

For each problem, define 2 variables, use a system of equations and solve. Use boxes.

1. A boat is rowed 10 miles downstream in two hours, then rowed the same distance upstream in $3\frac{1}{3}$ hours. Find the rate of the boat in still water and the rate of the current.
2. A box contains two different types of candy, weighs 10 pounds, and costs \$14.55. One type of candy costs \$1.50 a pound. The other type costs \$1.35 a pound. How many pounds of each kind are there?
3. A manufacturer has an order for 500 gallons of a 35% acid solution. The plant manager has on hand a 25% solution and a 50% solution. How many gallons of each type of solution should be mixed to fill the order?
4. While driving to Northridge, Thomas averages 40mph. On the return trip he averages 56mph and saves two hours of traveling time. How far from Northridge does he live?
5. While traveling with the wind, a plane flies 300 miles between Chicago and Columbia in 40 minutes. It returns against the wind in 45 minutes. Find the air speed of the plane and the rate of the wind.
6. How many pounds of candy that sell for 80 cents a pound should be mixed with candy that sells for \$1.50 a pound to make 20 pounds of a mixture to sell at \$1.01 a pound?
7. Kendall sold 30 peaches from his tree for a total of \$7.50. He sold the small ones for 20 cents each and the large ones for 35 cents each. How many of each kind did he sell?
8. Hayden walks from her home to the city in 4 hours. She can travel the same distance on her bike in one hour. If she rides 6mph faster than she walks, what is her speed on the bike?
9. An airplane travels 1800 miles in 3 hours flying with the wind. On the return trip, flying against the wind, it takes 4 hours to travel 2000 miles. Find the rate of the wind and the rate of the plane in still air.
10. A gas station attendant has some antifreeze that is 40% alcohol and another type of antifreeze that is 60% alcohol. He wishes to make 1000 gallons of antifreeze that is 48% alcohol. How much of each kind should he use?
11. A zinc alloy contains 2% zinc. A second alloy contains 8% zinc. How many pounds of each should be melted and blended to yield 1000 pounds of alloy containing 4% zinc?
12. Luke invests \$4000, part of it at 10% annual interest and the rest at 12% annual interest. If he receives \$460 in interest at the end of one year, how much did he invest at each rate?
13. Kate opened her bank and found 83 coins in nickels and dimes. If she has \$ 6.95 in all, how many coins of each did she have?
14. Two trains start toward each other on parallel tracks at the same time from towns 450 miles apart. One train travels 6mph faster than the other train. What is the rate of each train if they meet in 5 hours?