Questions

1. (Worked example) Determine the number of solutions of $2(x - 3) = 2x - 6$. Explain.

2. Determine the number of solutions of $3x + 5 = 3x + 7$.

3. Solve $4x - 9 = 2x + 5$ and state how many solutions there are.

4. Determine the number of solutions of $(\frac{1}{2})x + 3 = (\frac{1}{2})x + 3$.

5. Determine the number of solutions of $-5x + 2 = -5x - 8$.

6. Solve $7 = 7x - 3x$ and state how many solutions there are.

7. How many solutions does $0?x = 5$ have?

8. How many solutions does $0?x = 0$ have?

9. For what value of k does $kx + 2 = 3x + 2$ have infinitely many solutions?

10. Find k such that $kx + 4 = 3x + 5$ has no solution.

11. For what value of k does $kx + 4 = 3x + 4$ have infinitely many solutions?

12. Solve $2(x + 4) = 8 + 2x$ and state the number of solutions.

13. Determine the number of solutions of $5(2x - 1) = 10x - 3$.

14. How many real solutions does $|x| = -3$ have?

15. How many solutions does $|x - 2| = 0$ have? Give the solution(s).

16. How many real solutions does $x^2 + 1 = 0$ have?

17. Create a linear equation (in x) that has no solutions. Write one example.

18. Create a linear equation (in x) that has infinitely many solutions. Write one example.

19. Word problem: A number minus 3 equals the same number plus 2. How many solutions does the equation have?

20. Word problem: Twice a number equals twice that same number. How many solutions?

21. Determine the number of solutions of $0.5(x + 4) = 0.5x + 2$.

22. Determine the number of solutions of $(x/3) + 1 = (x/3) + 2$.

23. Solve $9 - 3x = 3(3 - x)$. How many solutions?

24. Determine the number of solutions of $6x + 2 = 2(3x + 1)$.

25. Solve $8x - 4 = 2(4x - 2)$. How many solutions?

26. Solve $2x + 3 = 5$. How many solutions?

27. Determine the number of solutions of $3(x + 1) = 3x + 3$.

28. Given $4x + k = 4x + 7$, for what values of k does the equation have (a) infinitely many solutions, (b) no solutions?

29. Solve $x + 2 = 2x + 3$. How many solutions?

30. Determine the number of solutions of $2(x - 1) = 2x + 4$.

31. How many solutions does $0 = x - x$ have?

32. Determine the number of solutions of $(x + 5)/2 = x/2 + 2.5$.

33. Consider $(k + 1)x + 2 = (k + 1)x - 4$. For how many values of k is this equation impossible (no solution)?

34. Create a linear equation that has exactly one solution. Give one example and show the solution.

35. Word problem: John says "twice my age is equal to twice my age." How many possible ages satisfy his statement?

36. A rectangle's length L satisfies $L + 3 = L - 2$. How many possible lengths satisfy this equation?

37. Solve and state the number of solutions: $(x - 2)/4 = (x + 3)/4 - 1.25$.

38. Determine the number of solutions of $2(x + 1) = 2x + 3$.

39. For $mx + 2 = 0$, for what values of m does the equation have (a) no solution, (b) exactly one solution?

40. Solve $4(x - 3) = 4x - 12$. How many solutions?

41. Determine the number of solutions of $5(x + 2) = 5x + 11$.

42. How many real numbers x satisfy $x^2 - 1 = (x - 1)(x + 1)$?

43. How many real solutions does $x^2 = 4$ have? List them.

44. How many real solutions does $x^2 + 1 = 0$ have?

45. Create a quadratic equation that has no real solution (give an example).

46. Create a quadratic identity (an equation true for all real x) and state why it has infinitely many solutions.

47. Find a and b so that $ax + b = 2x + 5$ has infinitely many solutions.

48. Give one example of p and q so that $3x + p = qx + 2$ has no solutions.

49. How many solutions does $0?(x - 4) = 5$ have?

50. How many solutions does $0?(x - 4) = 0$ have?