

Inverse Proportion

1. x is inversely proportional to y .

When $x = 2$, $y = 8$.

Express x in terms of y .

Find the value of x when $y = 16$.

Find the value of y when $x = 32$.

2. a is inversely proportional to the square of b .

When $a = 4$, $b = 2$.

Express a in terms of b .

Find the value of a when $b = 1$.

Find the value of b when $a = 2$.

3. It takes 2 road sweepers 6 hours to sweep a neighbourhood.

How long does it take 4 road sweepers to sweep the same neighbourhood?

How many road sweepers would be needed to complete the job in 1 hour?

Inverse Proportion

4. It takes 8 sheep 3 days to eat all of the grass in a field.
How many days does it take 18 sheep to eat all of the grass in a field?

How many sheep would it take to eat all of the grass in a field in one day?

5. The force (F) in Newtons exerted by a magnet on a metal object is inversely proportional to the square of the distance (d) in cm between the two.
When $d = 10$, $F = 2$.
What is the force when the objects are 15 cm away from each other?

What is the distance when the force is 8 N?

6. m is inversely proportional to n .
 n is inversely proportional to the square root of p .
When $m = 10$, $n = 5$.
When $n = 2$, $p = 36$.
Find the value of m when $p = 4$.

Inverse Proportion **Answers**

1. x is inversely proportional to y .

When $x = 2$, $y = 8$.

Express x in terms of y .

$$x = 16 / y$$

Find the value of x when $y = 16$.

$$x = 1$$

Find the value of y when $x = 32$.

$$y = \frac{1}{2}$$

2. a is inversely proportional to the square of b .

When $a = 4$, $b = 2$.

Express a in terms of b .

$$a = 16 / b^2$$

Find the value of a when $b = 1$.

$$a = 16$$

Find the value of b when $a = 2$.

$$b = 2\sqrt{2} = 2.83 \text{ (2 d.p.)}$$

3. It takes 2 road sweepers 6 hours to sweep a neighbourhood.

How long does it take 4 road sweepers to sweep the same neighbourhood?

3 hours

How many road sweepers would be needed to complete the job in 1 hour?

12

Inverse Proportion **Answers**

4. It takes 8 sheep 3 days to eat all of the grass in a field.
How many days does it take 18 sheep to eat all of the grass in a field?

$$4/3 = 1.33$$

How many sheep would it take to eat all of the grass in a field in one day?

$$24$$

5. The force (F) in Newtons exerted by a magnet on a metal object is inversely proportional to the square of the distance (d) in cm between the two.
When $d = 10$, $F = 2$.

What is the force when the objects are 15 cm away from each other?

$$8/9 = 0.89 \text{ N}$$

What is the distance when the force is 8 N?

$$5 \text{ cm}$$

6. m is inversely proportional to n.
n is inversely proportional to the square root of p.

When $m = 10$, $n = 5$.

When $n = 2$, $p = 36$.

Find the value of m when $p = 4$.

$$m = 50 / n$$

$$n = 12 / \sqrt{p}$$

$$\begin{aligned} m &= 50 \times 1 / n \\ &= 50 \times \sqrt{p} / 12 \\ &= 25 / 3 = 8.33 \end{aligned}$$