

39 Rearranging Formulas (Lesson 19)

Do Now:

Exercise

1. **Solve** each equation **for x** . For part (b), remember a variable symbol, like a , b , and c , represents a number.
 - a. $2x - 6 = 10$
 - b. $ax - b = c$

Exercise

2. **Solve** the equation $ax - b = c$ **for a** this time. Are the steps you take different from part (b)?

Example : Rearranging Familiar Formulas

Rearrange each formula to solve for the specified variable. Assume no variable is equal to 0.

1. The perimeter formula for a rectangle is $p = 2(l + w)$ where p = perimeter, l = length, and w = width. Solve for w .

Exercise

- a. Given $A = P(1 + rt)$,
 - i. Solve for P .
 - ii. Solve for t .

- i. Given $K = \frac{1}{2}mv^2$, solve for v .

Example: Comparing Equations with one Variable to those with more than one Variable

Try the left column first. If you're stuck, solve the matching equation on the right first.

Equation Containing More Than One Variable	Related Equation
Solve $ax + b = d - cx$ for x .	Solve $3x + 4 = 6 - 5x$ for x .
Solve for x . $\frac{ax}{b} + \frac{cx}{d} = e$	Solve for x . $\frac{2x}{5} + \frac{x}{7} = 3$

Problem Set

Solve each equation for x .

1. $ax + 3b = 2f$

2. $rx + h = sx - k$

3. $\frac{x+b}{4} = c$

4. $\frac{x}{5} - 7 = 2q$

5. $\frac{x}{6} - \frac{x}{7} = ab$

6. $\frac{3ax+2b}{c} = 4d$

7. Solve for
- m
- .

$$T = 4\sqrt{m}$$

8. Solve for
- d
- .

$$F = G \frac{mn}{d^2}$$

9. Solve for
- b_1

$$A = \frac{1}{2}h(b_1 + b_2)$$

10. The science teacher wrote three equations on a board that relate velocity,
- v
- , distance traveled,
- d
- , and the time to travel the distance,
- t
- , on the board.

$$v = \frac{d}{t}$$

$$t = \frac{d}{v}$$

$$d = vt$$

Would you need to memorize all three equations or could you just memorize one? Explain your reasoning.