



Equations & Inequalities

Name: _____

Grade: 7 _____

Date: _____

Solve multi-step equations & inequalities, graph solutions, and apply in context. Show steps and reasoning.

Part 1 · One-Step & Two-Step Equations EQUATIONS

(1. $x + 8 = 15$

(2. $4y = 28$

(3. $z/5 = 9$

(4. $2x - 7 = 11$

(5. $3a + 4 = 19$

(6. $5b - 10 = 25$

Part 2 · Multi-Step Equations MULTI

(7. $2x + 3x = 25$

(8. $4y - 2y + 6 = 18$

$$(9. 7z - 3 = 4z + 12$$

$$(10. 2a + 5 = 3a - 8$$

$$(11. 6b - 2 = 4b + 10$$

$$(12. 5x + 7 = 3x + 15$$

Part 3 · Inequalities

INEQUAL

$$(13. x - 3 > 4$$

$$(14. 2y + 5 \leq 17$$

$$(15. 3z - 7 < 11$$

$$(16. 4a + 8 \geq 20$$

$$(17. 5b - 10 > 15$$

$$(18. x/2 \leq 6$$

Part 4 · Graphing Solutions

GRAPH

$$(19. \text{Graph solution to } x > 7 \text{ on a number line.}$$

20. Graph solution to $y \leq 5$.

21. Graph solution to $z < -2$.

22. Graph solution to $a \geq 0$.

23. Graph solution to $b > -3$.

24. Graph solution to $x \leq 10$.

Part 5 · Context & Word Problems

CONTEXT

25. A movie costs \$12. You have \$50. How many tickets can you buy?

26. A bus seats 48 passengers. If 5 buses are used, what is the max number of passengers?

27. A coder spends x minutes daily. In 7 days, total time is 420 min. Find x .

28. A store sells $3x$ items Monday, $2x$ Tuesday. Total 50 items. Find x .

29. A runner covers $2y$ km in morning, y km in evening. Total 18 km. Find y .

30. Reflection: Most helpful strategy? _____

Part 6 · Error Analysis

ERROR

31. Error: Solve $2x + 3 = 13$ as $x = 8$. Correct & mistake?

32. Error: Solve $3x = 12$ as $x = 36$. Correct & why?

33. Error: Solve $x - 3 > 4$ as $x > 1$. Correct & why?

Part 7 · Challenge & Reflection CHALLENGE

34. Solve: $4(x + 2) = 3x + 14$

35. Solve: $2y - 5 = 3y + 8$

36. Solve: $5z + 3 = 2z + 21$

37. Solve: $6a - 2 = 4a + 10$

38. Reflection: Most helpful strategy? _____

Answer Key

1. 7
2. 7
3. 45
4. 9
5. 5
6. 7
7. 5
8. 6
9. 4
10. 13
11. 6
12. 4
13. $x > 7$
14. $y \leq 6$
15. $z < 6$
16. $a \geq 3$
17. $b > 5$
18. $x \leq 12$
19. Open circle at 7, shade right
20. Closed circle at 5, shade left
21. Open circle at -2, shade left
22. Closed circle at 0, shade right
23. Open circle at -3, shade right
24. Closed circle at 10, shade left
25. 4
26. 240
27. 60
28. 10
29. 6
30. Varies
31. $x=5$ / subtracted not divided
32. $x=4$ / divided not multiplied
33. $x > 7$ / added not subtracted
34. $x=12$
35. $y=-13$
36. $z=6$
37. $a=6$
38. Varies

Accept equivalent forms. Reflection varies.