Direct Proportion: $y = kx$

1

y is directly proportional to x. When $x = 3$, $y = 18$. Find y when $x = 8$.

x	3	8
y	18	?

× ☐

Statement $y \propto$ ☐

Replace $\propto$ with $= k$ $y = k$ ☐

Substitute ☐ $= k \times$ ☐

Find k $k =$ ☐

Formula $y =$ ☐ x

Use it $y =$ ☐ × ☐

$y =$ _____

2

y is directly proportional to x. When $x = 5$, $y = 35$. Find y when $x = 12$.

x	5	12
y	35	?

× ☐

Statement $y \propto x$

Replace $\propto$ with $= k$ $y = k$ ☐

Substitute ☐ $= k \times$ ☐

Find k $k =$ ☐

Formula $y =$ ☐ x

Use it $y =$ ☐ × ☐

$y =$ _____

3

y is directly proportional to x. When $x = 2$, $y = 13$. Find y when $x = 9$.

x	2	9
y	13	?

× ☐

Statement $y \propto x$

Replace $\propto$ with $= k$ $y = k$ ☐

Substitute ☐ $= k \times$ ☐

Find k $k =$ ☐

Formula $y =$ ☐ x

Use it $y =$ ☐ × ☐

$y =$ _____

4

y is directly proportional to x. When $x = 16$, $y = 12$. Find y when $x = 10$.

x	16	10
y	12	?

× ☐

Statement $y \propto x$

Replace $\propto$ with $= k$ $y = k$ ☐

Substitute ☐ $= k \times$ ☐

Find k $k =$ ☐

Formula $y =$ ☐ x

Use it $y =$ ☐ × ☐

$y =$ _____

5

P is directly proportional to Q.
When $Q = 12$, $P = 42$. Find Q when $P = 63$.

Statement _____

Replace $\propto$ with $= k$ _____

Substitute _____

Find k _____

Formula _____

Use it _____

$Q =$ _____

6

The cost, C pounds, of cheese is directly proportional to its mass, m kg.
0.4 kg costs £5.20.

(a) Find a formula for C in terms of m.
(b) Find the cost of 1.5 kg.

_____

_____

_____

Answer _____

7

y is directly proportional to x.
Complete the table, then write y in terms of x.

x	4	10	
y	10		40

_____

Formula _____

8

y is directly proportional to x. When $x = 5$, $y = 20$. Sam says that when $x = 8$, $y = 23$, because y is always 15 more than x.
Explain Sam's mistake, then find the right value of y.

_____

_____

$y =$ _____

Direct Proportion: y = kx *further practice*

9

y is directly proportional to x.
When $x = 4.5$, $y = 7.2$. Find y when $x = 11$.

$y =$ _____

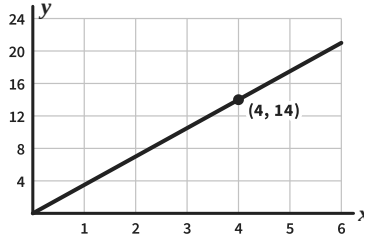
10

The area, A m², a tin of paint covers is directly proportional to the volume of paint, V litres. 3 litres cover 39 m². How many litres are needed to cover 91 m²?

Answer _____

11

The graph shows y against x.
y is directly proportional to x.
Find a formula for y in terms of x, then find y when $x = 30$.



$y =$ _____

12

The cost of rope, C pounds, is directly proportional to its length, L metres. At shop A, 6 m costs £8.10. At shop B, 15 m costs £19.50. Write a formula for each shop. Which shop is better value?

Answer _____

13

The distance a cyclist rides at a steady speed, d km, is directly proportional to the time, t minutes. She rides 9 km in 24 minutes. How far does she ride in 1 hour 20 minutes?

Answer _____

14

a is directly proportional to b, and b is directly proportional to c. $a = 12$ when $b = 3$, and $b = 10$ when $c = 4$.
Find a when $c = 6$.

$a =$ _____

15

y is directly proportional to x.
When $x = a$, $y = 12$. When $x = a + 5$, $y = 32$. Find k and a.

Answer _____

16

Is y directly proportional to x? Explain how you know.

x	3	5	8
y	10.5	17.5	27

Answer _____