

Applications of Quadratic Equations

MATH 101 *College Algebra*

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Strategy

1. Understand the problem.
 - 1.1 Read the problem carefully (several times if necessary).
 - 1.2 Restate the problem in your own words.
2. Devise a plan.
 - 2.1 Identify the quantity asked for. Assign a variable to this quantity.
 - 2.2 Draw a picture or set up a chart if it helps.
 - 2.3 Write an equation that relates the information provided.
3. Carry out the plan
 - 3.1 Study the picture or chart for insight into the solution.
 - 3.2 Solve the equation.
4. Look back over the results.
 - 4.1 Does the solution make sense in the context of the problem?
 - 4.2 Check your solution in the equation.

Number Problem

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Let x be one number, then x^2 is the other.

$$x^2 + x = 72$$

$$x^2 + x - 72 = 0$$

$$(x + 9)(x - 8) = 0$$

$$\begin{array}{rcl} x + 9 & = & 0 \\ x & = & -9 \end{array} \qquad \begin{array}{rcl} x - 8 & = & 0 \\ x & = & 8 \end{array}$$

If $x = -9$ then $x^2 = 81$ and $-9 + 81 = 72$. If $x = 8$ then $x^2 = 64$ and $8 + 64 = 72$.