

Direct and Inverse Proportion

For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

Total marks: **24**

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

1 k is a constant.

Circle the equation where P is inversely proportional to Q .

[1 mark]

$$P = kQ$$

$$P = Q - k$$

$$P = \frac{k}{Q}$$

$$P = kQ^2$$

2 X is inversely proportional to Y .

Tick one box.

[1 mark]

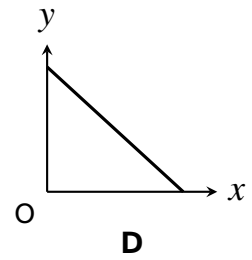
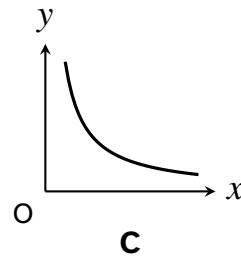
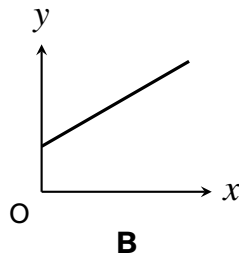
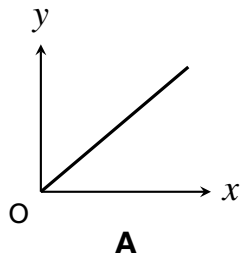
☐ X is directly proportional to Y

☐ X is directly proportional to $\frac{1}{Y}$

☐ X is directly proportional to $2Y$

☐ X is directly proportional to Y^2

3 Here are four graphs.

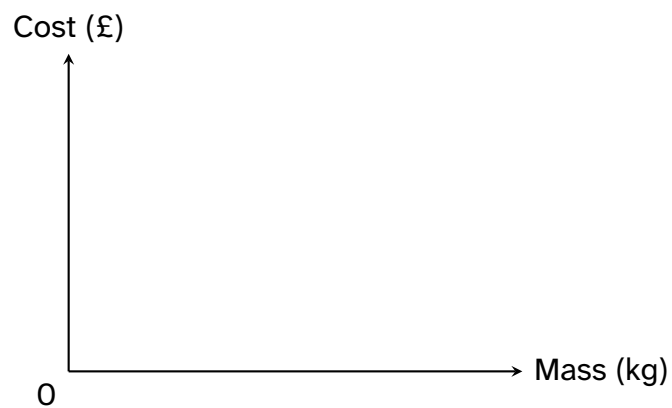


In one of these graphs, y is directly proportional to x .
Circle the letter of this graph.

[1 mark]

4 The cost of some apples is directly proportional to their mass.

On the axes, sketch a graph to show this relationship.



[1 mark]

- 5 y is inversely proportional to x .

Complete the table.

x	1	2	4	8
y	40		10	

[2 marks]

- 6 5 kg of apples cost £7.40
Work out the cost of 8 kg of the same apples.

[2 marks]

Answer £ _____

- 7 V is directly proportional to H .
When $H = 6$, $V = 21$
Work out the value of V when $H = 10$

[2 marks]

Answer $V =$ _____

- 8 It takes 6 workers 10 days to build a wall.
How many days would it take 4 workers to build the same wall?
Assume all workers work at the same rate.

[2 marks]

Answer _____ days

- 9 A charity packs food parcels.

$$t = \frac{150}{v}$$

- t is the time, in minutes, to pack all the parcels.
- v is the number of volunteers.

- (a) Work out the time taken when there are 4 volunteers.
Give your answer in minutes and seconds.

[2 marks]

Answer _____ minutes _____ seconds

- (b) The parcels must be packed in **less** than 20 minutes.
Work out the smallest number of volunteers needed.

[2 marks]

Answer _____

- 10** y is directly proportional to x .
When $x = 4$, $y = 10$
Sam says,
‘When $x = 8$, $y = 14$, because I add 4 to both numbers.’

Is Sam correct?

Tick a box.

Give a reason for your answer.

[1 mark]

☐ Yes

☐ No

- 11** On a treadmill, the speed is directly proportional to the level number.
At level 10 the speed is 12 km/h.
Jo runs on the treadmill at level 8 for 25 minutes.

How far does Jo run?

[4 marks]

Answer _____ km

- 12** A group of 6 people on a camping trip has enough drinking water for 8 days.
2 of the people leave the group.

- (a) Assume that each person drinks the same amount of water each day.
How many days will the water last for the 4 people who are left?

[2 marks]

Answer _____ days

- (b) In fact, the 2 people who left each drank **less** water each day than the other 4 people.

What does this mean about the number of days the water will last for the 4 people?

Tick one box.

[1 mark]

- ☐ It is more than the answer to (a)
- ☐ It is the same as the answer to (a)
- ☐ It is less than the answer to (a)
- ☐ It is not possible to say