

Solve It Smart

Use variables to model and solve real situations.

GRADE 7 • 7.EE.B.4

CCSS.Math.Content.7.EE.B.4 "Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities."

NAME _____

DATE _____

MODEL WITH X

Let x represent the unknown quantity. Use an equation when two amounts are equal, and use an inequality when an amount can be greater than, less than, at least, or at most another amount. Undo operations in reverse order to isolate x .

WORKED EXAMPLE

Solve: $8x + 6 = 38$

1. Subtract 6 from both sides: $8x = 32$.
2. Divide both sides by 8: $x = 4$.

Answer: $x = 4$

PRACTICE 6 problems

1 Solve: $3x + 2 = 29$

ANSWER _____

2 Solve: $2x - 7 = 19$

ANSWER _____

3 Solve: $x/5 + 1 = 3$

ANSWER _____

4 Solve: $7(x - 2) = 35$

ANSWER _____

5 Solve: $21 - 3x = 0$

ANSWER _____

6 Solve: $5x + 3 \leq 18$

ANSWER _____

APPLY IT Show your work

- 1** The esports club charges \$12 for a team registration and \$3 per player. A team paid \$27 total. How many players registered?

WORK SPACE

ANSWER _____

- 2** Jordan has \$30 for a movie ticket and snacks. The ticket costs \$9, and each snack costs \$3. What is the greatest number of snacks Jordan can buy without spending more than \$30?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A game gives 2 free gems when you start and 5 gems for each quest you complete. You need at least 27 gems to unlock a character. What is the least number of quests you must complete? Write an inequality and solve it.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $3x + 2 = 29$	$x = 9$
2	Solve: $2x - 7 = 19$	$x = 13$
3	Solve: $x/5 + 1 = 3$	$x = 10$
4	Solve: $7(x - 2) = 35$	$x = 7$
5	Solve: $21 - 3x = 0$	$x = 7$
6	Solve: $5x + 3 \leq 18$	$x \leq 3$

PART 2 • APPLY IT

- 5 players** Let p be the number of players. Solve $12 + 3p = 27$ to get $p = 5$.
- 7 snacks** Let s be the number of snacks. Solve $9 + 3s \leq 30$ to get $s \leq 7$, so Jordan can buy at most 7 snacks.

CHALLENGE

$2 + 5q \geq 27$; $q \geq 5$, so the least number is 5 quests.

Accept equivalent equation and inequality forms. For the context problems, accept only whole-number quantities that make sense in the situation.