

Balance It Out

Use addition and subtraction to solve for x .

GRADE 6 • MA.6.AR.2.2

MA.6.AR.2.2 "Write and solve one-step equations in one variable within a mathematical or real-world context using addition and subtraction, where all terms and solutions are integers."

NAME _____

DATE _____

KEEP BOTH SIDES EQUAL

To solve an equation, undo the number added to or subtracted from x . Do the same inverse operation to both sides so the equation stays balanced.

WORKED EXAMPLE

Solve: $x - 15 = 7$

1. Add 15 to both sides.
2. $x - 15 + 15 = 7 + 15$
3. $x = 22$

Answer: $x = 22$

PRACTICE 6 problems

1 Solve: $x + 8 = 21$

ANSWER _____

2 Solve: $x - 14 = 9$

ANSWER _____

3 Solve: $-6 + x = 5$

ANSWER _____

4 Solve: $x + (-10) = -18$

ANSWER _____

5 Solve: $x - (-6) = 2$

ANSWER _____

6 Solve: $18 = x + 25$

ANSWER _____

APPLY IT Show your work

- 1** At the start of a game round, Leo has x coins. He earns 18 coins and then has 53 coins. Write and solve an equation to find how many coins Leo had at the start.

WORK SPACE

ANSWER _____

- 2** The drama club sold x tickets before refunds. After 16 refunds, 29 tickets remained sold. Write and solve an equation to find how many tickets were sold before refunds.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A student says that $x + (-9) = 14$ has the solution $x = 5$. Is the student correct? Explain your reasoning and give the correct solution.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $x + 8 = 21$	$x = 13$
2	Solve: $x - 14 = 9$	$x = 23$
3	Solve: $-6 + x = 5$	$x = 11$
4	Solve: $x + (-10) = -18$	$x = -8$
5	Solve: $x - (-6) = 2$	$x = -4$
6	Solve: $18 = x + 25$	$x = -7$

PART 2 • APPLY IT

1. **$x + 18 = 53$; $x = 35$** Subtract 18 from both sides of $x + 18 = 53$. Leo started with 35 coins.
2. **$x - 16 = 29$; $x = 45$** Add 16 to both sides of $x - 16 = 29$. The club sold 45 tickets before refunds.

CHALLENGE

No. $x = 23$, because adding 9 to both sides gives $x = 23$.

Accept equivalent equation forms for the word problems, such as $53 = x + 18$. For the challenge, accept any explanation showing that 9 must be added to both sides.