A Strategy for Application Problems:

1. **READ**: Use a dictionary if necessary.

2. **DEFINE UNKNOWNS**: Use variables and describe them with words and/or a picture.

3. **DESCRIBE RELATIONSHIPS WITH MATHEMATICAL SYMBOLS**

4. **SIMPLIFY TO ONE EQUATION**

5. **SOLVE THE EQUATION**

6. **ANSWER THE QUESTION**: The answer may not be the variable you solved for.

Example 7.1 (Number 1 from Section 2.3 in your textbook)
A student has exam scores of 88, 62, and 79. What score does he need on the fourth exam to have an average of 80?
Example 7.2 (Similar to Number 2 from Section 2.3 in your textbook)
How many gallons of a 12% acid solution should be combined with 10 gallons of an 18% acid solution to obtain a 16% acid solution?

Example 7.3 (Example 8 from Section 2.3 in your textbook)
A pilot wants to make the 840-mile round trip from Cleveland to Peoria and back in 5 hours flying time. Going to Peoria, there will be a headwind of 30 mph, that is, a wind opposite to the direction the plane is flying. It is estimated that on the return trip to Cleveland, there will be a 40-mph tailwind (in the direction the plane is flying). At what constant speed should the plane be flown?
Example 7.4 (Number 7 from Section 2.3 of your textbook)
The diameter of a circle is 16 cm. By what amount must the radius be decreased to decrease the area by $48\pi$ square centimeters?

Example 7.5 (Number 6 from Section 2.3 in your textbook)
A merchant has 5 pounds of mixed nuts that cost $30. He wants to add peanuts that cost $1.50 per pound and cashews that cost $4.50 per pound to obtain 50 pounds of a mixture that costs $2.90 per pound. How many pounds of peanuts are needed?