

1. Two executives in cities 400 miles apart drive to a business meeting at a location between their cities. They meet after 4 hours. Find the average speed of each car if one car travels 20 miles per hour faster than the other.
2. A pharmacist needs 100 liters of 50% alcohol solution. She has on hand 30% alcohol solution and 80% alcohol solution that she can mix. How many liters of each solution should she use to make the 50% alcohol solution?
3. In your motorboat, you travel 18 miles upstream at top speed to meet your friend Robin in one hour. Returning, you find that the trip downstream, still at top speed, takes only  $\frac{3}{4}$  hr. What is the top speed of the motorboat? What is the speed of the current?
4. You own a candy shop. You decide to mix 30 pounds of candy worth \$6 per pound with candy worth \$3 per pound to get a mix worth \$5 per pound. How much of the \$3 per pound candy should be used?
5. A freight train and an express train leave towns 390 km apart, traveling toward one another. The express train travels 30 km/hr faster than the freight train. They pass each other 3 hours later. What are their speeds?
6. A bank teller has ten-dollar bills and twenty-dollar bills. She has 25 more twenties than tens. The value of the bills is \$2900. How many of each kind of bill does she have?
7. How much milk that is 3% butterfat should be mixed with milk that is 18% butterfat to get 25 gallons of milk that is 4.8% butterfat?
8. A manufacturer of CD players shipped 200 of the players to its two warehouses in Quebec. It costs \$3 per unit to ship to warehouse A and \$2.50 per unit to ship to warehouse B. If the total shipping cost was \$537.50, how many players were shipped to each warehouse?
9. Octane ratings show the percentage of isooctane in gasoline. An octane rating of 98, for example, indicates a gasoline that is 98% isooctane. Find the number of gallons of 98-octane gasoline and 92-octane gasoline that must be mixed to produce 40 gallons of 94-octane gasoline.
10. A truck radiator holds 24 liters of fluid. How much pure antifreeze must be added to a mixture that is 4% antifreeze in order to fill the radiator with a mixture that is 20% antifreeze?
11. A train travels 150 km in the same time that a plane travels 400 km. If the speed of the plane is 20 km/hr less than 3 times the speed of the train, find the speed of the train and the speed of the plane.
12. On a 10-day trip, you rent a car for \$31 per day at weekend rates and \$40 per day at weekday rates. If your rental bill was \$364, how many days did you rent at each rate?