

Setting up proportion equations

Grade 6 | Higher | 13 questions, 42 marks

GCSE Maths topic practice



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1 y is directly proportional to x . $y = 24$ when $x = 8$.

- a. Find y when $x = 5$.
- b. Find x when $y = 45$.

(3 marks)

Answer _____

2 The cost, C pounds, of a square tile is directly proportional to the square of the length of its side, s cm.

A tile with side 10 cm costs £12.

- a. Show that $C = 0.12s^2$.
- b. Work out the cost of a tile with side 15 cm.

(4 marks)

Answer _____

3 The time, T hours, taken to paint a fence is inversely proportional to the number of painters, n .

4 painters take 9 hours.

- Write down a formula for T in terms of n .
- How long would 6 painters take?
- How many painters are needed to paint the fence in 2.4 hours?

(4 marks)

Answer _____

4 y is directly proportional to the square of x .

When $x = 4$, $y = 48$.

Find the value of y when $x = 5$.

(3 marks)

Answer _____

5 p is inversely proportional to q .

When $q = 5$, $p = 12$.

- Find a formula for p in terms of q .
- Find the value of p when $q = 8$.

(3 marks)

Answer _____

6 y is inversely proportional to x .

When $x = 4$, $y = 9$.

- Find the value of y when $x = 6$.
- Find the value of y when $x = 12$.

(3 marks)

Answer _____

7 y is inversely proportional to the square of x .

When $x = 3$, $y = 4$.

Find the negative value of x when $y = 9$.

(3 marks)

Answer _____

8 The force F newtons between two magnets is inversely proportional to the square of the distance d cm between them.

When $d = 2$, $F = 60$.

a. Find a formula for F in terms of d .

b. Find the positive value of d when $F = 15$.

(4 marks)

Answer _____

9 y is inversely proportional to the cube of x . $y = 4$ when $x = 2$.

a. Show that $y = \frac{1}{2}$ when $x = 4$.

b. Find the value of x when $y = \frac{32}{125}$.

(4 marks)

Answer _____

- 10** x and y are positive quantities.
 y is inversely proportional to the square of x .
 x is increased by 25%.
Work out the percentage change in y .

(4 marks)

Answer _____

- 11** y is inversely proportional to x .
When $x = 3$, $y = 20$.
Work out the value of y when $x = 5$.

(2 marks)

Answer _____

- 12** The distance d metres a dropped object falls is directly proportional to the square of the time t seconds.
When $t = 3$, $d = 45$.
Work out the value of d when $t = 6$.

(2 marks)

Answer _____

- 13** y is directly proportional to the square of x .
 x is increased by 20%.
Show that y increases by 44%.
Assume x and y are positive.

(3 marks)

Answer _____

End of questions | Total 42 marks