

Direct and Inverse Proportion

ANSWERS

Calculator | 30 minutes | Total marks: 27

Name Class

1 y is directly proportional to x .

When $x = 4$, $y = 18$

(a) Work out a formula for y in terms of x .

$$18 = 4k \text{ (1)}$$

Answer $y = 4.5x \text{ (1)}$ [2 marks]

(b) Work out the value of y when $x = 10$

$y = 45 \text{ (1)}$ [1 mark]

2 y is directly proportional to the square of x .

When $x = 3$, $y = 45$

(a) Work out a formula for y in terms of x .

$$y = kx^2 \text{ (1)}$$
$$45 = 9k \text{ (1)}$$

Answer $y = 5x^2 \text{ (1)}$ [3 marks]

(b) Work out the value of y when $x = 4$

$y = 80 \text{ (1)}$ [1 mark]

(c) Work out the positive value of x when $y = 180$

$$x^2 = 36 \text{ (1)}$$

$x = 6 \text{ (1)}$ [2 marks]

3

y is inversely proportional to x .

When $x = 5$, $y = 12$

(a) Work out a formula for y in terms of x .

$$y = \frac{k}{x} \quad (1)$$

$$k = 5 \times 12 \quad (1)$$

Answer $y = \frac{60}{x} \quad (1)$

[3 marks]

(b) Work out the value of y when $x = 8$

$$y = 7.5 \quad (1)$$

[1 mark]

4

y is inversely proportional to the square of x .

When $x = 5$, $y = 2$

(a) Work out a formula for y in terms of x .

$$y = \frac{k}{x^2} \quad (1)$$

$$k = 2 \times 25 \quad (1)$$

Answer $y = \frac{50}{x^2} \quad (1)$

[3 marks]

(b) Work out the positive value of x when $y = 0.5$

$$x^2 = 100 \quad (1)$$

$$x = 10 \quad (1)$$

[2 marks]

5

y is directly proportional to the square root of x .

When $x = 9$, $y = 12$

(a) Work out a formula for y in terms of x .

$$12 = 3k \quad (1)$$

Answer $y = 4\sqrt{x} \quad (1)$

[2 marks]

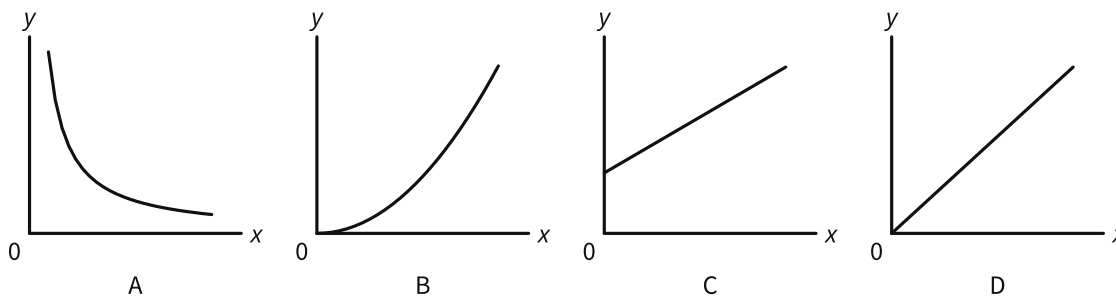
(b) Work out the value of y when $x = 25$

$$y = 20 \quad (1)$$

[1 mark]

6

Here are four sketch graphs.



Write down the letter of the graph that shows

y is directly proportional to x D (1) [1 mark]

y is directly proportional to x^2 B (1) [1 mark]

y is inversely proportional to x A (1) [1 mark]

7

The time, T hours, to build a wall is inversely proportional to the number of workers, n .

6 workers take 20 hours.

Work out the time taken by 8 workers.

$$T = \frac{120}{n} \quad (1)$$

Answer 15 (1) hours [2 marks]

8 y is directly proportional to the cube of x .

x is doubled.

Describe what happens to y .

y is multiplied by 8 (1)

[1 mark]

Question	Topic	RAG
1	I can find and use a formula for direct proportion	
2	I can work with proportion to a square	
3	I can find and use a formula for inverse proportion	
4	I can work with inverse proportion to a square	
5	I can work with proportion to a square root	
6	I can recognise graphs of direct and inverse proportion	
7	I can solve an inverse proportion problem in context	
8	I can describe the effect of a change in one variable	