Direct and Inverse Variation HW

Name _____

Period _____

1. The speed [*y*] you must go to cover a certain distance varies inversely with the time [*x*] of the trip. Suppose you must travel 54 miles [*y*] per hour to complete your trip if it takes you 4 hours [*x*]. How fast must you travel to complete your trip in 3 hours?

$y = \frac{k}{x} \rightarrow 54 = \frac{k}{4}$
$k = yx \rightarrow 4(54) = k$
$216 = k$
$y = \frac{216}{3} \rightarrow y = 72$

72 mph

2. It takes a crew of 4 painters [*x*] to complete a certain job in 12 hours. If time [*y*] required varies inversely as the number of painters, how long will it take to complete the job if only 2 painters [*x*] are available?
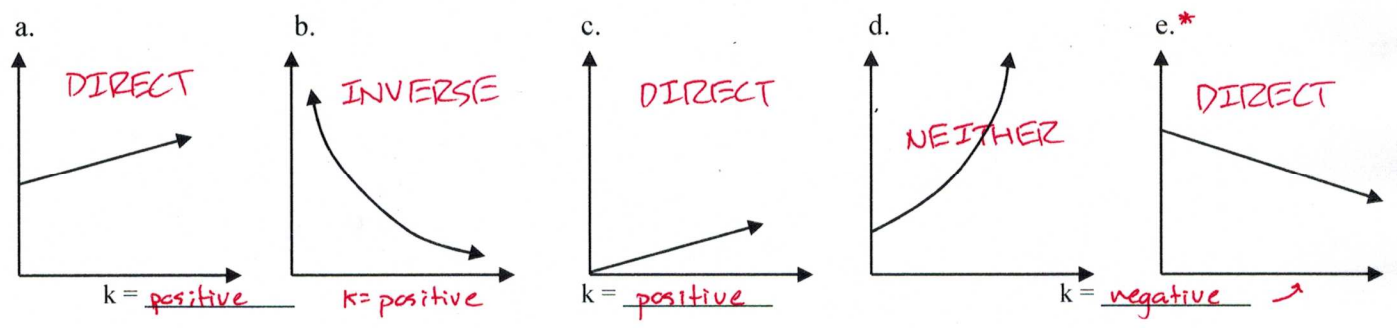
$K = 4(12) \rightarrow K = 48$
$y = \frac{48}{2} \rightarrow y = 24$

24 hours

3. A marching band can make different rectangular patterns with different numbers of rows and columns. The number [*y*] of rows and the number [*x*] of columns vary inversely with one another. One arrangement has 12 rows and 9 columns. How many rows would be in an arrangement that contains 6 columns? [*y*] [*x*]

$K = 12(9) \rightarrow K = 108$
$y = \frac{108}{6} \rightarrow y = 18 \text{ rows}$

4. Determine if each of the following graphs is an example of direct variation, inverse variation, or neither.

a. DIRECT   k = _positive_
b. INVERSE   k = positive
c. DIRECT   k = _positive_
d. NEITHER
e.* DIRECT   k = _negative_

5. y varies directly with x. If y = -6 when x = 2, find y when x = -6.

$k = \frac{-6}{2} \rightarrow K = -3$ $y = -3(-6) \rightarrow y = 18$

6. y varies inversely with x. If y = 4 when x = 16, find x when y = -2.

$K = 4(16) \rightarrow K = 64$ $-2 = \frac{64}{x} \rightarrow -2x = 64 \rightarrow x = -32$

7. y varies inversely with x. If y = 7 when x = -4, find y when x = 5.

$K = 7(-4) \rightarrow K = -28$ $y = \frac{-28}{5} \rightarrow y = -5.6$

8. y varies directly with x. If y = 15 when x = -18, find y when x = 1.6.

$\frac{8}{5}$ $K = \frac{15}{-18} \rightarrow K = -\frac{5}{6}$ $y = -\frac{5}{6}(\frac{8}{5})$ $y = \frac{kc}{x} \rightarrow y = -\frac{4}{3}$

9. Given the following charts, decide if the equation is an inverse variation, direct variation or neither. If it is a direct or inverse variation, find the equation for the chart.

$\frac{y}{x}$

X	Y	yx
-3	-4	12
-1	-12	12
2	6	12

$\frac{4}{3}$
12
3

inverse

$y = \frac{12}{x}$ $K = 12$

$\frac{y}{x}$

X	Y	yx
2	-6	-12
1	-3	-3
3	-12	-36

-3
-3
-4

neither

$\frac{y}{x}$

X	Y
1.2	6
3	15
6.1	30.5

5
5
5

direct
$K = 5$ $y = 5x$