

**Applied Problems — 1.7**

1. A student has test scores of 72, 80, and 65. What score on the next test will raise the student's average to 76?
2. Britnee and her friend do not wish to spend more than \$70 for dinner at a restaurant. If a sales tax of 6% is added to the bill and they plan to tip 15% after the tax has been added, what is the most they can spend for the meal?
3. Tan is having an investment firm invest \$100,000 in two stocks, A and B. The expected annual rate of return, or simple interest, for stock A is 15%, but there is some risk involved, and Tan does not wish to invest more than \$50,000 in this stock. The annual rate of return on the more stable stock B is anticipated to be 10%. Determine whether there is a way of investing money so that the annual interest is \$13,000?
4. Dylan, a pharmacist, is to prepare 15 milliliters of special eye drops for a glaucoma patient. The eye-drop solution must have a 2% active ingredient, but the pharmacist only has 10% solution and 1% solution in stock. How much of each type of solution should be used to fill the prescription?

5. Anne starts at the beginning of a runner's path and runs at a constant rate of 6 mph. Five minutes later Mija begins at the same point, running at a rate of 8 mph and following the same course. How long will it take the Mija to reach Anne?

6. A wafer cone is to hold  $8 \text{ in}^3$  of ice cream when filled from the bottom as shown. The diameter of the cone is 2 inches, and the top of the ice cream has a shape of a hemisphere. Find the height,  $h$ , of the cone.

The volume,  $V$ , of a cone is given by  $V = \frac{1}{3}\pi r^2 h$ , where  $r$  = radius and  $h$  = height .

The volume,  $V$ , of a sphere is given by  $V = \frac{4}{3}\pi r^3$ , where  $r$  = radius

7. With water from one hose, a swimming pool can be filled in 8 hours. A second, larger hose used alone can fill the pool in 5 hours. How long would it take to fill the pool if both hoses were used simultaneously?