Direct and Inverse Proportion

Year 10–11 Maths · Years 10–11 · NCEA Level 1 · About 25 minutes · 8 questions

Name _____ Date _____ Score / 8

WHAT YOU WILL PRACTISE

- Write and use a formula for direct proportion
- Write and use a formula for inverse proportion
- Solve a problem where y is proportional to x^2

WORKED EXAMPLE

y is directly proportional to x. When x = 5, y = 30. Find y when x = 8.

1. Write the formula: y = kx.
2. Substitute the known values to find k: 30 = 5k, so k = 6.
3. The formula is y = 6x.
4. Substitute x = 8: y = 6 × 8 = 48.

Answer: y = 48

Questions

Show your working in the space under each question.

1. y is directly proportional to x. When x = 4, y = 20. Find y when x = 7.

2. y is directly proportional to x. When x = 6, y = 15. Write a formula for y in terms of x.

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3. y is directly proportional to x. When x = 8, y = 6. Find x when y = 15.

4. y is inversely proportional to x. When x = 3, y = 8. Find y when x = 6.

5. y is inversely proportional to x. When x = 5, y = 12. Write a formula for y in terms of x.

6. y is inversely proportional to x. When x = 4, y = 9. Find x when y = 12.

7. y is directly proportional to x^2. When x = 2, y = 12. Find y when x = 5.

8. The time taken to fill a pool is inversely proportional to the number of pumps used. 4 pumps take 6 hours. How long would 3 pumps take?

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Answers: Direct and Inverse Proportion

Mark your own work, then go back to any question you got wrong before reading the tutor tip.

Q	QUESTION	ANSWER
1	y is directly proportional to x. When x = 4, y = 20. Find y when x = 7.	**y = 35**
2	y is directly proportional to x. When x = 6, y = 15. Write a formula for y in terms of x.	**y = 2.5x**
3	y is directly proportional to x. When x = 8, y = 6. Find x when y = 15.	**x = 20**
4	y is inversely proportional to x. When x = 3, y = 8. Find y when x = 6.	**y = 4**
5	y is inversely proportional to x. When x = 5, y = 12. Write a formula for y in terms of x.	**y = 60/x**
6	y is inversely proportional to x. When x = 4, y = 9. Find x when y = 12.	**x = 3**
7	y is directly proportional to x^2. When x = 2, y = 12. Find y when x = 5.	**y = 75**
8	The time taken to fill a pool is inversely proportional to the number of pumps used. 4 pumps take 6 hours. How long would 3 pumps take?	**8 hours**

TUTOR TIP

Always find k first. Write y = kx for direct proportion and y = k/x for inverse proportion, then substitute the pair of values you are given.

Stuck on a question? Work through it live with a tutor.

YFCampus offers one-to-one online Maths tutoring matched to your school curriculum. Book a free trial class at **www.yfcampus.com/nz**

Written for students aged 13 to 16 and suitable for Years 10–11. Check your school's curriculum for the exact order of topics. YFCampus is independent and is not affiliated with any exam board or education ministry.