JRA Tutors
Private tuition and small online Study Pods

Direct and Inverse Proportion

Grade 5 topic · Foundation and Higher · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Foundation students: aim for Questions 1–15 (52 marks) and have a go at the rest. Higher students: complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 75 marks.

Warm-up

1 y is directly proportional to x. When x = 5, y = 40. Find a formula for y in terms of x. **[3 marks]**

Answer _____

2 y is directly proportional to x. When x = 4, y = 28. Find a formula for y in terms of x. **[3 marks]**

Answer _____

3 y is directly proportional to x. When x = 5, y = 10. Find a formula for y in terms of x. **[3 marks]**

Answer _____

4 y is directly proportional to x. When x = 2, y = 16. Find a formula for y in terms of x. **[3 marks]**

Answer _____

5 y is directly proportional to x. When x = 2, y = 10. Find a formula for y in terms of x. **[3 marks]**

Answer _____

Core

6 y is directly proportional to x. When x = 5, y = 20. Work out y when x = 9. **[3 marks]**

Answer _____

7 y is directly proportional to x. When x = 6, y = 54. Work out y when x = 10. **[3 marks]**

Answer _____

8 y is directly proportional to x. When x = 5, y = 20. Work out y when x = 8. **[3 marks]**

Answer _____

9 y is directly proportional to x. When x = 5, y = 30. Work out y when x = 7. **[3 marks]**

Answer _____

10 y is directly proportional to x. When x = 5, y = 45. Work out y when x = 10. **[3 marks]**

Answer _____

Stretch

11 y is inversely proportional to x. When x = 6, y = 30. Work out y when x = 12. **[4 marks]**

Answer _____

12 y is inversely proportional to x. When x = 2, y = 16. Find a formula for y in terms of x. **[4 marks]**

Answer _____

13 y is directly proportional to x^2. When $x = 4$, $y = 64$. Work out y when $x = 7$. **[4 marks]**

Answer _____

14 y is inversely proportional to x^2. When $x = 2$, $y = 18$. Work out y when $x = 3$. **[5 marks]**

Answer _____

15 y is directly proportional to $\sqrt{x}$. When $x = 9$, $y = 12$. Work out y when $x = 25$. **[5 marks]**

Answer _____

Challenge

16 It takes 6 workers 8 days to build a wall. How long would it take 4 workers? **[4 marks]**

Answer _____

17 A spring extends 4 cm when a 10 N force is applied. Assuming the extension is directly proportional to the force, find the extension when the force is 25 N. **[4 marks]**

Answer _____

18 The time (t) to fill a pool is inversely proportional to the number (n) of pumps. 5 pumps take 12 hours. How long do 8 pumps take? Give your answer in hours and minutes. **[5 marks]**

Answer _____

19 The area of a circle is directly proportional to the square of its radius. A circle with radius 3 cm has area 28.3 cm². Find the area when the radius is 5 cm, to 3 significant figures. **[5 marks]**

Answer _____

20 y is inversely proportional to x. When x = 4, y = 15. Find the value of x when y = 5. **[5 marks]**

Answer _____