Name: _____

Formulas and Applications

1) Carol has 8 hours to spend on a hike up a mountain and back again. She can walk up the trail at an average of 2 mph and can walk down at an average of 3 mph. How long should she plan to spend on the uphill part of the hike?

2) One hour and 20 minutes after a hiker started down a mountain trail a ranger started after him on horseback and overtook him in 40 minutes. Find the speed of each if the ranger rode 6 miles per hour faster than the man walked.

3) An automobile radiator contains 12 quarts of a 20% antifreeze and water solution. How much must be replaced by 80% antifreeze to make a 30% solution?

4) A lady drove to a city 30 miles away to shop and returned home in the evening. She spent 15 minutes longer driving the return trip than in the going, and she drover three-fourths as fast when returning as she did when going to the city. How long did it take her to drive to the city?

5) Mr. Williams starts out in his auto traveling 30 miles per hour. Four hours later Mr. Speedster starts out from the same point at 60 miles per hour to overtake Mr. Williams. In how many hours will he be overtaken?

6) How much water must be added to 30 quarts of a 75% acid solution to reduce it to a 15% solution of acid?

7) Two trains start from the same station and run in opposite directions. One runs at an average rate of 40 miles per hour, and the other at 65 miles per hour. In how many hours will they be 315 miles apart?

8) Bob starts out in his car traveling 30 mph. Four hours later, Mr. Speedster starts out from the same point at 60 mph to overtake Bob. In how many hours will he catch him?