

7 A Strategy for Application Problems

Concepts:

- Solving Application Problems

(Section 2.3)

Although there is no hard and fast algorithm for solving application problems, there are strategies for approaching application problems that can help you to understand the problem, organize your thoughts, solve the problem, and communicate your solution.

A Strategy for Application Problems:

1. **READ:** Use a dictionary if necessary.
2. **DEFINE UNKNOWNNS:** 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 48π 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?