

Exercises — Word problems: linear equations

1. The sum of two numbers is 66. The larger number is three less than twice the smaller number. Find the numbers.
2. A supermarket had a one day sale on Pepperidge Farm cookies. It sold three times as many packages of chocolate-chip cookies as oatmeal, and twice as many fudge-almond as oatmeal. If the supermarket sold 600 packages in one day, how many packages of each did it sell?
3. Otis lives one mile away from Tina. They begin to bicycle toward each other at the same time. The road from Otis's house to Tina's is downhill; so Otis can travel twice as fast as Tina, who peddles her bike uphill at 4 miles/hour. For the entire time of Otis' and Tina's journey, a fly travels back and forth between them at 12 miles/hour. How far will the fly fly?
4. In an FBI sting operation a group of agents leave a warehouse at 234 Vassar Street and move at 4 miles/hour to a second warehouse at 432 Rassav Street, eight miles from the Vassar Street warehouse. At the same time several members of the mob also move from the Vassar Street warehouse to the Rassav Street warehouse; but they move at a slower speed of 3 miles/hour. How much time will the FBI have at the Rassav Street warehouse before the mob arrives?
5. A compulsive gambler doubles his money at roulette. Feeling lucky he decides to play blackjack and loses \$400. He returns to the roulette table and, once again, doubles his money. He seems to always lose when he plays blackjack and always win when he plays roulette. No matter, he decides to push his luck and play crap once more, only to lose another \$400. If he ends with \$20.00, how much money did he start with?
6. Two different kinds of tea are to be mixed to produce 3 pounds of tea that is valued at \$3.20 /pound. If the value of the first and second kinds of tea are \$3.80 and \$2.70, respectively, how many pounds of tea of each type should go into the

mixture?

7. A hobo was one fourth across a railroad bridge when he heard the train coming from behind. There was not enough room on the bridge for a person and a train. If the train was exactly one bridge-length away, which way should he run and why?

8. John Quizwiz averaged 73%, 84%, 68%, 89% and 91% on the first 5 Workouts of this worktext, respectively. If he averaged 100% on Workouts 6, 7, 8 and 9, what should he average on this Workout, in order that his average over the first 10 Workouts be 90%?

9. A nursery mixes three different kinds of grass seed—clover, alfalfa and bluegrass. The clover sells for \$0.42 per pound; but the nursery has only 20 pounds left, and must use it all. The alfalfa sells for \$0.35 per pound and the bluegrass for \$0.55 per pound; but there are ample supplies of alfalfa and bluegrass. How much of each should be in the mixture, if the nursery can mix 100 pounds to be sold at \$0.45 per pound?

10. Professor Egghead can write an algebra textbook in 18 months. Professor Wizzard can write one in one year. How long would it take them if they worked together?

11. Le Capital, is the French National Railroad's high speed train that links Paris to Marseille. It travels at an average speed of 210 kilometers/hour when traveling from Paris to Marseille and 190 kilometers/hour on returning from Marseille to Paris. What is the average speed of the train in making the journey back and forth?

12. A jumbo jet is on route from Boston to San Francisco. During the first half of the trip it averages 580 miles/hour. During the second half, the pilot decides to increase the average speed by 20 miles/hour. What will the final average speed be?

13. It is 9:00 a.m. (Pacific Time) in San Francisco when it is 12:00 p.m. (EST) in Boston. In Problem 12, assume that the plane left Boston at 12:00 p.m. (EST) and is scheduled to arrive at 1:50 p.m. ; and assume, once again, that the plane traveled half the 3000 distance between Boston and San Francisco at an average speed of 580 miles per hour. If the pilot decided to increase the average velocity during the second half of the trip in order to arrive at San Francisco on time, what should the average velocity of the plane be for the second half of the trip?