

A9

Algebra exam review

- 1** p is inversely proportional to m .
 $p = 48$ when $m = 9$

Calculate the value of p when $m = 12$

.....

(Total 2 marks)

- 2** In a factory, chemical reactions are carried out in spherical containers.

The time, T minutes, the chemical reaction takes is directly proportional to the square of the radius, R cm, of the spherical container.

When $R = 120$, $T = 32$

Find the value of T when $R = 150$

$T =$

(Total 4 marks)

- 3** The weight of a piece of wire is directly proportional to its length.

A piece of wire is 25 cm long and has a weight of 6 grams.
Another piece of the same wire is 30 cm long.

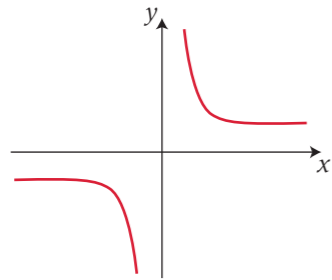
Calculate the weight of the 30 cm piece of wire.

..... grams

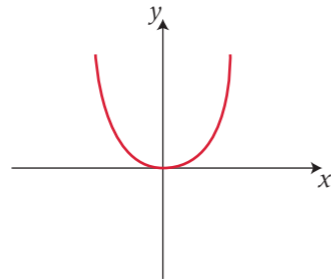
(Total 2 marks)



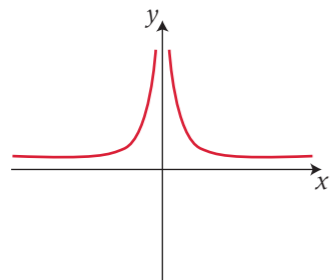
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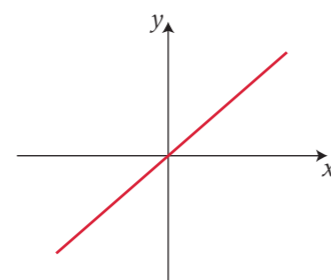
Graph A



Graph B



Graph C



Graph D

The graphs of y against x represent four different types of proportionality.
Write down the letter of the graph which represents the type of proportionality.

Type of proportionality	Graph letter
y is directly proportional to x
y is inversely proportional to x
y is proportional to the square of x
y is inversely proportional to the square of x

(Total 2 marks)

5 A ball is dropped from a tower.
After t seconds, the ball has fallen a distance x metres.
 x is directly proportional to t^2 .

When $t = 2$, $x = 19.6$

a Find an equation connecting x and t .

.....
(3)

b Find the value of x when $t = 3$

$x =$
(2)

c Find how long the ball takes to fall 10 m.

..... seconds
(3)

(Total 8 marks)

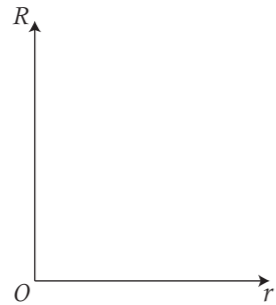
6 An electrician has wires of the same length made from the same material.
The electrical resistance, R ohms, of a wire is inversely proportional to the square of its radius, r mm.

When $r = 2$, $R = 0.9$

a i Express R in terms of r .

$R =$

ii On the axes, sketch the graph of R against r .



(4)

One of the electrician's wires has a radius of 3 mm.

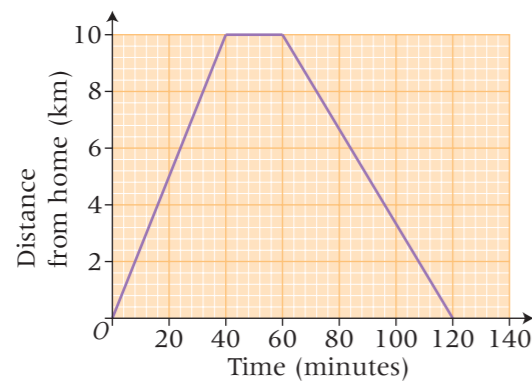
b Calculate the electrical resistance of this wire.

..... ohms

(1)

(Total 5 marks)

7 Jodi went on a trip by cycle from his home. The diagram shows his distance/time graph.



a At what times was Jodi 6 km from home?

..... minutes

..... minutes

(2)

b Where was Jodi after 120 minutes?

.....

(1)

c Between what times was Jodi moving fastest?

..... minutes, minutes

(1)

d Calculate Jodi's speed during the first 20 minutes of his trip. Give your answer in kilometres per hour.

..... km/h

(2)

e At what time had Jodi cycled 14 km?

..... minutes

(1)

(Total 7 marks)