



Math Worksheet for 9th Grade

Linear equations with unknown coefficients

Name: _____

Due Date: _____

Teacher: _____

Parent Sign: _____

Answers

1. $x = 5$

2. $x = 2$

3. $x = -2$

4. $x = -4$

5. $x = 5$

6. $x = 12$

7. $x = 6$

8. $x = 2$

9. $x = 5$

10. $x = 2$

11. $x = 4$

12. $x = 8$

13. $x = 6$

14. $x = 2$

15. $x = 3$

16. $3p + 2 = 11 \rightarrow p = 3$

17. $60h = 150 \rightarrow h = 2.5$ hours

18. Perimeter $2[(2x+1)+(x-1)] = 26 \rightarrow x = 3$

19. $4a = 68 \rightarrow a = 17$

20. $5t = 45 \rightarrow t = 9$

21. $x = 18$

22. $x = 4$

23. $x = 6$

24. $x = 16$

25. $x = 3$

26. $2(3) + k = 10 \rightarrow k = 4$

27. $k(3) - 4 = 8 \rightarrow 3k = 12 \rightarrow k = 4$

28. $k(5) = 15 \rightarrow k = 3$

29. $4x + k = 4x + 7 \rightarrow$ this holds for all x only if $k = 7$ (infinitely many solutions); if $k \neq 7$ then no solutions.

30. $5x + 3 = 5x + k \rightarrow$ infinitely many if $k = 3$; no solution if $k \neq 3$; (exactly one solution never occurs because x cancels)

31. $3x + 2 = 3x + 2 \rightarrow$ infinitely many solutions



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32. $3x + 2 = 3x + 5 \rightarrow$ no solution

33. $0x = 0 \rightarrow$ infinitely many solutions (any x)

34. $0x = 7 \rightarrow$ no solution

35. $(k-1)x = 7 \rightarrow$ if $k = 1$ then equation is $0 \cdot x = 7 \rightarrow$ no solution; if $k \neq 1$ then one solution $x = 7/(k-1)$

36. $x = 4 \rightarrow 2(4) + k = 10 \rightarrow 8 + k = 10 \rightarrow k = 2$

37. $x = 2 \rightarrow k(2) + 2 = 14 \rightarrow 2k = 12 \rightarrow k = 6$

38. For $x = 0$ to be a solution: $k \cdot 0 + 5 = 5 \rightarrow 5 = 5$ (always true) \rightarrow any k works

39. $k(-1) + 3 = 0 \rightarrow -k + 3 = 0 \rightarrow k = 3$

40. $7(2) + k = 21 \rightarrow 14 + k = 21 \rightarrow k = 7$

41. $4x + 6 = 4x + 6 \rightarrow$ infinitely many solutions

42. $2x + 1 = 2x - 1 \rightarrow$ no solution

43. $m x + 2 = m x + 2$ holds for all x for every m (any real m)

44. $m x + 3 = m x + 5 \rightarrow$ this can never hold for all x ; it has no solution for any m (because $3 \neq 5$). If interpreted as "has a solution for some x ", there is no x satisfying $3 = 5$, so no m gives a solution.

45. $(2m)x = 10$:

- If $m = 0 \rightarrow$ equation is $0 \cdot x = 10 \rightarrow$ no solution.

- If $m = 5 \rightarrow (2 \cdot 5)x = 10 \rightarrow 10x = 10 \rightarrow x = 1$ (one solution).

46. $10 - 3x = 4 \rightarrow -3x = -6 \rightarrow x = 2$

47. $14 = 2(3x + 1) \rightarrow 14 = 6x + 2 \rightarrow 6x = 12 \rightarrow x = 2$

48. $(x - 5) + 2x = 10 \rightarrow 3x - 5 = 10 \rightarrow 3x = 15 \rightarrow x = 5$

49. $6x + 4 = 2x + 12 \rightarrow 4x = 8 \rightarrow x = 2$

50. $11x - 22 = 0 \rightarrow 11x = 22 \rightarrow x = 2$