Algebra 1 SOL Review: Day 6

1. TestNav
2. Day #6 Overview: Variation
3. Independent Practice: Variation

TestNav: Chromebook

1. Search for TestNav using Google Chrome
2. Follow link

Algebra 1 SOL Review Session

Day: 6 **Topics**: Variation and Rate of Change

Key Concepts:

- Direct Variation
- Indirect (Inverse) Variation

Guided Practice:
Variation

Independent Practice:

1. A relation is shown in the table below.

x	y
-6	9
-2	3
4	-6
6	-9

Which of the following statements is true?

A. The relation is a direct variation because $xy = -54$

B. The relation is a direct variation because $y = -\frac{3}{2}x$

C. The relation is an inverse variation because $xy = -54$

D. The relation is an inverse variation because $y = -\frac{3}{2}x$

2. A relation is shown in the table below.

x	y
-5	-2
$\frac{1}{2}$	20
4	$\frac{5}{2}$
10	1

Which of the following statements is true?

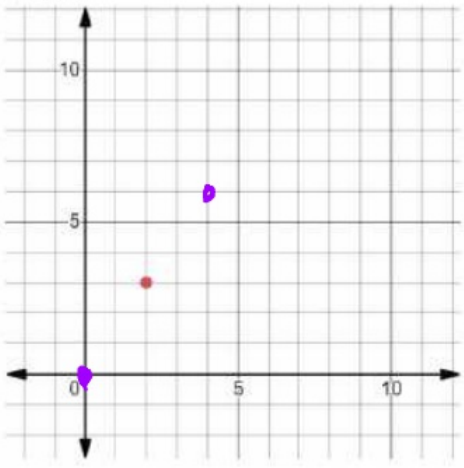
A. The relation is a direct variation because $xy = 10$

B. The relation is a direct variation because $y = \frac{2}{5}x$

C. The relation is an inverse variation because $xy = 10$

D. The relation is an inverse variation because $y = \frac{2}{5}x$

3. The point shown is an element of a direct variation. Plot two points other than the point shown, that are also elements of the direct variation



4. The relation show is an inverse variation. Write the equation that represents the variation.

$$\left\{(-3,-10),\left(\frac{1}{2},60\right),(-6,-5),\left(40,\frac{3}{4}\right)\right\}$$

$xy = 30$

OR

$y = \frac{30}{x}$

Algebra 1 SOL Review Session

More Independent Practice

5. What is the constant of variation for the following variation?

$$\left\{(3,4),(-6,-8),\left(\frac{3}{4},1\right),(12,16)\right\}$$

A. -12

B. $-\frac{3}{4}$

C. 12

D. $\frac{4}{3}$

6. y varies inversely with x. Write an equation if $y=3$ when $x=-2$

A. $xy=6$

B. $y=-\frac{3}{2}x$

C. $y=-\frac{2}{3}x$

D. $xy=-6$

7. The weight, w, of an object is directly proportional to its mass, m. Which equation represents this relationship?

A. $w=\frac{k}{m}$

B. $w=k+m$

C. $w=km$

D. $w=k-m$

8. An experiment is conducted on a container of gas that is kept at a constant temperature.
   - When the pressure of the gas is 30 pounds per square inch, the volume is 120 in^3
   - When the pressure of the gas is 40 pounds per square inch the volume is 90 in^3
   - Let p represent the pressure on the gas
   - Let v represent the volume of the gas.

Which statement is true about this relationship?

A. The volume of the gas varies directly with the pressure because $v=4p$

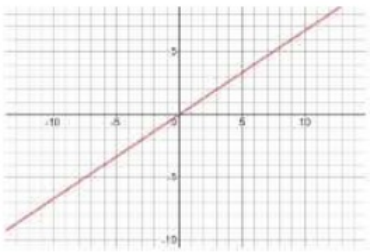
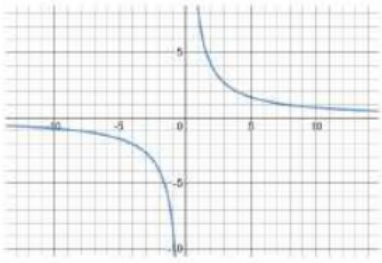
B. The volume of the gas varies directly with the pressure because $vp=3600$

C. The volume of the gas varies inversely with the pressure because $v=4p$

D. The volume of the gas varies inversely with the pressure because $vp=3600$

Variation

Variation (A1.8)

	Direct	Indirect (Inverse)
Description	Variables move in same direction As x increase, y increases As x decreases, y decreases	Variables move in opposite directions As x increases, y decreases As x decreases, y increases
Constant of variation, k	Found by dividing y by x	Found by multiplying x and y
Equation	$y = kx$	$y = \frac{k}{x}$
Graph		
Graph Characteristics	Graph is a line Must go through the origin!!! $(0,0)$ The constant of variation, k, is also the slope of the line	Cannot include the origin!!! $(0,0)$ Not a line

Desmos Tip:

1. Given a table? Add it to Desmos and interpret the results. (see graph characteristics)
   Compare to your answer choices by typing them into Boxes "1"-"4"

2. Asked to graph points on a Direct Variation? Always use (0,0) !!!!

$y = kx$ VS $y = \frac{k}{x}$

$y = 10x$ $y = \frac{10}{x}$

$x = 13$ $y = 10 \cdot 13 = 130$ $y = \frac{10}{13}$

$x = 15$ $y = 10 \cdot 15 = 150$ $y = \frac{10}{15}$

Variation

Guided Practice

A relation is shown in the table below.

x	y
-3	-6
-2.5	-7.2
4	4.5
6	3

Which of the following statements is true?

A. The relation is a direct variation because $xy = 18$

B. The relation is a direct variation because $y = \frac{1}{2}x$

C. The relation is an inverse variation because $xy = 18$

D. The relation is an inverse variation because $y = \frac{1}{2}x$

A relation is shown in the table below.

x	y
5	6
8	9.6
10	12
15	18

Which of the following statements is true?

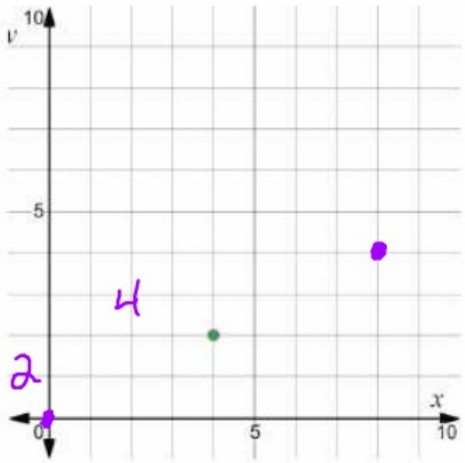
A. The relation is a direct variation because $xy = 30$

B. The relation is a direct variation because $y = 1.2x$

C. The relation is an inverse variation because $xy = 30$

D. The relation is an inverse variation because $y = 1.2x$

The point shown is an element of a direct variation. Plot two points other than the point shown, that are also elements of the direct variation



The relation show is an inverse variation. Write the equation that represents the variation.

$$\left\{(3,4),\left(\frac{1}{2},24\right),(-6,-2),\left(18,\frac{2}{3}\right)\right\}$$