LESSON MAKER PRO

Balance Both Sides

Use equivalent steps to solve linear equations.

HIGH SCHOOL · HSA-REI.A

CCSS.Math.Content.HSA-REI.A "Understand solving equations as a process of reasoning and explain the reasoning"

NAME _____ DATE _____

KEEP THE EQUATION BALANCED

An equation states that two expressions have the same value. Use the same inverse operation on both sides to create an equivalent equation, then isolate x. Check your result by substituting it into the original equation.

WORKED EXAMPLE

Solve: $7x - 5 = 30$

1. Add 5 to both sides: $7x = 35$.
2. Divide both sides by 7: $x = 5$.
3. Check: $7(5) - 5 = 30$.

Answer: x = 5

PRACTICE 6 problems

1 Solve: $3x + 8 = 26$

ANSWER _____

2 Solve: $4(x - 1) = 36$

ANSWER _____

3 Solve: $2(x + 9) = 24$

ANSWER _____

4 Solve: $x/4 + 3 = 9$

ANSWER _____

5 Solve: $11x + 2 = 68$

ANSWER _____

6 Solve: $9 - 2x = -15$

ANSWER _____

APPLY IT Show your work

1 A gaming account has $18 available. After paying a $6 account fee, the remaining money buys game credits that cost $3 each. How many credits can be bought?

WORK SPACE

ANSWER _____

2 A student club pays a $12 setup fee plus $4 for each team shirt. The total cost is $48. How many shirts does the club order?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve: 3(2x - 4) + 8 = 2(x + 9). Then explain in one or two sentences why your steps do not change the solution.

WORK SPACE AND ANSWER

Balance Both Sides

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve: 3x + 8 = 26	**x=6**
2	Solve: 4(x - 1) = 36	**x = 10**
3	Solve: 2(x + 9) = 24	**x=3**
4	Solve: x/4 + 3 = 9	**x = 24**
5	Solve: 11x + 2 = 68	**x=6**
6	Solve: 9 - 2x = -15	**x = 12**

PART 2 · APPLY IT

1. **4 credits** Let x be the number of credits. Solve 3x + 6 = 18 to get x = 4.
2. **9 shirts** Let x be the number of shirts. Solve 4x + 12 = 48 to get x = 9.

CHALLENGE

x = 11/2. I distributed and combined like terms, then used the same inverse operations on both sides, which kept the equation balanced.

Accept any correctly shown sequence of equivalent equations. For the challenge, accept 11/2 or 5.5 and an explanation that equal operations on both sides preserve equality.