

Applications of Quadratic Equations

MATH 101 *College Algebra*

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

Number Problem

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

$$\begin{aligned}x^2 + x &= 72 \\x^2 + x - 72 &= 0 \\(x + 9)(x - 8) &= 0 \\x + 9 = 0 & \qquad \qquad x - 8 = 0 \\x = -9 & \qquad \qquad \qquad x = 8\end{aligned}$$

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