ALBERT

Name _____ Date _____

# Literal Equations Worksheet

Algebra 1 · Common Core HSA-CED.A.4

> Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.

## Practice

Builds the skill step by step.

1. The distance formula is d = rt, where d is distance, r is rate and t is time. Solve the formula for t.

2. The area of a rectangle is A = lw. Which equation is solved for w?

   A. $w = A - l$

   B. $w = Al$

   C. $w = \frac{l}{A}$

   D. $w = \frac{A}{l}$

3. The perimeter of a square is p = 4s. Solve the formula for s.

4. Solve y = mx + b for b.

5. Ohm's law says V = IR. Which equation shows the formula solved for R?

   A. $R = \frac{V}{I}$

   B. $R = VI$

   C. $R = \frac{I}{V}$

   D. $R = V - I$

6. The perimeter of a rectangle is p = 2l + 2w. Solve for w. (First subtract 2l from both sides.)

7. Simple interest is i = prt. Solve the formula for r.

8. Solve 3x + y = 12 for y.

9. Use d = rt. Solve for t, then find how long it takes to drive 150 miles at 60 miles per hour.

10. Kai is solving 5x − 2y = 10 for y. After his first step, the equation is −2y = 10 − 5x. What did he do?

    A. He subtracted 10 from both sides.

    B. He added 5x to both sides.

    C. He subtracted 5x from both sides.

    D. He divided both sides by −2.

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## On Level

Grade-level practice.

1. The area of a triangle is $a = \frac{1}{2}bh$. Solve the formula for h.

2. Solve $y = mx + b$ for m.

3. The formula $f = \frac{9}{5}c + 32$ changes a Celsius temperature c to Fahrenheit f. Solve the formula for c.

4. Use the formula from the last problem to change 77°F to degrees Celsius.

5. Solve $ax + b = c$ for x.

   A. $x = \frac{c + b}{a}$

   B. $x = \frac{c - b}{a}$

   C. $x = a(c - b)$

   D. $x = \frac{c}{a} - b$

6. Solve $4x - 3y = 24$ for y.

7. The volume of a rectangular box is v = lwh. Solve the formula for h.

8. A box holds 360 cubic inches. Its base is 10 inches by 6 inches. Use your formula from the last problem to find the height of the box.

9. A taxi ride costs c = 3 + 2.5m dollars, where m is the number of miles. Solve the formula for m.

10. Use the taxi formula. How many miles is a ride that costs $28?

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## Challenge

Multi-step and word problems that stretch it.

1. The mean of two numbers is $m = \frac{a + b}{2}$. Solve the formula for b.

2. The area of a trapezoid with bases b and c and height h is $a = \frac{1}{2}h(b + c)$. Solve for c.

3. Solve $ax + 3 = bx + 7$ for x. Assume $a \neq b$.

4. Priya solved $p = 2l + 2w$ for w and wrote $w = p - l$. What mistake did she make?

   A. She should have multiplied both sides by 2.

   B. She should have added 2l to both sides first.

   C. She divided only the 2l term by 2, not the p term.

   D. She made no mistake; her answer is correct.

5. Solve $y = \frac{3}{x} + 2$ for x.

6. Simple interest is $i = prt$. Solve for t, then find how many years it takes $1,200 at a rate of 0.05 per year to earn 180 dollars of interest.

7. Solve $2(x + y) = z$ for y.

8. Solve $k = \frac{ab}{c}$ for b.

9. Ana and Ben each solved $6x + 2y = 18$ for y. Ana wrote $y = 9 - 3x$. Ben wrote $y = -3x + 9$. Which statement is true?

   A. Only Ana is correct.

   B. Only Ben is correct.

   C. Both are correct.

   D. Neither is correct.

10. A rectangular garden has perimeter $p = 2l + 2w$. The gardener has 54 feet of fence and wants the garden to be 15 feet long. Solve for w, then find the width.