Literal Equations and Formulas

Algebra 1 •Section 2.5

Name: _____	Date: _____	Score: _____ / 12

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.

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

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

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

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5. Solve $d = rt$ for t.

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

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7. Solve $V = lwh$ for w.

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8. Solve $I = Prt$ for r.

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

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

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Word Problems

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

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

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Answer Keys

1. $\boxed{b = y - mx}$
2. $\boxed{h = \frac{2A}{b}}$
3. $\boxed{l = \frac{P-2w}{2}}$
4. $\boxed{r = \frac{C}{2\pi}}$
5. $\boxed{t = \frac{d}{r}}$
6. $\boxed{C = \frac{5}{9}(F - 32)}$
7. $\boxed{w = \frac{V}{lh}}$
8. $\boxed{r = \frac{I}{Pt}}$
9. $\boxed{c = 2s - a - b}$
10. $\boxed{p = \frac{q+7}{3}}$
11. $\boxed{w = \frac{A}{l};\ w = 8}$
12. $\boxed{r = \frac{d}{t};\ r = 60}$

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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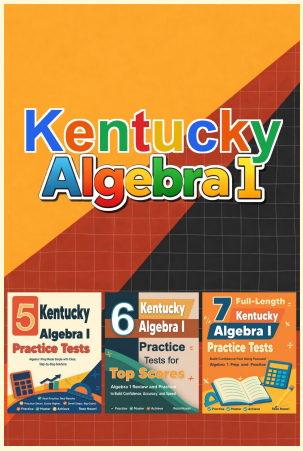

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