1 y is directly proportional to the square of x.

When $x = 3$, $y = 36$

Find the value of y when $x = 5$

.....

(Total for Question 1 is 4 marks)

2 p is inversely proportional to t.

When $t = 4$, $p = 12$

Find the value of p when $t = 6$

.....

(Total for Question 2 is 3 marks)

3 T is directly proportional to the cube of r

$T = 21.76$ when $r = 4$

(a) Find a formula for T in terms of r

(3)

(b) Work out the value of T when $r = 6$

(1)

(Total for Question 3 is 4 marks)

4 F is inversely proportional to the square of v.

Given that $F = 6.5$ when $v = 4$

find a formula for F in terms of v.

.....

(Total for Question 4 is 3 marks)

5 A is inversely proportional to C^2

$A = 40$ when $C = 1.5$

Calculate the value of C when $A = 1000$

$C =$ .....

(Total for Question 5 is 3 marks)

6 The following table gives values of x and y where y is inversely proportional to the square of x.

x	1.5	2	3	4
y	16	9	4	2.25

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

.....

(3)

Given that $x > 0$

(b) find the value of x when $y = 144$

.....

(2)

(Total for Question 6 is 5 marks)

7 T is inversely proportional to m^2

$T = 30$ when $m = 0.5$

(a) Find a formula for T in terms of m.

.....

(3)

(b) Work out the value of T when $m = 0.1$

.....

(1)

(Total for Question 7 is 4 marks)

8 y is inversely proportional to $\sqrt{x}$
x is directly proportional to T^3

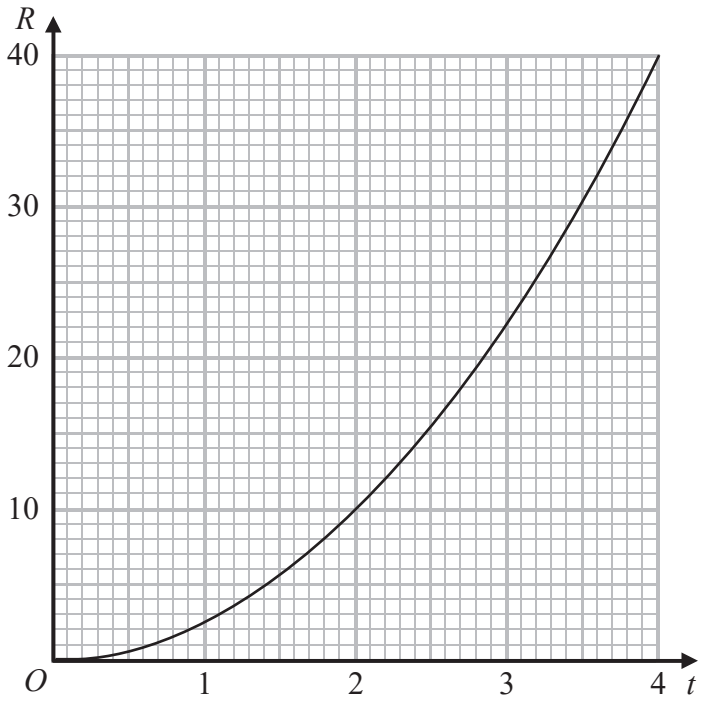
Given that $y = 8$ when $T = 25$

find the exact value of T when $y = 27$

$T =$ .....

(Total for Question 8 is 4 marks)

9 R is proportional to t^2
The graph shows the relationship between R and t for $0 \leqslant t \leqslant 4$



(a) Find a formula for R in terms of t.

.....

(3)

Given also that $R = \dfrac{8}{5x}$

(b) show that t is inversely proportional to $\sqrt{x}$ for $t > 0$

(2)

(Total for Question 9 is 5 marks)

10 y is directly proportional to the cube of x
$y = 20h$ when $x = h \quad (h \neq 0)$

(a) Find a formula for y in terms of x and h

$y =$.....

(3)

(b) Find x in terms of h when $y = 67.5h$
Give your answer in its simplest form.

$x =$.....

(2)

(Total for Question 10 is 5 marks)

11 A is inversely proportional to the square of r

$A = 5$ when $r = 0.3$

(a) Find a formula for A in terms of r

.....

(3)

(b) Find the value of A when $r = 7.5A$

$A =$ .....

(3)

(Total for Question 11 is 6 marks)

12 x is proportional to $\sqrt{y}$ where $y > 0$

y is increased by 44%

Work out the percentage increase in x.

.....%

(Total for Question 12 is 3 marks)

13 y is inversely proportional to x^3

$y = 44$ when $x = a$

Show that $y = 5.5$ when $x = 2a$

(Total for Question 13 is 3 marks)

14 y is directly proportional to the square root of t.
$y = 15$ when $t = 9$

t is inversely proportional to the cube of x.
$t = 8$ when $x = 2$

Find a formula for y in terms of x.
Give your answer in its simplest form.

.....

(Total for Question 14 is 4 marks)

15 x is directly proportional to the square of y.
y is directly proportional to the cube of z.

$z = 2$ when $x = 32$

Find a formula for x in terms of z.

.....

(Total for Question 15 is 4 marks)

16 h is inversely proportional to p

p is directly proportional to $\sqrt{t}$

Given that $h = 10$ and $t = 144$ when $p = 6$
find a formula for h in terms of t

.....

(Total for Question 16 is 4 marks)

17 y is inversely proportional to d^2
When $d = 10$, $y = 4$

d is directly proportional to x^2
When $x = 2$, $d = 24$

Find a formula for y in terms of x.
Give your answer in its simplest form.

.....

(Total for Question 17 is 5 marks)