

Topic: Direct variation**Question:** If $3k = 15$ and $kx = 75$, find x .**Answer choices:**

A $x = -25$

B $x = 5$

C $x = 15$

D $x = 25$



Solution: C

We'll solve the first equation for k .

$$3k = 15$$

$$\frac{3k}{3} = \frac{15}{3}$$

$$k = 5$$

Now we'll take the value we found for k and plug it into the second equation to solve for x .

$$kx = 75$$

$$5x = 75$$

$$\frac{5x}{5} = \frac{75}{5}$$

$$x = 15$$



Topic: Direct variation

Question: If $5k = 5$ and $kx = 20$, find x .

Answer choices:

A $x = -5$

B $x = 4$

C $x = 15$

D $x = 20$



Solution: D

We'll solve the first equation for k .

$$5k = 5$$

$$\frac{5k}{5} = \frac{5}{5}$$

$$k = 1$$

Now we'll take the value we found for k and plug it into the second equation to solve for x .

$$kx = 20$$

$$1x = 20$$

$$x = 20$$



Topic: Direct variation

Question: If you attach weights to a hanging spring, it will stretch. The amount of stretch varies directly with the amount of hanging weight. If a weight of 20 will stretch the spring a distance of 4, what distance will a weight of 50 stretch it?

Answer choices:

- A 8
- B 10
- C 12
- D 15



Solution: B

A direct variation follows the pattern $x = ky$. If we let w be weight, and d be distance, we can write

$$w = kd$$

Plugging in the given pair $(d, w) = (4, 20)$ gives

$$20 = k \cdot 4$$

$$k = 5$$

Plugging in the other value of w (50) and the value of k gives

$$50 = 5d$$

$$d = 10$$

