotation, reflection or translation?</p>  |
| <p>Jim gets a \$20 allowance per week plus \$25 for every lawn he mows. If he made \$345 in one week, how many lawns did he mow?</p> | <p>Solve:</p> $9 - x = -47$ |
| <p>Solve and plot your answer on the number line below:</p> $4x + 1 = \frac{1}{3}x + 10$  | <p>Solve:</p> $-16 = \frac{4}{3}x - 8$ |
| <p>Write and solve an equation based off the verbal phrase.</p> <p>The sum of x and 9 is divided by 2. That quantity is equal to 3x.</p> | <p>Write and solve an equation based off the verbal phrase.</p> <p>The difference between 4 and the product 6x is 40.</p> |
| <p>Solve the following:</p> $7(x + 4) = 8x + 31$ | <p>Solve the following:</p> $-(6x + 6) + 2 = -6x - 3$ |
| <p>Solve for the variable m.</p> $m - n = 5$ | <p>Solve:</p> $11 = -x - 7$ |
| Extra Credit Problem | |
| <p>Is the following a rotation, reflection or translation?</p>  | <p>Is the following a rotation, reflection or translation?</p>  |
| <p>A segment with endpoints (5,8) and (-6,8) is rotated around the origin. How long will the new segment be?</p> | <p>$\triangle XYZ$ at $X(-6, 1)$, $Y(4, 0)$, $Z(1, 3)$ is translated left 9 and up 12. What are the new coordinates of the triangle?</p> |

Name: _____ Class: _____ Date: _____

Day 4

Solving Equations with Special Solutions

| Type of Solution | What You See | Examples | What This Means |
|------------------|--|----------------------------|---|
| One Solution | The variable remains in the equation and will be equal to one value. | $x=2$ $x=0$ $-1=x$ | There is one solution that satisfies the equation. |
| No Solution | The variable can be eliminated from the equation and an untrue equation is left. | $0=4$ $-8=8$ $x+1=x$ | There is no solution that can make the equation true. |
| All Real Numbers | The variable can be eliminated from the equation and a true equation is left. | $0=0$ $5=5$ $x=x$ | Any real number can make the equation true. (There are infinite solutions.) |

Example 1: Solve each equation. Show your work.

a) $2(6x - 9) = 3(4x - 6)$
 $12x - 18 = 12x - 18$
 $\underline{-12x \quad -12x}$
 $-18 = -18$
 All Real Numbers

b) $-(4x - 6) = 2(4 - 2x)$
 $-4x + 6 = 8 - 4x$
 $\underline{+4x \quad +4x}$
 $6 = 8$
 No Solution

c) $3(2x - 4) = -6(x + 2)$
 $6x - 12 = -6x - 12$
 $\underline{+6x \quad +6x}$
 $12x - 12 = -12$
 $\underline{+12 \quad +12}$
 $12x = 0$
 $12 \quad 12$
 $x = 0$

d) $-5(2x - 2) = \frac{2}{3}(3x - 3)$
 $-10x + 10 = 2x - 2$
 $\underline{+10x \quad +10x}$
 $10 = 12x - 2$
 $\underline{+2 \quad +2}$
 $12 = 12x$
 $12 \quad 12$
 $1 = x$



Try: Solve each equation. Show your work.

a) $\frac{1}{2}(4x - 8) = -(4x - 8)$

b) $2(3x - 3) = \frac{2}{3}(9x - 6)$

c) $4(2x + 5) - 8(x + 2) = 4$

d) $\frac{1}{5}(10 - 5x) = 2x + 3x + 2$

Example 2: For each problem, determine whether there is one solution, no solution, or infinite solutions. Show or explain how you know.

a) Five times the sum of a number and one is equal to the product of five and the number.

$$5(n+1)=5n \rightarrow 5n+5=5n \rightarrow 5=0 \rightarrow \text{No Solution}$$

b) The sum of a number and twice the number equals four times the number less six.

$$n+2n=4n-6 \rightarrow 3n=4n-6 \rightarrow -n=-6 \rightarrow n=6 \rightarrow \text{One Solution}$$

Try: For each problem, determine whether there is one solution, no solution, or infinite solutions. Show or explain how you know.

a) Three more than the product of two and a number is the same as two times the number increased by 3.

b) Six times the sum of a number and five equals thirty.



Name: _____ Class: _____ Date: _____

Day 4

Solving Equations with Special Solutions
Practice

For 1-9, solve each equation. Show your work.

1) $8e + 3 = 3 + 8e$

2) $6e - 2 = 6e + 3$

3) $2j + 9 = 5j + 9$

4) $3b + 4b - 2 = 7b - 6 + 4$

5) $2(5f - 8) = 10f - 8$

6) $4(3c + 8) = 3(4c + 10)$

7) $5(d - 7) = 7(2d - 5)$

8) $\frac{1}{2}(2h - 10) = -(3h - 7)$

9) $\frac{2}{3}(6g - 12) = \frac{1}{2}(8g - 16)$

For 10-12, determine whether there is one solution, no solution, or infinite solutions. Show or explain how you know.

10) Twice a number is the same as two times the sum of the number and five.

11) Five more than the product of two and a number is the same as the product of three and the number increased by five.

12) Two times the sum of twice a number and four is four times the sum of a number and two.

13) Select the equation that does not belong.

a. $-2(x - 3) = -(2x - 2)$

b. $4x - 5 = -5 + 4x$

c. $3(4x - 2) = 2(6x - 3)$

d. $2(7x - 1) - 9x - 5x = -2$

14) Identify the error. Then solve the equation correctly.

$$4(3x - 6) = 3(2x - 8)$$

$$12x - 24 = 6x - 24$$

$$\begin{array}{r} +24 \\ \hline 12x = 6x \end{array}$$

$$12x = 6x$$

No Solution

Day 5

Simplify:

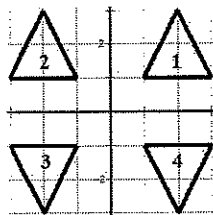
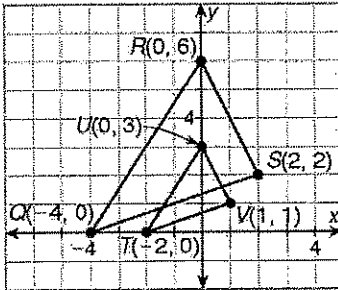
$$z - \frac{y-1}{3}$$

If $y = 4$ and $z = 3$

You are responsible for buying the hamburger rolls for an upcoming picnic. Each bag of rolls costs \$1.30 and contains 8 rolls. You need to buy a total of 64 rolls. How much money will it cost for the rolls?

Jim's teacher wants to buy note pads for the entire class. If note pads cost \$1.75 each, write an equation that shows how many can be bought with \$40.

What is the scale factor from $\triangle TUV$ to $\triangle QRS$?



If $\triangle 1$ is the preimage, which triangles could be the image after a reflection?

If $\triangle 1$ is the preimage, which triangles could be the image after a rotation?

Give a rule that would translate $\triangle 3$ to $\triangle 4$.

Day 5

Simplify:

$$y + z - 2y$$

If $y = 4$ and $z = 2$

What kind of transformation is depicted in the picture below?



Solve the equation for x :

$$\frac{x}{2} - 8 = 17$$

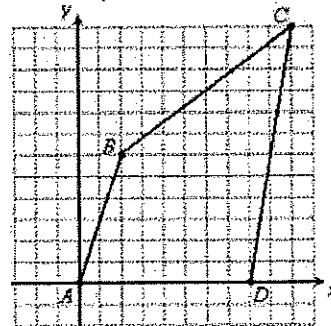
Solve the equation for x

$$4(8x - 8) = -192$$

Solve the equation for x

$$2(2x - 1) = x$$

Draw a new figure that has been dilated by a factor of $\frac{1}{2}$. (centered at the origin).



$\triangle XYZ$ at $X(-6, 1)$, $Y(4, 0)$, $Z(1, 3)$ is reflected across the y -axis. What are the new coordinates of the triangle?

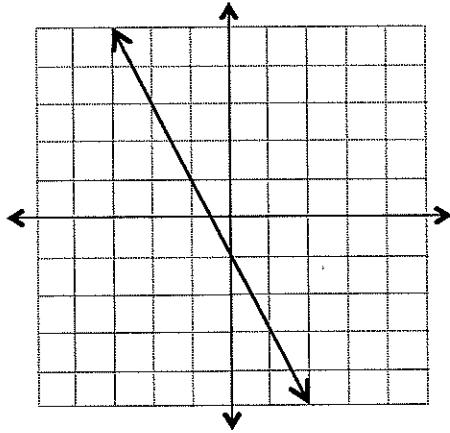
Name: _____ Class: _____ Date: _____

Day 5

Linear v. Nonlinear Functions

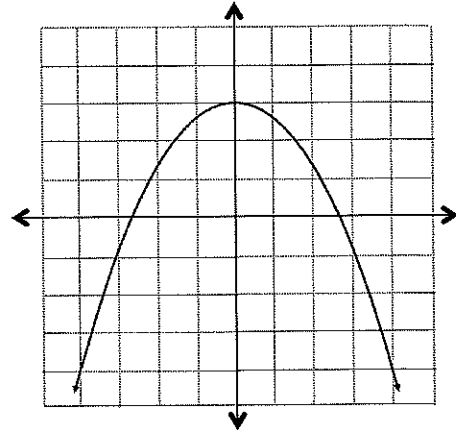
Example 1: Identify each function as linear or nonlinear.

a)



linear

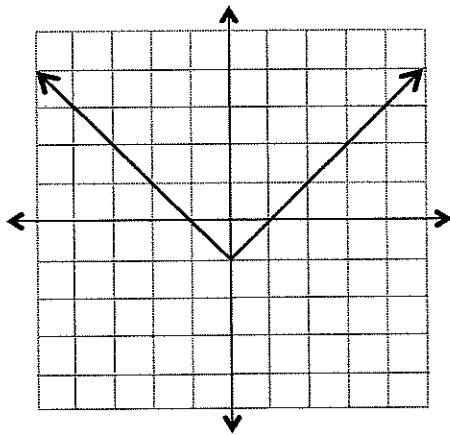
b)



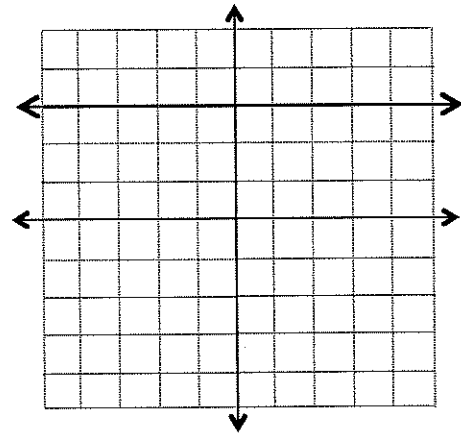
nonlinear

Try: Identify each function as linear or nonlinear.

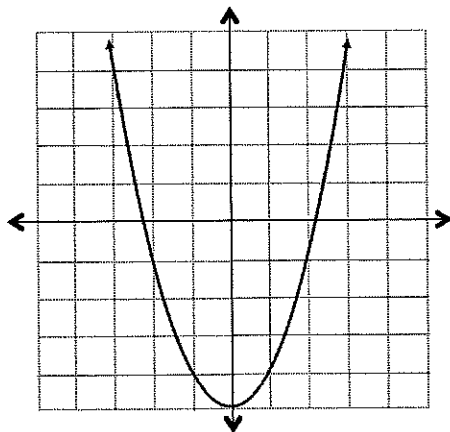
a)



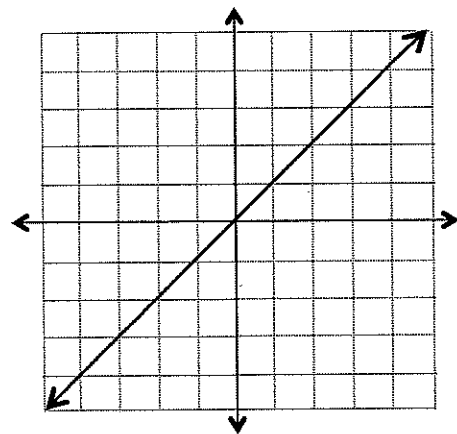
b)



c)



d)



Example 2: Identify each function as linear or nonlinear.

a) $y = 2x^2$

nonlinear

b) $y = -x - 5$

linear

c) $y = |4x - 1|$

nonlinear

Try: Identify each function as linear or nonlinear.

a) $y = \frac{2}{3}x$

b) $y = \frac{1}{2}x^2 - 4$

c) $y = 5$

d) $y = 6^x$

e) $y = |-x - 3|$

f) $y = -3x - 10$

Example 3: Identify each function as linear or nonlinear.

a)

| x | y |
|---|----|
| 0 | 4 |
| 1 | 6 |
| 2 | 8 |
| 3 | 10 |

linear

b)

| x | y |
|---|----|
| 1 | 1 |
| 2 | 4 |
| 3 | 9 |
| 4 | 16 |

nonlinear

c)

| x | y |
|---|----|
| 0 | 2 |
| 2 | 4 |
| 4 | 8 |
| 6 | 16 |

nonlinear

Try: Identify each function as linear or nonlinear.

a)

| x | y |
|---|----|
| 0 | 14 |
| 2 | 11 |
| 4 | 8 |
| 6 | 5 |

b)

| x | y |
|---|----|
| 1 | -3 |
| 2 | -1 |
| 3 | 1 |
| 4 | 3 |

c)

| x | y |
|----|---|
| -4 | 5 |
| -2 | 3 |
| 0 | 1 |
| 2 | 3 |



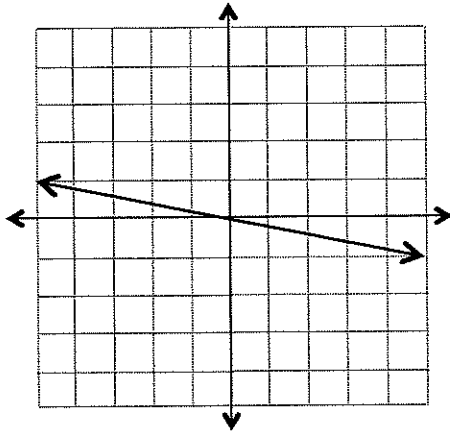
Name: _____ Class: _____ Date: _____

Day 5

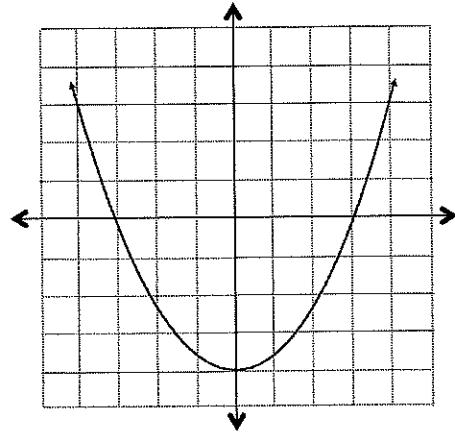
Linear and Nonlinear Functions Practice

For 1-13, identify each function as linear or nonlinear.

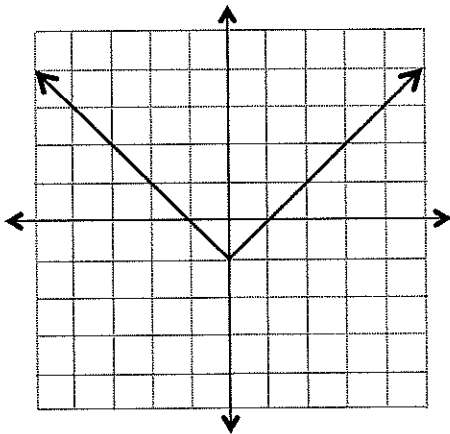
1)



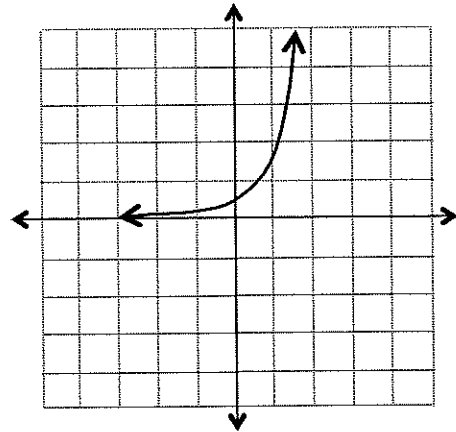
2)



3)



4)



5) $y = |x + 1|$

6) $y = 3x^2$

7) $y = -\frac{4}{3}x - 3$

8) $y = -1$

9) $y = \frac{1}{4}x + 9$

10) $y = \frac{3}{2}(2^x)$

11)

| x | y |
|---|----|
| 0 | 1 |
| 1 | 3 |
| 2 | 9 |
| 3 | 27 |

12)

| x | y |
|----|----|
| -5 | 4 |
| 0 | 1 |
| 5 | -2 |
| 10 | -5 |

13)

| x | y |
|---|----|
| 0 | 0 |
| 2 | 6 |
| 4 | 18 |
| 6 | 38 |

14) Landon and Evelyn each answered the homework question below. Determine whether Landon, Evelyn, or neither are correct. Explain your thinking. Clearly state the correct answer.

Determine whether the function in the table is linear, quadratic, exponential, or absolute value.

Landon
The function in the table is exponential because the x is multiplied by 10, 4, 2, then 1.

| x | y |
|---|----|
| 1 | 10 |
| 2 | 8 |
| 3 | 6 |
| 4 | 4 |

Evelyn
The function in the table is absolute value because all of the numbers are positive.

15) Identify which parent function is linear.

a) $f(x) = |x|$

b) $f(x) = x$

c) $f(x) = b^x$

d) $f(x) = \frac{1}{x}$

16) Explain why this graph does NOT represent a linear function.

