

Direct and Inverse Proportion - Forming Equations

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **27**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** y is directly proportional to $\frac{1}{x^2}$

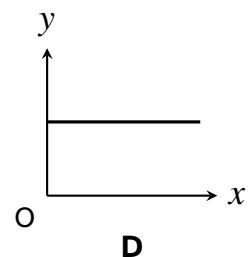
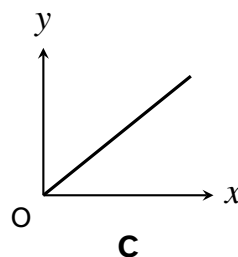
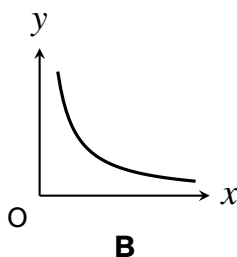
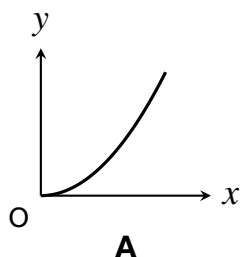
Which statement is correct?

Tick one box.

[1 mark]

- ☐ y is inversely proportional to x
- ☐ y is inversely proportional to x^2
- ☐ y is directly proportional to x^2
- ☐ y is inversely proportional to $\sqrt{x}$

- 2** Here are four sketch graphs.



In one of these graphs, y is inversely proportional to x .
Circle the letter of this graph.

[1 mark]

A

B

C

D

- 3** h is directly proportional to w^2
The value of h is multiplied by 25
By what number has w been multiplied? Circle your answer.

[1 mark]

×5

×25

×50

×625

- 4** T is inversely proportional to n^2
The value of n is halved.
Carys says, "The value of T will also be halved."
Is she correct? Tick a box.
Give a reason for your answer.

[1 mark]

☐ Yes

☐ No

- 5** p is inversely proportional to q .
Complete the table.

q	2	5	
p	30		4

[2 marks]

6 y is directly proportional to x^2

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

(a) Find a formula for y in terms of x .

[3 marks]

Answer _____

(b) Work out y when $x = 5$

[1 mark]

Answer _____

7 F is inversely proportional to the square of d .

When $d = 3$, $F = 20$

(a) Find an equation for F in terms of d .

[3 marks]

Answer _____

(b) Work out the positive value of d when $F = 5$

[2 marks]

Answer _____

- 8 p is proportional to $\sqrt{q}$
Complete the table.

q	4	25	
p	6		21

[3 marks]

- 9 The power, P kilowatts, produced by a small wind turbine is directly proportional to the cube of the wind speed, v metres per second.
When $v = 4$, $P = 32$
Work out the wind speed when the turbine produces 108 kilowatts.

[4 marks]

Answer _____ metres per second

- 10 r is positive.
 V is directly proportional to r^3
 A is directly proportional to r^2
When $r = 2$, $V = 40$ and $A = 24$
Work out the value of V when $A = 54$

[5 marks]

Answer _____