Lesson 2-6 Formulas

✓ Check Skills You’ll Need

Evaluate each formula for the values given.

1. Distance: \( d = rt \), when \( r = 60 \text{ mi/h} \) and \( t = 2 \text{ h} \).

2. Perimeter of a rectangle: \( P = 2l + 2w \), when \( l = 11 \text{ cm} \) and \( w = 5 \text{ cm} \).

3. Area of a triangle: \( A = \frac{1}{2}bh \), when \( b = 8 \text{ m} \) and \( h = 7 \text{ m} \).

A literal equation is an equation involving two or more variables. Formulas are special types of literal equations. To transform a literal equation, you solve for one variable in terms of the others. This means that you get the variable that you are solving for on one side of the equation.

Example 1: Transforming Geometric Formulas

Solve the formula for the area of a triangle \( A = \frac{1}{2}bh \) for height \( h \).

\[
A = \frac{1}{2}bh
\]

__________________________ Multiply each side by 2.

__________________________ Divide each side by \( b \) to get \( h \) alone on one side of the equation.

Example 2: Transforming Geometric Formulas

Solve the formula for the perimeter of a rectangle \( P = 2(l + w) \) for the width \( w \).

\[
P = 2(l + w)
\]

__________________________ Divide both sides by 2.

__________________________ Subtract \( l \) from both sides.

Example 3: Solve \( y = 5x + 7 \) for \( x \).

Example 4: Solve \( y - 4 = 3x - 8 \) for \( x \).

Example 5: Solve \( ab - d = c \) for \( b \).

Example 6: Solve \( m - hp = d \) for \( p \).

Example 7: The formula \( C = \frac{5}{9}(F - 32) \) gives the Celsius temperature \( C \) in terms of Fahrenheit temperature \( F \). Transform the formula to find \( F \) in terms of \( C \).