



Math Worksheet for 6th Grade

Analyzing relationships between variables

Name: _____

Due Date: _____

Teacher: _____

Parent Sign: _____

Questions

1. Write an equation relating d (distance in miles) to t (time in hours) if a cyclist rides at 6 miles per hour.
1. Write an equation relating d (distance in miles) to t (time in hours) if a cyclist rides at 6 miles per hour.
2. If each bag holds 8 marbles and b is the number of bags, m is the number of marbles, write an equation relating m and b .
3. Write an equation for the total cost C (in dollars) of buying x notebooks at \$2 each.
4. A movie theater charges \$5 per ticket plus a \$2 booking fee (one-time). Write an equation relating total cost T to number of tickets n .
5. If y equals three times x , write the equation connecting x and y .
6. If the perimeter P of a square relates to side length s , write the equation for P in terms of s .
7. A recipe uses 3 cups of flour for each batch. Let F be cups of flour and B be batches. Write the equation relating F and B .
8. Write an equation for the total pages read, p , if a student reads 12 pages per day for d days.
9. A taxi charges \$4 base fare plus \$2 per mile. Write an equation for cost C for m miles.
10. If the number of stickers S is half the number of sheets h ($S = \frac{1}{2} * h$), write the same relationship as an equation using fraction form.
11. Given the table of x and y : $(x,y) = (1, 5), (2, 9), (3, 13)$. Find the equation that relates y to x .
12. For the pairs $(x,y) = (2, 6), (4, 12), (6, 18)$ determine whether y is proportional to x and write the constant of proportionality.
13. Given $(x,y) = (0, 4), (1, 7), (2, 10)$. Write an equation for y in terms of x .
14. Determine whether the relationship $y = 4x$ is proportional. Explain briefly.
15. Table: $(x,y) = (1, 6), (2, 11), (3, 16)$. Find the rule $y = mx + b$ (state m and b).
16. The number of pages P in a book equals 240 minus 10 times the number of weeks w already read: $P = 240 - 10w$. What is P when $w = 3$?
17. A store sells pencils in boxes of 12. Let p be number of pencils and b be number of boxes. If $p = 12b$, how many pencils are in 7 boxes?
18. The temperature T (degC) decreases by 2 degrees every hour from 20 degC. Write T after h hours and find T when $h = 5$.
19. A farmer has 4 chickens per coop. Let C be chickens and n be number of coops. If $C = 4n$, how many coops for 28 chickens?
20. Given the equation $y = 5x - 3$, find y when $x = 2$ and x when $y = 7$.
21. Sam earns \$10 per hour mowing lawns. Write an equation for his earnings E in terms of hours h and find E for $h = 4.5$ hours.
22. A plant grows $\frac{1}{2}$ inch every week. Let G be growth in inches and w be weeks. Write the equation and find G after 10 weeks.



Math Worksheet for 6th Grade

Analyzing relationships between variables

Name: _____

Due Date: _____

Teacher: _____

Parent Sign: _____

23. Mia buys notebooks and each notebook costs \$3. If she also paid \$1 tax once, write total cost C for n notebooks and compute C for $n = 6$.
24. The relationship between apples a and baskets b is $a = 5b + 2$ (2 apples extra). How many apples when $b = 4$? Is this proportional? Why or why not?
25. Given: y increases by 2 whenever x increases by 1 and $y = 4$ when $x = 0$. Write the equation.
26. In a game, score $S = 7 + 2k$ where k is number of levels completed. What is S after 5 levels? What does 7 represent?
27. Table: $x = 0, 1, 2, 3$; $y = 2, 5, 8, 11$. Is there a linear relationship? If so, give equation.
28. A printing shop charges \$15 plus \$0.10 per page. Let C be total cost for p pages. Write equation and find cost for 50 pages.
29. The number of tiles T needed for a floor is $T = 9 + 3n$ where n is number of extra rows beyond the first. If $n = 4$, how many tiles? What is the slope (rate)?
30. A cyclist travels at constant 9 km/hr. $d = 9t$. How long to go 27 km? If $t = 2$ hours, what is d ?
31. Given pairs (x,y) : (1,2), (2,4.5), (3,7). Does y relate linearly to x ? If yes, find equation (you may use decimals).
32. A recipe asks for 2 eggs for every 3 cups of flour. Let E be eggs and F be cups of flour. Write an equation showing their proportional relationship. How many eggs for 9 cups of flour?
33. The number of seats S in a theater equals $50r$ where r is number of rows. If $S = 350$, find r .
34. A mail service charges \$0.50 per kg plus \$2 base. Write C in terms of weight w . What is C for $w = 3$ kg?
35. Given the equation $y = -2x + 10$, is the relationship proportional? What is y when $x = 4$?
36. A printer can print 20 pages per minute. Let p be pages printed, m be minutes. Write equation and find how many minutes to print 150 pages.
37. A babysitter charges \$8 per hour and a \$5 registration fee the first time. Write total cost T in hours h . If total $T = \$29$, how many hours worked?
38. Table: $x = 2, 4, 6$; $y = 5, 11, 17$. Is there a constant rate of change? Find the equation $y = mx + b$.
39. A taxi charges \$3.50 base and \$1.75 per mile. Write cost C for m miles and find C for 6 miles.
40. A school sells fundraiser cookies: each box has 6 cookies. Total cookies $C = 6b + 4$ (they already had 4 cookies). If they want 100 cookies total, how many boxes b must they buy? (Assume b is whole number; if needed round up.)
41. The relationship between x and y is $y = 4x + 0$. Explain whether this is proportional and what the constant of proportionality is.
42. Lara saves \$15 each week and already has \$30. Let S be total saved after w weeks. Write $S(w)$. How many weeks to reach \$120?
43. A function is given by $y = (\frac{1}{3})x + 2$. What is y when $x = 9$? Is this a proportional relationship? Explain.
44. Given a table: $x = 0, 2, 4$; $y = 1, 5, 9$. Find equation and identify slope and intercept.
45. A cell phone plan costs \$20 per month plus \$0.10 per text. Write C texts plan cost and find cost for 150 texts.
46. The distance d (in meters) from origin after t seconds is $d = 3t + 1$. What is d at $t = 0$ and what is the unit rate (slope)?



Math Worksheet for 6th Grade

Analyzing relationships between variables

Name: _____

Due Date: _____

Teacher: _____

Parent Sign: _____

47. A car rental charges \$30 per day and \$0.20 per mile. Let C be total cost for d days and m miles: write equation. If you rent for 3 days and drive 100 miles, what is cost?
48. The cost C (dollars) for printing posters is $C = 2p$ for p posters, but if you print more than 50 posters you get a \$20 discount, making $C = 2p - 20$. If $p = 60$, what is C ? Is this still proportional? Why or why not?
49. A puzzle factory produces 40 puzzles per hour. If P is puzzles and h is hours, write equation. How many hours to produce 500 puzzles (rounded up to whole hours)?
50. Given the pattern: When x increases by 3, y increases by 9. Write the simplest linear equation connecting y and x if $y = 0$ when $x = 0$.