FORMULAS

Objective: To solve equations by working with formulas.

Example 1
- The width \( w \) is 75 feet and the perimeter \( P \) is 300 feet. Use the formula \( P = 2l + 2w \) to find the length \( l \).
  
  \[
  300 = 2l + 2(75) \\
  300 = 2l + 150 \\
  150 = 2l \\
  75 = l = \text{length}
  \]

Example 2
- Use the formula \( 2x + 3y = 6 \) to find \( y \) if \( x = -2 \).
  
  \[
  2(-2) + 3y = 6 \\
  -4 + 3y = 6 \\
  3y = 10 \\
  y = \frac{10}{3}
  \]

RE-WRITING A FORMULA

- \[ \text{GOAL: To get the variable you are solving for on one side by itself.} \]
- \[ \text{Ex. 3: Solve } y - 4 = 3x - 8 \text{ for } x. \]
  
  \[
  y - 4 + 8 = 3x \\
  y + 4 = 3x \\
  \frac{y + 4}{3} = x
  \]

Example 4
- Solve \( m - hp = d \) for \( p \).
  
  \[
  m - hp = d \\
  -hp = d - m \\
  p = \frac{d - m}{-h}
  \]
Solve for $x$. \[
\frac{x}{5} + \frac{y}{4} = 1
\]

Multiply everything by LCD=20.

\[
20\left(\frac{x}{5}\right) + 20\left(\frac{y}{4}\right) = 20(1)
\]

\[
4x + 5y = 20
\]

\[
4x = 20 - 5y
\]

\[
x = \frac{20 - 5y}{4}
\]

**SUMMARY**

- Substitute given values and solve.
- Transform the given equation or formula so that it is solved for the variable you need.