

Literal Equations and Formulas

Algebra 1 • Section 2.5

Name: _____

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Quick Review and Helpful Hints

Solving means undoing operations in a sensible order while keeping both sides balanced. Show one clean move at a time, and substitute the answer back when the equation is easy to check.

▷ **Example:** Solve $4x - 9 = 23$.

Work: Add 9 to both sides: $4x = 32$. Divide by 4, so $x = 8$.

★ **Answer:** $x = 8$

◆ Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. Solve $y = mx + b$ for b .

2. Solve $A = \frac{1}{2}bh$ for h .

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

4. Solve $C = 2\pi r$ for r .

5. Solve $d = rt$ for t .

6. Solve $F = \frac{9}{5}C + 32$ for C .

7. Solve $V = lwh$ for w .

8. Solve $I = Prt$ for r .

9. Solve $s = \frac{a+b+c}{2}$ for c .

10. Solve $q = 3p - 7$ for p .

◆ Word Problems

11. The formula $A = lw$ gives area. Solve for w and find w if $A = 96$ and $l = 12$.

12. The formula $d = rt$ gives distance. Solve for r and find r if $d = 180$ and $t = 3$.



Answer Keys

1. $b = y - mx$

2. $h = \frac{2A}{b}$

3. $l = \frac{P-2w}{2}$

4. $r = \frac{C}{2\pi}$

5. $t = \frac{d}{r}$

6. $C = \frac{5}{9}(F - 32)$

7. $w = \frac{V}{lh}$

8. $r = \frac{I}{Pt}$

9. $c = 2s - a - b$

10. $p = \frac{q+7}{3}$

11. $w = \frac{A}{l}; w = 8$

12. $r = \frac{d}{t}; r = 60$

Step-by-Step Explanations

1. Treat b like the unknown: it has mx added on, so subtract mx from both sides.
2. Clear the fraction by multiplying by 2, then divide by b — the letter still standing next to h .
3. First subtract the $2w$ that's tagging along, then divide everything left by 2 to free l .
4. The whole chunk 2π is multiplying r , so divide both sides by it as one unit.
5. Since rate and time are multiplied, dividing both sides by r leaves time on its own.
6. Undo it in reverse order: subtract 32 first, then multiply by $\frac{5}{9}$ to cancel the $\frac{9}{5}$.

7. Three letters multiply together; the two that aren't w are l and h , so divide by their product.
8. Everything except r — that's P and t — is multiplying it, so divide both sides by Pt .
9. Multiply by 2 to lift the fraction, then move a and b off to isolate c .
10. Work backward through the operations on p : add 7 to both sides, then divide by 3.
11. Divide by l to get the general rule $w = A/l$, then plug in: $96 \div 12 = 8$.
12. Dividing by t rearranges it to $r = d/t$; substituting the numbers gives $180 \div 3 = 60$.



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