LESSON MAKER PRO

Choose Your Move

Use the structure of each equation or inequality to find an efficient path.

GRADE 8 · 8A.AF.D

8A.AF.D "The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without..."

NAME _____ DATE _____

LOOK BEFORE YOU SOLVE

Look for parentheses, like terms, and x on both sides before choosing your first move. Distribute when needed, then use equal moves on both sides to isolate x. If x cancels, check whether the numbers left behind make a true or false statement.

WORKED EXAMPLE

Solve $6(x + 8) = x + 53$.

1. Distribute: $6x + 48 = x + 53$.
2. Subtract x and 48 from both sides: $5x = 5$.
3. Divide by 5: $x = 1$.
4. Check: $6(1 + 8) = 54$ and $1 + 53 = 54$.

Answer: x = 1

PRACTICE 6 problems

1 Solve $9x + 14 = 32$.

ANSWER _____

2 Solve $4(x + 9) = 2x + 50$.

ANSWER _____

3 Solve $13x - 10 = 9x + 26$.

ANSWER _____

4 Solve $3(x + 10) = 3x + 30$. State why your answer makes sense.

ANSWER _____

_____

5 Solve $2(x + 11) = 2x + 29$. State why your answer makes sense.

ANSWER _____

_____

6 Solve $4x + 10 \leq 38$.

ANSWER _____

APPLY IT Show your work

1 A music app offers two plans. Plan A costs $11 plus $4 per downloaded song. Plan B costs $29 plus $2 per downloaded song. After how many songs will the plans cost the same?

WORK SPACE

ANSWER _____

2 You have at most $43 for a gaming account. The account fee is $10, and each game costs $3. What is the greatest number of games you can buy?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Find all values of x that satisfy both $3x + 10 \leq 31$ and $2(x - 9) > -4$. Explain your answer.

WORK SPACE AND ANSWER

ANSWER KEY

Choose Your Move

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 9x + 14 = 32.	**x = 2**
2	Solve 4(x + 9) = 2x + 50.	**x = 7**
3	Solve 13x - 10 = 9x + 26.	**x = 9**
4	Solve 3(x + 10) = 3x + 30. State why your answer makes sense.	**Infinitely many solutions. Both sides simplify to 3x + 30.**
5	Solve 2(x + 11) = 2x + 29. State why your answer makes sense.	**No solution. Subtracting 2x from both sides gives 22 = 29, which is false.**
6	Solve 4x + 10 ≤ 38.	**x ≤ 7**

PART 2 · APPLY IT

1. **9 songs** Set the costs equal: 11 + 4x = 29 + 2x. Subtract 2x and 11 to get 2x = 18, so x = 9.
2. **11 games** Write 10 + 3x ≤ 43, then solve to get x ≤ 11. Since you can buy only whole games, the greatest number is 11.

CHALLENGE

No values satisfy both inequalities. The first gives x ≤ 7, while the second gives x > 7.

Accept equivalent statements of the solution sets. For Problems 4 and 5, students should use the true or false statement left after x cancels to justify their answer.