Math Worksheet for 9th Grade

Introduction to variables

Name: Due Date: Teacher: Parent Sign:

A. What is a variable? (questions 1-12)

1. Define, in one sentence, what a variable is in algebra.

2. Identify the variable(s) in the expression 7x - 4.

3. Identify the variable(s) in the expression 3(a + 2).

4. In the sentence "Let t be the number of minutes you study," what does t represent?

5. True or false: In the expression 5 + 2, the 5 is a variable. Explain briefly.

6. In the expression 4x + 9, what is the coefficient of the variable? What is the constant term?

7. Circle the variable in each: (a) 12 + m (b) 5y - 3 (c) 8

8. Which symbol typically stands for an unknown number: 7, x, or 12? Explain briefly.

9. If n represents the number of pages you read per day, write an algebraic expression for the pages read in 6 days.

10. Give an example of a simple algebraic expression with exactly one variable and one constant.

11. Explain the difference between a variable and a constant in one sentence.

12. In the expression -3x + 2, what does the -3 represent?

B. Why aren't we using the multiplication sign? (questions 13-24)

13. Rewrite 5 x x without using the multiplication sign.

14. Rewrite x x 9 in the conventional algebraic order (coefficient first).

15. Rewrite 4 x (x + 3) without the multiplication sign.

16. Rewrite (x)(7) without the multiplication sign.

17. Explain briefly one reason mathematicians often omit the multiplication sign when multiplying a number and a variable.

18. Rewrite 1 x x in the conventional, simplified algebraic form.

19. Convert 6 x x x 1 into a simpler algebraic expression without the multiplication sign.

20. Rewrite 3 x x + 2 x x without multiplication signs and then combine like terms.

21. True or false: ab means a times b (no multiplication sign). If true, give a one-sentence explanation.

22. Rewrite 2 x (3x) without using the multiplication sign and simplify.

23. Explain why we write 7x instead of x7 in standard algebraic notation.

24. Given 2(x + 5), explain why the parentheses are important when we omit the multiplication sign.

C. Evaluating an expression with one variable (questions 25-50)

25. Evaluate 3x + 5 when x = 2.

26. Evaluate 4x - 7 when x = 0.

27. Evaluate -2x + 8 when x = 3.

28. Evaluate 5x when x = -4.

29. Evaluate x + 6 when x = -2.

30. Evaluate 7 - 2x when x = 5.

31. Evaluate 0.5x + 1 when x = 6.

32. Evaluate 3(x + 2) when x = 4.

33. Evaluate 2x - 3 for $x = \frac{1}{2}$.

34. Evaluate 4x + 1 when x = 0.25.

35. Evaluate -x + 9 when x = 9.

36. If p represents your pocket money in dollars and p = 12, evaluate the expression p + 8.

37. If s is the side length (in cm) of a square and s = 7, evaluate the perimeter expression 4s.

38. If t represents hours worked and t = 8, evaluate the pay expression 15t (dollars).

39. Evaluate 3x - 2 when x = -1.

40. Evaluate (x + 5) - 2x when x = 3.

41. Evaluate 6 - (2x + 1) when x = 2.

42. Evaluate 2(x - 4) when x = -2.

43. Evaluate x/2 + 3 when x = 10.

44. Evaluate 3x + 4 for x = 2.5.

45. Evaluate -4x when x = 0.

46. If a = x + 3 and x = 4, evaluate a (first write a as an expression, then evaluate).

47. Write an expression for "seven more than twice a number n," then evaluate it when n = 5.

48. A notebook costs n dollars. Write an expression for the cost of 3 notebooks, then evaluate when n = 2.50.

49. Mia has x stickers. She gives away 4 stickers. Write an expression for the stickers left, then evaluate when x = 12.

50. The perimeter of a rectangle with width w and length 3 more than w is 2(w + (w + 3)). Let w = 4; evaluate the perimeter.