

Balance It Out

Use inverse operations to solve for x .

GRADE 6 • 6.PFA.3.c

6.PFA.3.c "Apply properties of real numbers and properties of equality to solve a one-step equation in one variable. Coefficients are limited to integers and unit fractions. Numeric terms are limited to integers."

NAME _____

DATE _____

KEEP BOTH SIDES EQUAL

To undo addition or subtraction, use the opposite operation on both sides. To undo multiplication by a number or a unit fraction, multiply both sides by its reciprocal. Do the same operation to each side so the equation stays balanced.

WORKED EXAMPLE

Solve: $x/6 = 7$

1. Multiply both sides by 6.
2. $6(x/6) = 7 \cdot 6$
3. $x = 42$

Answer: $x = 42$

PRACTICE 6 problems

1 Solve: $x + 9 = -4$

ANSWER _____

2 Solve: $x - 8 = 11$

ANSWER _____

3 Solve: $-4x = 20$

ANSWER _____

4 Solve: $x/4 = -5$

ANSWER _____

5 Solve: $(1/3)x = 12$

ANSWER _____

6 Solve: $5x = -25$

ANSWER _____

APPLY IT Show your work

- 1** Jayden has x coins in a game. He uses 15 coins to unlock a character and has 28 coins left. How many coins did Jayden have at first?

WORK SPACE

ANSWER _____

- 2** Mina reads one-fourth of an x -page graphic novel during study hall. She reads 9 pages. How many pages are in the graphic novel?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Solve: $(-1/8)x = 3$. Explain which number you multiply both sides by.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $x + 9 = -4$	$x = -13$
2	Solve: $x - 8 = 11$	$x = 19$
3	Solve: $-4x = 20$	$x = -5$
4	Solve: $x/4 = -5$	$x = -20$
5	Solve: $(1/3)x = 12$	$x = 36$
6	Solve: $5x = -25$	$x = -5$

PART 2 • APPLY IT

- 43 coins** Write $x - 15 = 28$. Add 15 to both sides to get $x = 43$.
- 36 pages** Write $x/4 = 9$. Multiply both sides by 4 to get $x = 36$.

CHALLENGE

$x = -24$; multiply both sides by -8.

Accept equivalent multiplication notation, such as $x/4$ or $(1/4)x$. Students may show inverse operations in a different order if both sides of the equation are treated equally.