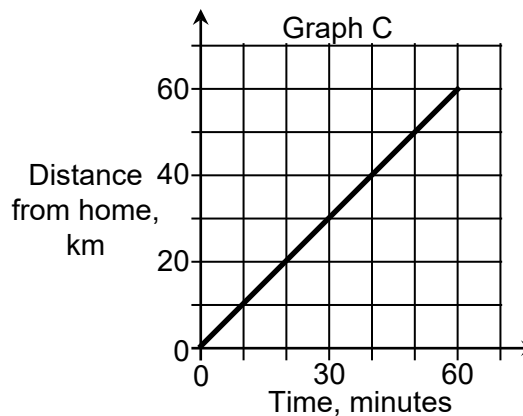
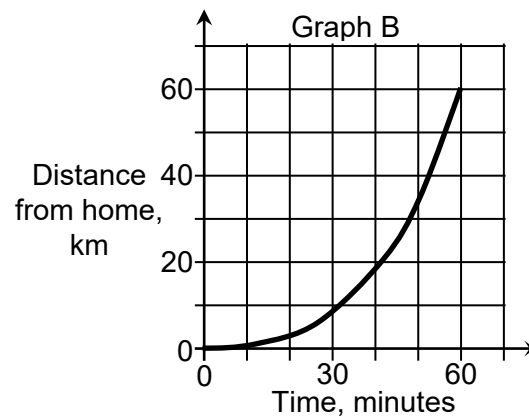
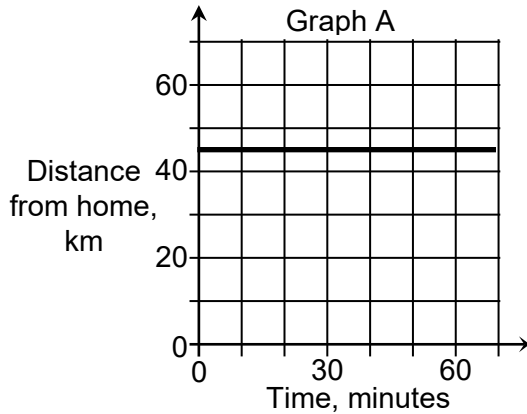


Topic Test 1 (20 minutes)

Direct and Inverse proportion - Higher

1 Here are three graphs.



Match each graph to a car.

[2 marks]

Graph shows a car travelling at a steady speed.

Graph shows a car that is not moving.

Graph shows a car whose speed is gradually increasing.

2 For any rectangle area = length \times width

When the area of a rectangle is doubled and the length is also doubled, what happens to the width?
Circle your answer.

[1 mark]

Doubles

Stays the same

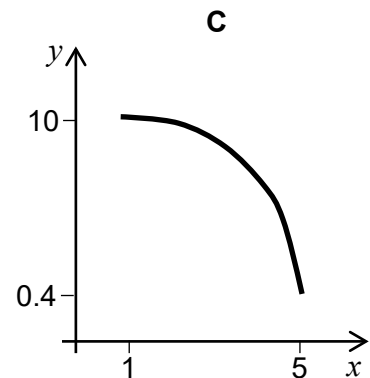
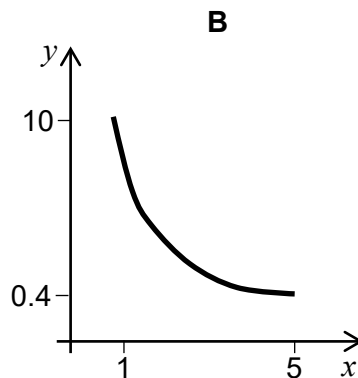
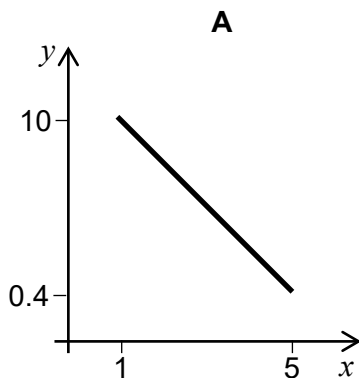
Halves

Quadruples

3 $y = \frac{10}{x^2}$ for values of x from 1 to 5

Which sketch graph is correct?
Circle the correct letter.

[1 mark]



4 $y = \frac{k}{x^2}$

When $x = 4$, $y = \frac{1}{2}$

Work out the value of y when $x = 2$

[2 marks]

Answer _____

-
- 5** Ticket sales for a concert go online on a website at 9 am.
There are 2400 tickets for sale.
The number of tickets sold is directly proportional to the number of seconds after 9 am
When Julia logs on 550 tickets have been sold.
The tickets are sold out at 9.08 am

Work out the time that Julia logged on to the website.

[3 marks]

Answer _____ am

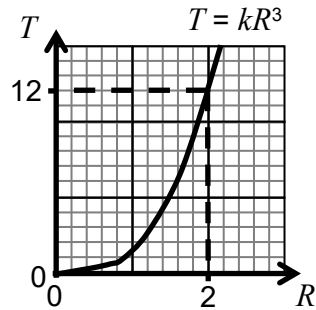
- 6** The mass of a sphere, M , is directly proportional to r^3 , where r is the radius of the sphere in cm
When $r = 10$ cm, $M = 200$ grams.

Work out the mass of a sphere, made of the same material, with a radius of 15 cm

[3 marks]

Answer _____ grams

7 The graph shows the relationship between T and R .



7 (a) Work out the value of T when $R = 4$

[3 marks]

Answer _____

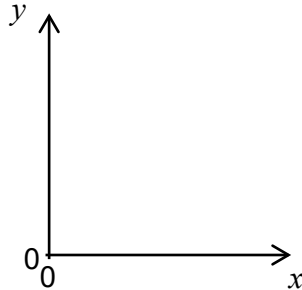
7 (b) Work out the value of R when $T = 32$
Give your answer to 3 significant figures.

[1 mark]

Answer _____

- 8 Sketch the graph of $y = \frac{1}{x}$ for positive x values.

[1 mark]



- 9 The time, T , taken for a journey of a fixed distance is inversely proportional to the average speed, S .

When $S = S_1$ $T = T_1$

On another journey, the speed S_1 is increased by 40%

Work out the time taken for this journey.

Give your answer as a fraction of T_1

[3 marks]

Answer _____