

Inverse proportion

Use it when y depends on two letters, directly proportional to one and inversely to the other.

1 Statement

Write it with $\propto$: the direct letter on top, the inverse letter on the bottom.

$$y \propto \frac{x}{z^2}$$

$y \propto x$ and $y \propto 1 \text{ over } z^2$
at the same time

2 Replace $\propto$ with $= k$

Swap the $\propto$ for $= k$.

$$y = \frac{kx}{z^2}$$

one k for both letters

3 Substitute

Put in all three values you are given.

$$y = \frac{k \times \boxed{x}}{\boxed{z}^2}$$

powers first (BIDMAS)

4 Find k

Multiply by the bottom.
Divide by the top.

$$k = \frac{\boxed{y} \times \boxed{z}^2}{\boxed{x}}$$

not a whole number?
keep it as a fraction

5 Formula

Write the formula with k in.

$$y = \frac{kx}{z^2}$$

6 Use it

Put in the two new values and work it out.

$$y = \frac{k \times \boxed{\text{new } x}}{\boxed{\text{new } z}^2}$$

finding z ? multiply up by z^2 ,
divide by y , then square root

The Maths Habit

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