LESSON MAKER PRO

# Solve for It

*Rearrange equations to put the quantity you need on its own.*

**HIGH SCHOOL · MT.CORE.ALG.FUN.8**

**MT.CORE.ALG.FUN.8** "Rearrange literal equations to highlight quantities of interest."

NAME _____ DATE _____

### KEEP IT BALANCED

To highlight a quantity, get it alone on one side of the equation. Use inverse operations on both sides, then divide by its coefficient if needed. A quantity you divide by must not equal zero.

### WORKED EXAMPLE

Solve $7q + 11r = 29$ for q.

1. Subtract 11r from both sides: $7q = 29 - 11r$.
2. Divide both sides by 7: $q = (29 - 11r)/7$.

**Answer: q = (29 - 11r)/7**

## PRACTICE 6 problems

**1** Solve $3a + b = c$ for a.

**ANSWER** _____

**2** Solve $P = 2l + 2w$ for w.

**ANSWER** _____

**3** Solve $d = rt$ for t. Assume r is not zero.

**ANSWER** _____

**4** Solve $y = mx + b$ for x. Assume m is not zero.

**ANSWER** _____

**5** Solve $A = (b_1 + b_2)h/2$ for $b_2$. Assume h is not zero.

**ANSWER** _____

**6** Solve $C = 5(F - 32)/9$ for F.

**ANSWER** _____

## APPLY IT Show your work

**1** A group rents a game room for $48, then pays $6 for each person who plays. The total cost is B = 48 + 6n, where n is the number of players. Solve for n, then find how many players can attend if the total cost is $120.

WORK SPACE

**ANSWER** _____

**2** A student club sells concert tickets for $18 each and bus passes for $5 each. Its revenue is R = 18t + 5p, where t is the number of tickets and p is the number of passes. Solve for p, then find how many passes the club sold if R = $135 and t = 5.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

Solve k = (3x + 4)/(2x - 5) for x. State the value of k for which your expression is undefined.

WORK SPACE AND ANSWER

# Solve for It



## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Solve 3a + b = c for a. | **a = (c - b)/3** |
| 2 | Solve P = 2l + 2w for w. | **w = (P - 2l)/2** |
| 3 | Solve d = rt for t. Assume r is not zero. | **t = d/r** |
| 4 | Solve y = mx + b for x. Assume m is not zero. | **x = (y - b)/m** |
| 5 | Solve $A = (b_1 + b_2)h/2$ for $b_2$. Assume h is not zero. | **$b_2 = 2A/h - b_1$** |
| 6 | Solve C = 5(F - 32)/9 for F. | **F = 9C/5 + 32** |

## PART 2 · APPLY IT

1. **n = (B - 48)/6; 12 players** Subtract 48 and divide by 6. When B = 120, n = (120 - 48)/6 = 12.
2. **p = (R - 18t)/5; 9 passes** Subtract 18t and divide by 5. With R = 135 and t = 5, p = (135 - 90)/5 = 9.

## CHALLENGE

**x = (5k + 4)/(2k - 3); undefined when k = 3/2**

Accept algebraically equivalent expressions. In the challenge, k = 3/2 makes the rearranged equation impossible, so no x satisfies the original equation for that value.