LESSON MAKER PRO

Undo the Equation

Solve two-step equations and use them in real situations.

HIGH SCHOOL · FA.A.8

FA.A.8 "Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. (7.EE.4a)"

NAME _____ DATE _____

WORK BACKWARD

For px + q = r, subtract q, then divide by p. For p(x + q) = r, divide by p first, then subtract q. Both methods work with fractions, decimals, and negative numbers when p is not zero.

WORKED EXAMPLE

Solve 9(x + 7) = 144.

1. Divide both sides by 9: x + 7 = 16.
2. Subtract 7 from both sides: x = 9.

Answer: x = 9

PRACTICE 6 problems

1 Solve 4x + 3 = 27.

ANSWER _____

2 Solve (1/2)x - 5 = 1.

ANSWER _____

3 Solve -3x + 1/2 = -17/2.

ANSWER _____

4 Solve 6(x - 1/3) = 10.

ANSWER _____

5 Solve (3/4)(x + 4) = 6.

ANSWER _____

6 Solve -2(x + 1/4) = 3/2.

ANSWER _____

APPLY IT Show your work

1 An arcade charges $4 to enter and $1.50 per game. You spend $19 in all. How many games did you play? Write and solve an equation.

WORK SPACE

ANSWER _____

2 Four friends each buy a $6 movie ticket and spend the same amount, x dollars, on snacks. Their total is $44. How much does each friend spend on snacks? Write and solve an equation.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student tries to solve (2/3)(x - 3/4) = 5/2 by multiplying 5/2 by 2/3, then adding 3/4. Explain the error and find x.

WORK SPACE AND ANSWER

ANSWER KEY

Undo the Equation

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 4x + 3 = 27.	**x = 6**
2	Solve (1/2)x - 5 = 1.	**x = 12**
3	Solve -3x + 1/2 = -17/2.	**x = 3**
4	Solve 6(x - 1/3) = 10.	**x = 2**
5	Solve (3/4)(x + 4) = 6.	**x = 4**
6	Solve -2(x + 1/4) = 3/2.	**x = -1**

PART 2 · APPLY IT

1. **10 games** Let x be the number of games. Solve 1.50x + 4 = 19 to get x = 10.
2. **$5 per friend** Solve 4(x + 6) = 44. Dividing by 4 and subtracting 6 gives x = 5.

CHALLENGE

The student should multiply by 3/2, the reciprocal of 2/3. Then x - 3/4 = 15/4, so x = 9/2.

Accept equivalent fractions or decimals for the equation solutions. For the challenge, accept any explanation that correctly uses division by 2/3 or multiplication by 3/2.