

Balance and Solve

Use equations and inequalities to find unknown values.

GRADE 7 • 7.PAR.3

7.PAR.3 "Represent authentic situations using equations and inequalities with variables; solve equations and inequalities symbolically, using the properties of equality."

NAME _____

DATE _____

KEEP BOTH SIDES FAIR

Use inverse operations to get x alone, and do the same operation to both sides of an equation or inequality. When you multiply or divide an inequality by a negative number, reverse the inequality sign.

WORKED EXAMPLE

Solve: $13x - 17 = 61$

1. Add 17 to both sides: $13x = 78$

2. Divide both sides by 13: $x = 6$

Answer: $x = 6$

PRACTICE 6 problems

1 Solve: $x + 14 = 39$

ANSWER _____

2 Solve: $8x = 72$

ANSWER _____

3 Solve: $4x - 9 = 31$

ANSWER _____

4 Solve: $x/3 + 11 = 19$

ANSWER _____

5 Solve: $2(x + 4) = 30$

ANSWER _____

6 Solve: $20 - 4x \geq 0$

ANSWER _____

APPLY IT Show your work

- 1** An art club has \$18 to start a fundraiser. It earns \$4 for each keychain it sells and wants to raise at least \$50. Write and solve an inequality to find how many keychains the club must sell.

WORK SPACE

ANSWER _____

- 2** A coding club has \$45 for tournament registration. The team registration fee is \$9, and each player costs \$3 to register. Write and solve an equation to find how many players can register if the club spends all \$45.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Solve: $3(x - 4) + 2 = 2x + 15$

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $x + 14 = 39$	$x = 25$
2	Solve: $8x = 72$	$x = 9$
3	Solve: $4x - 9 = 31$	$x = 10$
4	Solve: $x/3 + 11 = 19$	$x = 24$
5	Solve: $2(x + 4) = 30$	$x = 11$
6	Solve: $20 - 4x \geq 0$	$x \leq 5$

PART 2 • APPLY IT

1. **$18 + 4x \geq 50$; $x \geq 8$** Let x be the number of keychains. Subtract 18, then divide by 4 to get $x \geq 8$.
2. **$3x + 9 = 45$; $x = 12$** Let x be the number of players. Subtract 9 from both sides, then divide by 3 to get $x = 12$.

CHALLENGE

$x = 25$

Accept equivalent equation or inequality forms for the word problems. For the inequality, accept $x \leq 5$, including wording such as “ x is less than or equal to 5.”