

Name: _____

Exam Style Questions

Direct Proportion
Inverse Proportion



Equipment needed: Calculator and Pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

www.corbettmaths.com/contents

Videos 254, 255



Answers and Video Solutions



1. y is directly proportional to x .



$$y = 30 \text{ when } x = 2.5$$

Work out the value of y when $x = 4$

$y = \dots\dots\dots$
(3)

2. y is directly proportional to the square of x .



$$\text{When } y = 24, x = 2$$

Find the value of y when $x = 4$.

$y = \dots\dots\dots$
(3)

3. The cost of a circular table is directly proportional to the square of the radius.
A circular table with a radius of 40cm cost £50



What is the cost of a circular table with a radius of 60cm?

£.....
(3)

4. The time taken, t seconds, that it takes a water heater to boil water is inversely proportional to the power, p watts, of the water heater.



When $P = 2000W$, $T = 252$ seconds.

Find the time it takes to boil water when $P = 800W$

.....seconds
(3)

5. H varies directly to the cube of c.
When $H = 40$, $c = 2$



(a) Express H in terms of c.

$$H = \dots\dots\dots$$

(3)

(b) Find the value of H when $c = 5$

$$H = \dots\dots\dots$$

(1)

(c) Find the value of c when $H = 5000$

$$c = \dots\dots\dots$$

(1)

6. The force, F newtons, exerted by a magnet on a metal object is inversely proportional to the square of the distance d cm.



When $d = 2$ cm, $F = 50$ N

- (a) Express F in terms of d .

$$F = \dots\dots\dots \text{N} \quad (3)$$

- (b) Find the force when the distance between the magnet and metal object is 10cm

$$F = \dots\dots\dots \text{N} \quad (1)$$

- (c) Find the distance between the magnet and metal object when the force is 8N

$$d = \dots\dots\dots \text{cm} \quad (1)$$

- (d) Explain what happens to F when d is halved.

.....
.....
.....
(1)

7. The table shows a set of values for x and y .



y is directly proportional to the square root of x .

x	16	
y	9	54

Complete the table.

(4)

8. A and B are positive numbers.
 A is inversely proportional to B .
When $A = 4$, $B = 36$



Find the value of A when $B = A$

$A = \dots\dots\dots$
(4)

9. C is directly proportional to the square root of y.
When $C = 12.8$, $y = 16$



(a) Express C in terms of y.

$$C = \dots\dots\dots (3)$$

(b) Find C when $y = 400$

$$C = \dots\dots\dots (1)$$

10. The time taken, t, for passengers to be checked-in for a flight is inversely proportional to the square of the number of staff, s, working.



It takes 30 minutes passengers to be checked-in when 10 staff are working.

(a) Find an equation connecting t and s.

$$\dots\dots\dots (3)$$

(b) What is the minimum number of staff that must be working so that the time taken is under 60 minutes?

$$\dots\dots\dots (3)$$

11. The cost of a trip is directly proportional to the square root of the distance.



The cost is £495 when the distance is 324 miles.

Find a formula connecting the cost, C , and the distance d .

.....
(3)

12. w is inversely proportional to y^2



$w = 54$ when $y = c$

Find the value of w when $y = 3c$

.....
(3)

13. a is directly proportional to $\sqrt{c}$



w is inversely proportional to a^3

When $c = 49$, $a = 35$

When $a = 2$, $w = 16$

Find the value of w when $c = 4$

w =
(6)