LESSON MAKER PRO

# Solve It Smart

*Use equations and inequalities to model real situations.*

**GRADE 8 · 8.PAR.3.3**

**8.PAR.3.3** "Create and solve linear equations and inequalities in one variable within a relevant application."

NAME _____ DATE _____

## BALANCE AND COMPARE

Use x for the unknown amount. To solve an equation, undo operations in reverse order on both sides. To solve an inequality, do the same, but reverse the inequality sign when you multiply or divide by a negative number.

## WORKED EXAMPLE

Solve 6x - 5 = 31.

1. Add 5 to both sides: 6x = 36.
2. Divide both sides by 6: x = 6.

**Answer: x = 6**

## PRACTICE 6 problems

**1** Solve: 7x - 9 = 40

**ANSWER** _____

**2** Solve: x/4 + 3 = 9

**ANSWER** _____

**3** Solve: 2(x + 4) = 22

**ANSWER** _____

**4** Solve: 9 - 2x > -7

**ANSWER** _____

**5** Solve: 3x - 2 >= 19

**ANSWER** _____

**6** Solve: -2x + 13 > 27

**ANSWER** _____

## APPLY IT Show your work

**1** A gaming club charges a $12 membership fee plus $3 for each tournament you enter. You can spend no more than $45. Write and solve an inequality to find the greatest number of tournaments, x, you can enter.

WORK SPACE

**ANSWER** _____

**2** You have $18 saved for a new game and save $7 each week. The game costs $74. Write and solve an equation to find the number of weeks, x, you need to save.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

A school concert sells student tickets for $9 each and has already sold 14 adult tickets for $13 each. Ticket sales must be no more than $350. What is the greatest whole number of student tickets, x, the concert can sell? Show why your answer must be a whole number.

WORK SPACE AND ANSWER

# Solve It Smart



## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Solve: 7x - 9 = 40 | **x = 7** |
| 2 | Solve: x/4 + 3 = 9 | **x = 24** |
| 3 | Solve: 2(x + 4) = 22 | **x = 7** |
| 4 | Solve: 9 - 2x > -7 | **x < 8** |
| 5 | Solve: 3x - 2 >= 19 | **x >= 7** |
| 6 | Solve: -2x + 13 > 27 | **x < -7** |

## PART 2 · APPLY IT

1. **x <= 11, so the greatest number of tournaments is 11.** Write 12 + 3x <= 45. Subtract 12, then divide by 3 to get x <= 11.
2. **x = 8 weeks** Write 18 + 7x = 74. Subtract 18, then divide by 7 to get x = 8.

## CHALLENGE

**18 student tickets. 9x + 14(13) <= 350 gives 9x <= 168, so x <= 18 2/3. Since tickets must be whole tickets, the greatest possible number is 18.**

Accept equivalent inequality forms, including solutions written in words. For the challenge, accept 18 only when the student explains that a fraction of a ticket cannot be sold.