LESSON MAKER PRO

# Solve It Out

*Model real situations with one-step equations and inequalities.*

**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 _____

## MATCH THE SITUATION

Choose x for the unknown amount. Write an equation when two amounts are equal, and write an inequality when an amount must be greater than, less than, at least, or no more than another amount. Solve by using the opposite operation, then check that your answer fits the situation.

## WORKED EXAMPLE

Six equal ticket bundles cost $42. Let x be the cost of one bundle. Find x.

1. Let x = the cost of one ticket bundle.
2. Write 6x = 42.
3. Divide both sides by 6: x = 7.
4. Check: 6(7) = 42.

**Answer: x = 7 dollars per bundle**

## PRACTICE 6 problems

**1** Three equal bags hold 24 oranges altogether. Let x be the number of oranges in one bag. Find x.

**ANSWER** _____

**2** A reader split a book with x pages into 5 equal sections. Each section has 9 pages. Find the total number of pages.

**ANSWER** _____

**3** Noah had x trading cards. After he gave 11 cards away, he had 14 cards left. Find x.

**ANSWER** _____

**4** A playlist can be no more than 30 minutes long. It already has 13 minutes of songs, and x is the number of minutes that can be added. Solve x + 13 <= 30.

**ANSWER** _____

**5** A square garden has a perimeter of 36 feet. Let x be the length of one side. Find x.

**ANSWER** _____

**6** To unlock a game badge, a player must have more than 9 points after a 4-point penalty. The player starts with x points, so x - 4 > 9. Do x = 12 and x = 14 make the inequality true? Show each substitution.

**ANSWER** _____

## APPLY IT Show your work

**1** A club bus has 30 seats. Twenty-two seats are already filled. Let x be the number of additional students who can ride. Write and solve an inequality for x.

WORK SPACE

**ANSWER** _____

**2** A rectangular poster has an area of 40 square inches and a width of 5 inches. Let x be its length. Write and solve an equation for x.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

A gaming club has a strict rule that snack packs must cost less than $48 total. Each pack costs $4, so $4x < 48$. Kai says $x = 12$ makes the inequality true. In 1-2 sentences, decide whether Kai is correct and explain your reasoning.

WORK SPACE AND ANSWER

**ANSWER KEY** # Solve It Out

**GRADE 6 · TEKS 6.10**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Three equal bags hold 24 oranges altogether. Let x be the number of oranges in one bag. Find x. | **x = 8 oranges** |
| 2 | A reader split a book with x pages into 5 equal sections. Each section has 9 pages. Find the total number of pages. | **x = 45 pages** |
| 3 | Noah had x trading cards. After he gave 11 cards away, he had 14 cards left. Find x. | **x = 25 cards** |
| 4 | A playlist can be no more than 30 minutes long. It already has 13 minutes of songs, and x is the number of minutes that can be added. Solve x + 13 <= 30. | **x <= 17 minutes** |
| 5 | A square garden has a perimeter of 36 feet. Let x be the length of one side. Find x. | **x = 9 feet** |
| 6 | To unlock a game badge, a player must have more than 9 points after a 4-point penalty. The player starts with x points, so x - 4 > 9. Do x = 12 and x = 14 make the inequality true? Show each substitution. | **x = 12: no, because 12 - 4 > 9 is false. x = 14: yes, because 14 - 4 > 9 is true.** |

## PART 2 · APPLY IT

1. **22 + x <= 30; x <= 8 additional students** Model the seat limit with 22 + x <= 30. Subtract 22 from both sides to get x <= 8.
2. **5x = 40; x = 8 inches** Use area = length times width to write 5x = 40. Divide both sides by 5 to find x = 8.

## CHALLENGE

**No. Substituting 12 gives 4(12) < 48, or 48 < 48, which is false, so the club can buy fewer than 12 packs.**

Accept equivalent equations and inequalities that correctly model each situation. For inequality answers, accept a correct verbal description of the solution set, such as "at most 8 additional students."