LESSON MAKER PRO

Solve and Decide

Use equations and inequalities to find what works.

GRADE 7 · 7.EE.4d

7.EE.4d "Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities."

NAME _____ DATE _____

KEEP IT BALANCED

To solve an equation, undo operations while keeping both sides equal. For an inequality, use the same moves, but reverse the inequality sign if you multiply or divide both sides by a negative number.

WORKED EXAMPLE

Solve $11(x - 13) + 17 = 39$.

1. Subtract 17 from both sides: $11(x - 13) = 22$.
2. Divide both sides by 11: $x - 13 = 2$.
3. Add 13 to both sides: $x = 15$.

Answer: x = 15

PRACTICE 6 problems

1 Solve $3(x + 4) = 30$.

ANSWER _____

2 Solve $2(x + 3) + 4 = 24$.

ANSWER _____

3 Solve $3x + 2x - 4 = 16$.

ANSWER _____

4 Solve $3x + 4 > 19$.

ANSWER _____

5 Solve $2x - 3 <= 21$.

ANSWER _____

6 Solve $-4x + 2 >= 18$.

ANSWER _____

APPLY IT Show your work

1 For game night, 3 friends each buy x tokens at $2 per token. They also pay one $4 group fee. Their total is $40. Write an equation and find how many tokens each friend buys.

WORK SPACE

ANSWER _____

2 A skate park charges $4 to enter and $3 per hour. You have at most $28. Let x be the number of hours. Write and solve an inequality. What is the greatest whole number of hours you can skate?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student solves $-3x + 4 < 16$ by subtracting 4, then dividing by -3, and writes $x < -4$. Find the error and give the correct solution. Explain why.

WORK SPACE AND ANSWER

ANSWER KEY

Solve and Decide

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 3(x + 4) = 30.	**x = 6**
2	Solve 2(x + 3) + 4 = 24.	**x = 7**
3	Solve 3x + 2x - 4 = 16.	**x = 4**
4	Solve 3x + 4 > 19.	**x > 5**
5	Solve 2x - 3 <= 21.	**x <= 12**
6	Solve -4x + 2 >= 18.	**x <= -4**

PART 2 · APPLY IT

1. **3(2x) + 4 = 40; each friend buys 6 tokens.** Subtract 4 from both sides to get 6x = 36, then divide by 6.
2. **4 + 3x <= 28; x <= 8; greatest whole number: 8 hours.** Subtract 4 to get 3x <= 24, then divide by 3. The budget allows at most 8 hours.

CHALLENGE

The student did not reverse the inequality sign when dividing by -3. The correct solution is x > -4.

Accept equivalent equations or inequalities in the word problems. In the challenge, the explanation must identify division by a negative number as the reason the sign reverses.