

## 5.2 Application Problems

Solve.

21. A farmer has some cream which is 21% butterfat and some which is 15% butterfat. How many gallons of each must be mixed to produce 60 gal of cream which is 19% butterfat?
22. A chemist has some 8% hydrogen peroxide solution and some 5% hydrogen peroxide solution. How many milliliters of each should be mixed to make a 300-milliliter solution which is 6% hydrogen peroxide?
23. How many grams of pure acid must be added to 40 g of a 20% acid solution to make a solution which is 36% acid?
24. How many ounces of pure water must be added to 60 oz of a 15% salt solution to make a salt solution which is 10% salt?
25. A hygienist mixed 50 L of a 36% disinfectant solution with 40 L of water. What is the percent concentration of the resulting solution?
26. A researcher mixed 80 lb of a 30% aluminum alloy with 120 lb of a 25% aluminum alloy. What is the percent concentration of the resulting alloy?
27. A syrup manufacturer has some pure maple syrup and some which is 85% maple syrup. How many liters of each should be mixed to make 150 L which is 96% maple syrup?
28. A butcher has some hamburger which is 20% fat and some which is 15% fat. How many pounds of each should be mixed to make 50 lb of hamburger which is 18% fat?
29. A 100-pound bag of animal feed is 40% oats. How many pounds of oats must be added to this feed to produce a mixture which is 50% oats?
30. A goldsmith has 10 g of a 50% gold alloy. How many grams of pure gold should be added to the alloy to make an alloy which is 75% gold?

Solve.

- 31.** Ten grams of sugar are added to a 40-gram serving of a breakfast cereal which is 30% sugar. What is the percent concentration of sugar in the resulting mixture?
- 32.** Thirty ounces of pure grapefruit juice are added to 50 oz of a fruit punch which is 20% grapefruit juice. What is the percent concentration of grapefruit juice in the resulting mixture?
- 33.** A clothing manufacturer has some fiber which is 20% polyester and some which is 50% polyester. How many pounds of each fiber should be woven together to produce 600 lb of a fabric which is 35% polyester?
- 34.** A nurse wants to make 50 ml of a 16% salt solution. How many milliliters each of a 13% salt solution and an 18% salt solution should be mixed to produce the desired solution?
- 35.** A baker mixed some flour which was 40% wheat with 80 lb of flour which was 30% wheat to make a mixture which is 32% wheat. How many pounds of the 40% wheat flour were used?
- 36.** A manufacturer mixed a chemical which was 60% fire retardant with 70 lb of a chemical which was 80% fire retardant to make a mixture which is 74% fire retardant. How much of the 60% mixture was used?
- 37.** A 200-pound alloy of tin, which is 35% tin, is mixed with 300 lb of another tin alloy. The resulting alloy is 20% tin. Find the percent of tin in the 300-pound alloy.
- 38.** A silversmith mixes 50 g of one alloy which is 50% silver with 150 g of another silver alloy. The resulting alloy is 68% silver. Find the percent of silver in the 150-gram alloy.
- 39.** A chemist mixes a 5% silver nitrate solution with an 8% silver nitrate solution. How many ounces of each should be used to make 50 oz of a 7% silver nitrate solution? Round to the nearest hundredth.
- 40.** How many grams of salt must be added to 180 g of a solution which is 15% salt to make a solution which is 23% salt? Round to the nearest tenth.