



Math Worksheet for 7th Grade

Constant of proportionality

Name: _____

Due Date: _____

Teacher: _____

Parent Sign: _____

1. A table shows x : 1, 2, 3 and y : 2, 4, 6. Is y proportional to x ? If yes, what is the constant of proportionality k ?
2. A table shows x : 1, 2, 3 and y : 3, 6, 10. Is y proportional to x ? Explain briefly.
3. If y is proportional to x and $k = 5$, find y when $x = 7$.
4. If y is proportional to x and $k = 0.5$, find y when $x = 8$.
5. A pack of 10 pencils costs \$3. If cost is proportional to number of pencils, how much do 25 pencils cost?
6. A printer prints pages at a constant rate. It prints 30 pages in 2 minutes. Is the number of pages printed proportional to time? If so, what is the constant of proportionality (pages per minute)?
7. If y is proportional to x and $y = 18$ when $x = 6$, find x when $y = 30$.
8. A recipe uses 2 cups of flour for every 3 cups of sugar (flour : sugar). If you use 5 cups of flour, how much sugar is needed to keep the same ratio?
9. Complete the missing value if the relationship is proportional: x : 2, 4, 6 ; y : 5, 10, ?.
10. A bike rental charges a \$40 flat fee plus \$0.20 per mile. Is the relationship between miles ridden and total cost proportional? Explain.
11. If $y = kx$ and the point (8, -16) is on the line, what is k ?
12. If y is proportional to x and $k > 0$, what is y when $x = 0$? Explain.
13. A photocopier makes 15 copies per minute at a steady speed. How many minutes will it take to make 225 copies?

Identifying proportional relationships graphically

14. A line on a graph goes through (0, 0) and (5, 20). Does this show a proportional relationship? If so, what is k ?
15. A line goes through (0, 0) and (3, -9). Is it proportional? Find k .
16. A straight line passes through points (2, 6) and (4, 12). Does this represent a proportional relationship? If yes, find k .
17. A graph shows points (1, 2), (2, 4), (3, 6). Does this graph represent a proportional relationship? Find k .
18. A line passes through (0, 5) and (2, 13). Does this line represent a proportional relationship? Explain.
19. A graph has a straight line through the origin and the point (6, 9). Is the relationship proportional? If yes, what is k ?
20. A scatter of points includes (0, 0), (2, 5), and (4, 10). Do these points lie on a proportional line? If so, find k .
21. A proportional graph is a straight line through the origin with slope 0.25. What is y when $x = 16$?
22. A graph shows a line through (0, 0) and (-4, 8). Is it proportional? Find k .
23. A proportional graph has a point at (7, 21). What is the constant of proportionality?
24. A graph shows points (1, 4) and (2, 8). Does that indicate a proportional relationship? If so, what is k ?
25. A straight line through the origin passes through (3, 4.5). What is k ?

Constant of proportionality from a graph (read or compute k from points or real graphs)

26. On a proportional graph a point at $x = 2$ corresponds to $y = 7$. What is k ?



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27. A line through the origin passes through (10, 2.5). Find k.
28. A distance vs. time graph shows distance = 60 miles at time = 4 hours (line through origin). What is the speed (k, miles per hour)?
29. On a graph, the point (5, 20) lies on the proportional line. Find k.
30. A proportional graph passes through (3, 7.5). What is k?
31. A line through the origin passes through (8, -2). What is k?
32. A car's distance vs. time graph goes through (0,0) and (2,120). What is the speed in miles per hour? If the car drives for 3.5 hours at this speed, how far will it go?
33. A proportional graph shows (0,0) and (4,16). Write the constant k and the equation $y = kx$.
34. On a proportional graph, (2, 0.5) is a point. What is k?
35. A proportional line passes through (9, 27). Find k.
36. A fitness tracker's calories-burned vs. minutes graph goes through (0,0) and (30, 450). What is the constant of proportionality (calories per minute)? How many calories are burned in 20 minutes at this rate?
37. A proportional graph shows (0,0) and (1.5, 3). What is k? (Give a decimal.)

Identifying the constant of proportionality from equations

38. For the equation $y = 6x$, what is the constant of proportionality k?
39. For the equation $3y = 12x$, rewrite in form $y = kx$ and find k.
40. For the equation $y = (\frac{2}{3})x$, identify k.
41. If $5x = y/2$, rewrite as $y = kx$ and find k.
42. For $y = -4x$, identify k.
43. Given $y/x = 7$ for $x \neq 0$, what is k?
44. If $0.25x = y$, what is k?
45. From $2y = x$, rewrite as $y = kx$ and identify k.
46. For $y = (\frac{3}{5})x$, what is k? Then compute y when $x = 25$.
47. If $y = kx$ and the point (10, 27) is on the line, what is k?
48. Given $9x = 3y$, write $y = kx$ and find k.
49. For the equation $y = 0x$, what is k? Describe what this relationship means (briefly).
50. Decide whether the equation $y = 4x + 3$ represents a proportional relationship. If it is proportional, state k; if not, explain why.