

# Solve It Straight

Use inverse operations to solve and check one-step relationships.

**GRADE 6 • TEKS 6.10**

**6.10** "Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to solve problems. The student is expected to: model and solve one-variable..."

NAME \_\_\_\_\_

DATE \_\_\_\_\_

**UNDO THE OPERATION**

To solve a one-step equation, use the inverse operation to get the variable alone. To solve an inequality, use inverse operations too, but reverse the inequality sign when you multiply or divide by a negative number.

**WORKED EXAMPLE**

Solve  $x/4 = 5$ .

1. Start:  $x/4 = 5$
2. Multiply both sides by 4.
3.  $x = 5 * 4$
4.  $x = 20$

**Answer:  $x = 20$**

**PRACTICE** 6 problems

**1** Solve  $a + 9 = 23$ .

**ANSWER** \_\_\_\_\_

**2** Solve  $b - 7 = 12$ .

**ANSWER** \_\_\_\_\_

**3** Solve  $8c = 56$ .

**ANSWER** \_\_\_\_\_

**4** Solve  $d/3 = 9$ .

**ANSWER** \_\_\_\_\_

**5** Solve  $-2e \leq 16$ .

**ANSWER** \_\_\_\_\_

**6** Does  $f = 11$  make  $f - 8 > 1$  true?

**ANSWER** \_\_\_\_\_

## APPLY IT Show your work

- 1** The art club is making equilateral triangle flags. One flag has a perimeter of 39 inches. Each side has length  $s$  inches. Write an equation and solve for  $s$ .

WORK SPACE

ANSWER \_\_\_\_\_

- 2** Jalen wants to buy  $t$  tickets to an esports tournament. Tickets cost \$6 each, and he can spend no more than \$42. Write and solve an inequality for  $t$ .

WORK SPACE

ANSWER \_\_\_\_\_

## CHALLENGE One step up

### CHALLENGE

Which values make  $-2x \geq 0$  true:  $x = -3$ ,  $x = 0$ , or  $x = 7$ ? Explain your reasoning.

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## PART 1 • PRACTICE

| # | PROBLEM                              | ANSWER                                                          |
|---|--------------------------------------|-----------------------------------------------------------------|
| 1 | Solve $a + 9 = 23$ .                 | <b><math>a = 14</math></b>                                      |
| 2 | Solve $b - 7 = 12$ .                 | <b><math>b = 19</math></b>                                      |
| 3 | Solve $8c = 56$ .                    | <b><math>c = 7</math></b>                                       |
| 4 | Solve $d/3 = 9$ .                    | <b><math>d = 27</math></b>                                      |
| 5 | Solve $-2e \leq 16$ .                | <b><math>e \geq -8</math></b>                                   |
| 6 | Does $f = 11$ make $f - 8 > 1$ true? | <b>Yes. <math>11 - 8 = 3</math>, and <math>3 &gt; 1</math>.</b> |

## PART 2 • APPLY IT

- $3s = 39$ ;  $s = 13$  inches** An equilateral triangle has three equal sides, so its perimeter is  $3s$ . Divide 39 by 3 to find the side length.
- $6t \leq 42$ ;  $t \leq 7$ , so Jalen can buy at most 7 tickets.** Multiply the ticket cost by the number of tickets and use  $\leq$  because Jalen cannot spend more than \$42. Divide both sides by 6.

## CHALLENGE

**$x = -3$  and  $x = 0$ . Substituting  $-3$  gives  $6 \geq 0$ , and substituting  $0$  gives  $0 \geq 0$ . Substituting  $7$  gives  $-14 \geq 0$ , which is false.**

Accept equivalent inequality forms, such as  $-8 \leq e$ . For the ticket problem, accept  $t \leq 7$  with the understanding that  $t$  represents a nonnegative whole number of tickets.