

**Simplifying/Evaluating Expressions**

**KEY WORDS**

- Which is EQUIVALENT
- SIMPLIFY
- Which is FACTORED COMPLETELY
- =

**WHAT TO DO**

Choose a unique random number (not equal to 0 or 1) to substitute for each variable. The number 2 usually works. Use the calculator to calculate the value of the problem, write it down. Calculate the value of each answer choice. The value of the answer choice that matches the value problem is the answer.

It may be helpful to use the STO button in the calculator to substitute.

**Which expression is equivalent to  $\frac{18c^8d^9}{9c^3d^6}$  ? Assume the denominator does not equal zero.**

- A**  $2c^5d^3$
- B**  $9c^5d^3$
- C**  $2c^{11}d^{15}$
- D**  $9c^{11}d^{15}$

**Factors, Roots, Zeros, Intercepts**

**KEY WORDS**

- zero
- root
- solutions (given graph)
- factors

**WHAT TO DO**

Remember

- zeros are values of x that make the function (y value) equal zero
- Zeros, roots, solutions are the x-intercepts on a graph
- A polynomial and its factors, when graphed, will intersect at the x axis

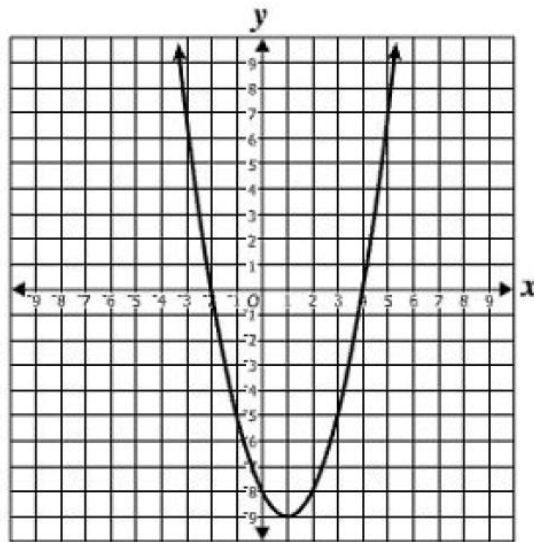
**Look at function  $g$ .**

$$g(x) = 9x^2 - 16$$

**Which set contains only the zeros of function  $g$  ?**

- A**  $\left\{ -\frac{4}{3}, \frac{4}{3} \right\}$
- B**  $\left\{ -\frac{4}{3}, 0, \frac{4}{3} \right\}$
- C**  $\{ -16, 9 \}$
- D**  $\{ -16, 0, 9 \}$

The graph of  $y = x^2 - 2x - 8$  is shown.



What are the solutions to  $x^2 - 2x - 8 = 0$  ?

- A  $x = 1$  and  $x = -9$
- B  $x = 0$  and  $x = -8$
- C  $x = -2$  and  $x = 4$
- D  $x = -4$  and  $x = 2$

Which binomial is a factor of  $c^2 - 12c + 32$  ?

- A  $c - 12$
- B  $c - 8$
- C  $c - 2$
- D  $c - 1$

Linear Equations

KEY WORDS

- Graph the equation of the line . . .
- Write an equation for the line . . .
- Which equation is the slope-intercept form

WHAT TO DO

Remember  $y = mx + b$

$$m = \text{slope} = \frac{\text{rise}}{\text{run}}$$

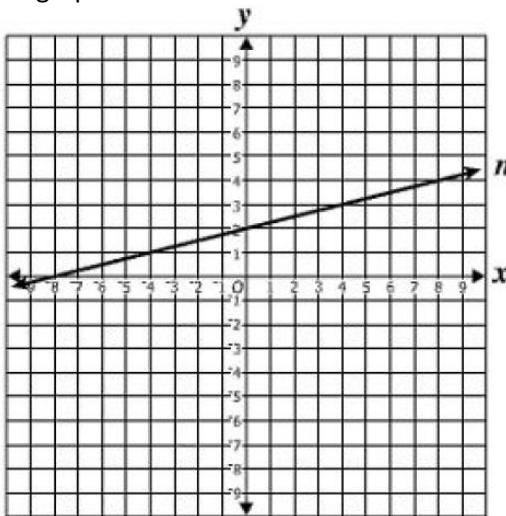
$b = y\text{-intercept} = \text{point where line crosses the } y\text{-axis}$

What is the slope of the line represented by this equation?

$$3x + 5y = -7$$

Slope =

The graph of line  $n$  is shown.



Which number is closest in value to the slope of line  $n$  ?

- A -4
- B  $-\frac{1}{4}$
- C  $\frac{1}{4}$
- D 4

Matching Tables, Equations, and Graphs

KEY WORDS

- Which equation describes the table
- Which table represents the equation
- Line of best fit
- Predict . . .

WHAT TO DO

To create an equation from a table, use STAT. Unless the problem says “quadratic” use a linear regression to get the equation.

To match a table to an equation, put the equation in Y=. Press 2<sup>nd</sup> TABLE to see a table of values and compare.

Which equation represents the pattern shown in the table?

$x$	$y$
-3	-10
-2	-7
-1	-4
0	-1

- A  $y = -3x - 19$
- B  $y = -x - 13$
- C  $y = x - 1$
- D  $y = 3x - 1$

**Solving Equations and Systems of Equations**

**KEY WORDS**

- Find the SOLUTION
- SOLVE the equation
- What value will make the statement true
- $x = \underline{\hspace{1cm}}$

**WHAT TO DO**

For one equation (linear or quadratic), in the calculator, put the left side of the equation as  $y_1$ , put the right side of the equation as  $y_2$ . Graph the equations. Find the intersection (2<sup>ND</sup>, CALC, 5.Intersect). The solution is the  **$x$ -value**.

For systems of equations (two equations), solve both equations for  $y$ . In the calculator, put the first equation in  $y_1$ , put the second equation in  $y_2$ . Graph the equations, find the point of intersection. The solution is the  $x$ -value and the  $y$ -value.

You may have to adjust the WINDOW to see the point of intersection.

**What value of  $p$  will make this equation true?**

$$\frac{6p + 4}{6} = \frac{4p - 8}{3}$$

**Look at the system of equations.**

$$\begin{cases} y = -x + 2 \\ 7x + 4y = -1 \end{cases}$$

**What is the value of  $x$  for the solution to this system of equations?**

- A -5      B -3      C 3      D 5

**Direct Variations**

**KEY WORDS**

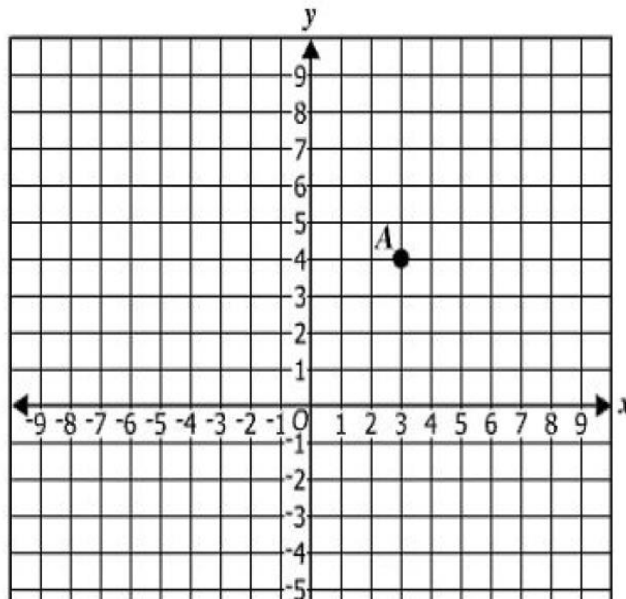
- Varies Directly
- Direct Variation

**WHAT TO DO**

Remember for direct variations

- passes through the origin
- use  $y = kx$
- $k$  is the constant of variation (slope)
- when  $x$  gets big,  $y$  gets big (for positive values)

The graph of the equation representing a direct variation passes through point  $A$ . Locate one additional point that is on the graph of this equation.



Two relationships are described.

**Relationship S:** Karen drove 160 miles in 4 hours, and then she drove 80 miles in 2 hours.

**Relationship T:** Vernon cooked 6 hamburgers in 10 minutes, and then he cooked 9 hamburgers in 15 minutes.

Which statement is true about these relationships?

- A Neither relationship is a direct variation.
- B Both relationships are direct variations.
- C Only Relationship S is a direct variation.
- D Only Relationship T is a direct variation.

Function Notation

KEY WORDS

- function (of  $x$ )
- domain
- range

WHAT TO DO

Remember

- if  $X$  repeats, it is **NOT** a function
- domain uses  $x$  values (left and right)
- range uses  $y$  values (up and down)
- plug in  $x$  values to get  $y$  values

Using the ordered pairs shown, create a relation containing three ordered pairs with a domain of  $\{-1, 2, 4\}$ .

{  ,  ,  }

$(-3, -1)$	$(4, -2)$
$(-1, 0)$	$(3, 4)$
$(-2, 2)$	$(2, 3)$

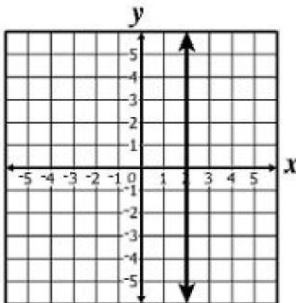
Which relation is a function?

A  $\{(-3, 3), (5, 5), (-3, 2), (5, 3)\}$

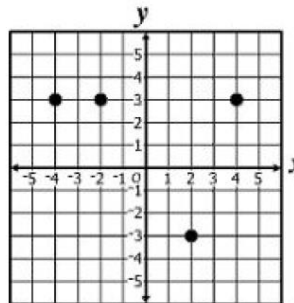
C

Domain	Range
4	3
5	4
2	5
4	6

B



D



What is  $f(-8)$  for the function  $f$  ?

$$f(x) = \frac{11(x - 24)}{2}$$

A -56

B -88

C -176

D -352

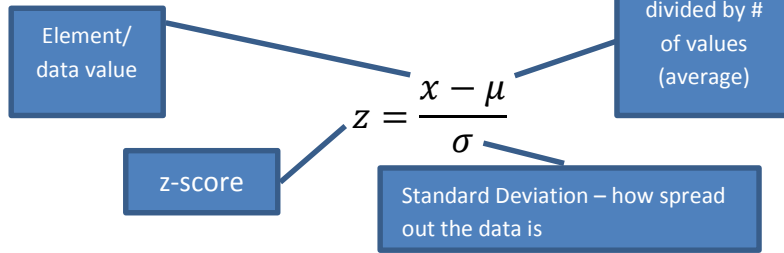
Statistics

**KEY WORDS**

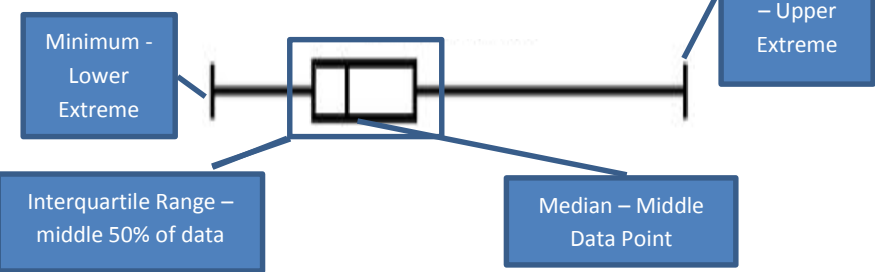
- mean
- standard Deviation
- z-score
- box and whisker plot

**WHAT TO DO**

To find the z-score use the formula



**Box and Whisker Plots**



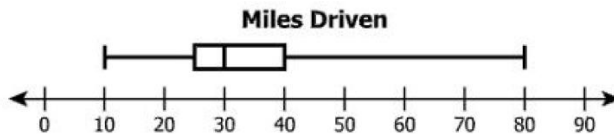
**Statistical information for a data set is given.**

- **The mean is 18.1.**
- **The z-score for 13.0 is -1.7.**

**What is the standard deviation for this data set?**

- A 1/7      B 3.0      C 3.4      D 5.1

**Katie recorded the number of miles she drove for each of 9 days. She drove a different number of miles each day. This box-and-whisker plot summarizes her information.**



**Katie drove 30 miles on each of two additional days. She redrew the box-and-whisker plot to include this data. Which statement must be true?**

- A The value of the range decreased.
- B The value of the mean remained the same.
- C The value of the median remained the same.
- D The value of the interquartile range increased.