LESSON MAKER PRO

Equation Escape

Simplify, balance, and solve for x.

GRADE 8 · 8.PFA.4

8.PFA.4 "The student will write and solve multistep linear equations in one variable, including problems in context that require the solution of a multistep linear equation in one variable..."

NAME _____ DATE _____

KEEP BOTH SIDES BALANCED

First simplify each side by distributing and combining like terms. Then use the same inverse operation on both sides until x is alone. Check by replacing x with your answer in the original equation.

WORKED EXAMPLE

Solve: $12(x + 1) = 6x + 18$

1. Distribute: $12x + 12 = 6x + 18$
2. Subtract $6x$: $6x + 12 = 18$
3. Subtract 12: $6x = 6$
4. Divide by 6: $x = 1$

Answer: x = 1

PRACTICE 6 problems

1 Solve: $4x - 9 = 19$

ANSWER _____

2 Solve: $8x + 5 = 3x + 30$

ANSWER _____

3 Solve: $7(x - 4) = 35$

ANSWER _____

4 Solve: $9x + 14 = 4x - 21$

ANSWER _____

5 Solve: $13x - 9x + 15 = 43$

ANSWER _____

6 Solve: $14(x + 2) = 9x + 55$

ANSWER _____

APPLY IT Show your work

1 A game tournament can use Room A for a $35 fee plus $4 per player. Room B costs a $15 fee plus $9 per player. Write and solve an equation to find how many players make the room costs equal.

WORK SPACE

ANSWER _____

2 A robotics team has $70. It pays a $14 registration fee and spends $7 on each sensor. Write and solve an equation to find how many sensors the team can buy.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve and confirm by substitution: $8(4x - 5) + 9 = 7(x + 13) + 3$

WORK SPACE AND ANSWER

ANSWER KEY

Equation Escape

GRADE 8 · 8.PFA.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve: 4x - 9 = 19	**x=7**
2	Solve: 8x + 5 = 3x + 30	**x=5**
3	Solve: 7(x - 4) = 35	**x=9**
4	Solve: 9x + 14 = 4x - 21	**x = -7**
5	Solve: 13x - 9x + 15 = 43	**x=7**
6	Solve: 14(x + 2) = 9x + 55	**x = 27/5**

PART 2 · APPLY IT

1. **4 players** Use 35 + 4x = 15 + 9x. Solving gives 20 = 5x, so x = 4.
2. **8 sensors** Use 14 + 7x = 70. Subtract 14, then divide by 7 to get x = 8.

CHALLENGE

x = 5; substituting gives 129 = 129.

Accept equivalent equation forms during students' work. For the last practice problem, accept x = 27/5 or x = 5 2/5.