

Section 4 Formulas

Definition: A **formula** is an equation that represents a mathematical relationship using two or more letters.

Examples: Interest Formulas

- Simple Interest Formula: Interest = principal \cdot rate \cdot time $i = prt$
- Simple Interest Formula: $A = P + Prt$
- Compound Interest Formula: $A = P\left(1 + \frac{r}{n}\right)^{nt}$

Geometric Formulas

- Rectangles: Perimeter: $P = 2l + 2w$ Area: $A = lw$
- Squares: Perimeter: $P = 4s$ Area: $A = s^2$
- Circles: Circumference: $C = 2\pi r$ Area: $A = \pi r^2$
- Triangles: Area: $A = \frac{1}{2}bh$

Other Formulas

Distance Formula: $d = rt$

Slope-Intercept formula: $y = mx + b$

Solve a formula for a given letter:

1. Identify the letter being solved for and multiply on both sides to clear fractions.
2. Simplify to terms.
3. Get all terms with the letter to be solved for on one side of the equation and all other terms on the other side.
4. Combine like terms; this may require factoring.
5. Multiply or divide to solve for the letter in question.

Examples: Solve for the indicated letter.

a) $P = 2l + 2w$, for l

b) $C = 2\pi r$, for r

c) $A = \frac{1}{2}bh$, for h

d) $A = P + Prt$, for P

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