GCSE HIGHER · REVISION MAT 4

Equations of proportion

1 $y \propto x$

$y = 45$ when $x = 9$.

Find the constant of proportionality.

2 y is directly proportional to x^2.

$y = 18$ when $x = 3$.

Write y in terms of x.

3 Explain why $y = x + 2$ does not show direct proportion.

4 The force F on a spring is proportional to its extension e.

F = 12 N when $e = 3$ cm.

Find e when F = 20 N.

5 y is inversely proportional to $\sqrt{x}$.

$y = 6$ when $x = 4$.

Show that $y = 4$ when $x = 9$.

6 Stopping distance d is proportional to v^2.

$d = 18$ m when $v = 30$ km/h.

Find d when $v = 50$ km/h.

7 $y \propto \frac{1}{x}$

Show that if x is tripled, y is divided by 3.

8 $y \propto x^3$

$y = 24$ when $x = 2$.

Find x when $y = 375$.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

Equations of proportion

1 $k = 5$

2 $18 = 9k$

$y = 2x^2$

3 When $x = 0$, $y = 2$, not 0, so $\frac{y}{x}$ is not constant.

4 $F = 4e$

$e = 5$ cm

5 $y = \frac{12}{\sqrt{x}}$

$\frac{12}{3} = 4$

6 $k = \frac{18}{900} = 0.02$

$d = 50$ m

7 $\frac{k}{3x} = \frac{1}{3} \times \frac{k}{x}$

Divided by 3

8 $y = 3x^3$

$x^3 = 125$

$x = 5$

Mr&Mrs MATHS