

Inverse Variation Applications Homework $d = rt$

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

$$54(4) = r(3)$$

$$\frac{216}{3} = \frac{3r}{3}$$

$$r = 72 \text{ mph}$$

2. It takes a crew of 4 painters to complete a certain job in 12 hours. If time required varies inversely as the number of painters, how long will it take to complete the job if only 2 painters are available? $tp = tp$

$$12(4) = t(2)$$

$$\frac{48}{2} = \frac{2t}{2}$$

$$t = 24 \text{ hours}$$

3. If rectangles have equal areas, then their lengths vary inversely with the widths. If a certain rectangle has a length of 40 and a width of 30, find the width if the length is 48.

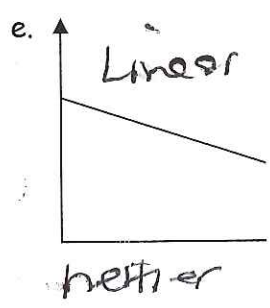
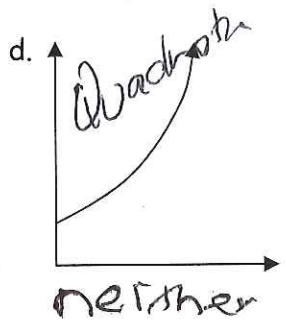
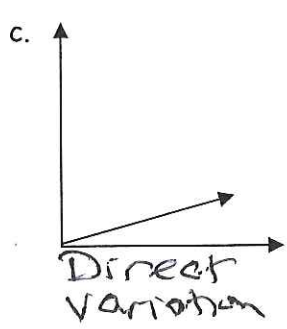
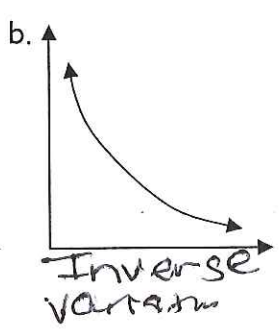
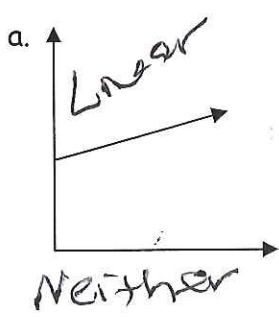
$$lw = lw$$

$$40(30) = 48w$$

$$\frac{1200}{48} = \frac{48w}{48}$$

$$w = 25$$

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



5. Complete each table of values to show the indicated type of variation. Find the constant of variation for each table.

a. Direct variation, $k = \frac{y}{x}$

| x | y |
|---|----|
| 2 | 8 |
| 4 | 16 |
| 6 | 24 |
| 8 | 32 |

$k = \frac{24}{6} = 4$

b. Inverse variation, $k = xy$

| x | y |
|---|-----|
| 2 | 120 |
| 4 | 60 |
| 6 | 40 |
| 8 | 30 |

$k = 2(120) = 240$

c. Inverse variation, $y = \frac{k}{x}$

| x | y |
|----|----|
| 20 | 15 |
| 15 | 20 |
| 10 | 30 |
| 5 | 60 |

$k = 300$