

1 A is inversely proportional to the square of r

$$A = 5 \text{ when } r = 0.3$$

(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 1 is 6 marks)

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

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

$$y = \dots\dots\dots$$

(3)

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

$$x = \dots\dots\dots$$

(2)

(Total for Question 2 is 5 marks)

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

y is increased by 44%

Work out the percentage increase in x .

.....%

(Total for Question 3 is 3 marks)

4 y is inversely proportional to x^3

$y = 44$ when $x = a$

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

(Total for Question 4 is 3 marks)

5 P is inversely proportional to y^2

When $y = 4$, $P = a$

(a) Find a formula for P in terms of y and a

.....
(3)

Given also that y is directly proportional to \sqrt{x}
and when $x = a$, $P = 4a$

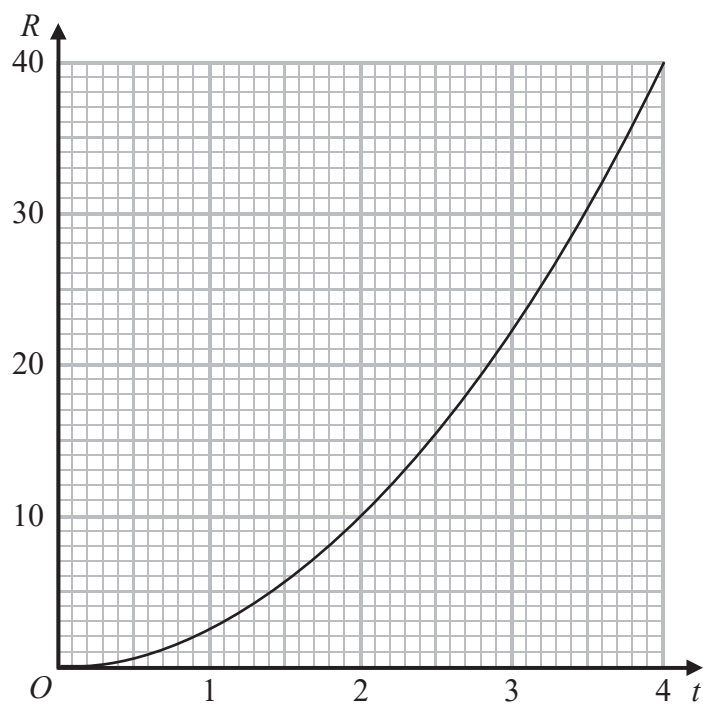
(b) find a formula for P in terms of x and a

.....
(3)

(Total for Question 5 is 6 marks)

6 R is proportional to t^2

The graph shows the relationship between R and t for $0 \leq t \leq 4$



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

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

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

(2)

(Total for Question 6 is 5 marks)

7 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 7 is 4 marks)

8 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 8 is 5 marks)

9 y is proportional to x^2

$$y = 3 \text{ when } x = 0.5$$

x is inversely proportional to w

$$x = 2 \text{ when } w = 0.2$$

Find the value of y when $w = 2$

$$y = \dots\dots\dots$$

(Total for Question 9 is 5 marks)

10 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 10 is 4 marks)

- 11** x is directly proportional to the square of y .
 y is directly proportional to the cube of z .

$$z = 2 \text{ when } x = 32$$

Find a formula for x in terms of z .

(Total for Question 11 is 4 marks)

- 12** 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 $y = 27$

$T = \dots\dots\dots$

(Total for Question 12 is 4 marks)