

Direct and Inverse Proportion

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Name _____

Total marks: **24**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 4 identical robot lawnmowers take 90 minutes to mow a football field.

(a) How many minutes would it take 6 of these robots to mow the field?

..... minutes
(2)

(b) State one assumption you made in your answer to part (a).

.....
(1)

(Total for Question 1 is 3 marks)

2 8 men can dig a trench in 15 hours.

How long would it take 6 men to dig the same trench?

Assume all the men work at the same rate.

..... hours
(2)

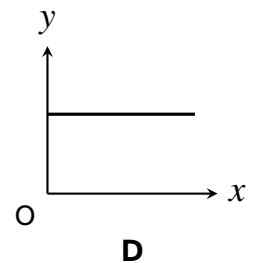
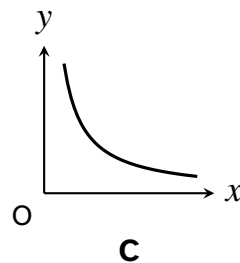
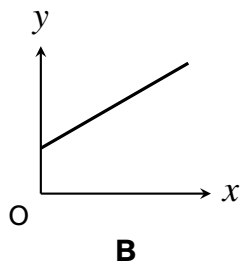
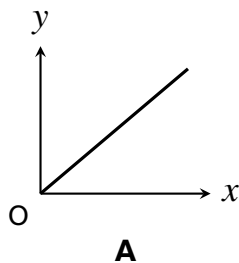
(Total for Question 2 is 2 marks)

- 3** The cost of petrol is directly proportional to the number of litres bought.
 35 litres of petrol cost £49.70
 Work out the cost of 50 litres of petrol.

£
 (2)

(Total for Question 3 is 2 marks)

- 4** Here are four graphs.



- (a) Write down the letter of the graph that shows y is directly proportional to x .

.....
 (1)

- (b) Write down the letter of the graph that shows y is inversely proportional to x .

.....
 (1)
(Total for Question 4 is 2 marks)

5 y is directly proportional to x .

When $x = 6$, $y = 15$

(a) Find the value of y when $x = 10$

$y = \dots\dots\dots$
(2)

(b) Find the value of x when $y = 40$

$x = \dots\dots\dots$
(1)

(Total for Question 5 is 3 marks)

6 A farmer has enough food to feed 12 cows for 20 days.

He sells 4 of the cows.

The remaining cows eat the same amount of food each day as before.

For how many days will the food last now?

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

(Total for Question 6 is 3 marks)

- 7** With 2 printers, a batch of exam papers takes 45 minutes to print.
The school needs the batch to be printed in 20 minutes or less.
What is the least number of printers the school needs to use?
Assume all the printers print at the same rate.

.....
(2)

(Total for Question 7 is 2 marks)

- 8** A hotel has 24 rooms.
10 decorators can paint all 24 rooms in 6 days.
All the decorators work at the same rate, and each room takes the same amount of work.

How many days would it take 5 decorators to paint 18 of the rooms?

..... days
(3)

(Total for Question 8 is 3 marks)

- 9 The pressure of the air inside a bicycle pump is P units.
 The volume of the air inside the pump is $V \text{ cm}^3$.
 P is inversely proportional to V .
 P is given by

$$P = \frac{1200}{V}$$

- (a) Work out the value of P when $V = 80$

$$P = \dots\dots\dots (1)$$

- (b) Work out the value of V when $P = 40$

$$V = \dots\dots\dots (2)$$

- (c) The volume of the air is divided by 3
 What happens to the pressure of the air?

.....

 (1)

(Total for Question 9 is 4 marks)