Beginning Algebra Worksheet    Section 3.4

For each of the following problems:
   a. Make a table to organize the information.
   b. Write an equation.
   c. Solve the equation.
   d. Answer the question asked.

PART A    MOTION PROBLEMS

1. Two cars start at the same place at the same time and travel in opposite
directions at average rates of 60 mph and 72 mph. How many hours will it
take before the cars are 198 miles apart?

2. Two trains leave a depot at the same time, one traveling north at 60 mph and
the other south at 50 mph. How long will it take before the trains are 550
miles apart?

3. Train A leaves a station traveling at 40 mph. Six hours later, train B leaves
the same station traveling in the same direction at 60 mph. How long does it
take for train B to catch up to train A?

4. Train A leaves a station traveling at 50 mph. Four hours later, train B leaves
the same station traveling in the same direction at 60 mph. How long does it
take for train B to catch up to train A?

5. Two cars start at the same point at the same time and travel in the same
direction, one at 48 mph and one at 60 mph. How many hours will it take for
the faster car to be 54 miles ahead of the slower car?

6. Mary can walk 4 mph, and Judy can bike 10 mph. If they start at the same
point and travel in the same direction, how long will it take Mary to be 8 miles
behind Judy?

7. Two trains, an express and a commuter, are 450 miles apart. Both start at
the same time and travel toward each other. They meet 6 hours later. The
speed of the express is 25 mph faster than the speed of the commuter. Find
the speed of each train.

8. Train A leaves station A traveling at 40 mph at the same time that train B
leaves station B at 60 mph. If station A and station B are 325 miles apart and
the trains are traveling toward each other, how many hours is it before the
two trains meet? How far are they from station B when they meet?

9. A train traveling at 40 mph leaves for a certain town. One hour later, a bus
traveling at 50 mph leaves for the same town and arrives at the same time as
the train. If both the train and the bus travel in a straight line, how far is the
town from where they started?
PART B  MONEY PROBLEMS

10. George invested $19,000 for one year, part at 11% and part at 12%. If the total amount of interest he earned was $2,200, how much money did he invest at each rate?

11. Cindy invested $24,000 for one year, part at 6% and part at 9%. If the total amount of interest she received was $1,740, how much was invested at each rate?

12. You inherit $16,000 and invest it in two bonds that pay 6% and 8% annual interest. At the end of one year the interest from the 8% bond is $580 greater than the interest from the 6% bond. How much was invested in each bond?

13. One thousand two hundred (1,200) people attended a college basketball game. Student tickets cost $4; regular admission tickets cost $15. If the receipts for the game totaled $12,786, how many of each kind of ticket were sold?

14. A landscaper has a budget of $2,250 to plant 100 plants around a new office building. If rhododendrons cost $40 each, and azaleas cost $15 each, how many of each type can she plant?

15. Randy bought a total of 5 pounds of coffee for $18.45. Some of it was decaffeinated and some of it was regular coffee. The price of decaf coffee was $3.87 per pound, and the price of the regular coffee was $3.57 per pound. How many pounds of decaffeinated coffee did he buy?
PART C  MIXTURE PROBLEMS

16. How many pounds of gourmet coffee beans selling for $2.80 per pound should be mixed with 2 pounds of coffee beans selling for $1.60 a pound to obtain a mixture selling for $2.56 per pound?

17. How many pounds of almonds selling for $3.00 per pound should be mixed with 7 pounds of peanuts selling for $1.20 a pound to obtain a mixture selling for $1.74 per pound?

18. How much candy priced at $2.50 per pound must be mixed with candy priced at $3.50 per pound to create 100 pounds of mixed candy selling at $2.90 per pound?

19. How many pounds of salted nuts selling for $1.60 per pound should be mixed with unsalted nuts selling for $3.00 a pound to get 10 pounds of the mixture selling for $2.02 per pound?

20. How many liters of 18% salt solution must be added to 92 liters of 61% salt solution to get a 41% salt solution?

21. How many ounces of a 15% alcohol solution must be mixed with 4 ounces of a 20% alcohol solution to make a 17% alcohol solution?

22. How many liters of 24% salt solution must be added to 76 liters of 64% salt solution to get a 43% salt solution?

23. How many pounds of gourmet candy selling for $2.40 per pound should be mixed with 3 pounds of regular candy selling for $1.20 per pound to obtain a mixture selling for $2.04 per pound?

24. How many pounds of M&M’s selling for $2.00 per pound should be mixed with 2 pounds of Raisinettes selling for $3.00 per pound to obtain a mixture selling for $2.20 per pound?

25. A chemist needs 12 liters of a 36% acid solution. How many liters of 18% acid should be combined with a 45% acid solution to obtain the proper mixture?
ANSWERS

1. 1.5 hours  
2. 5 hours  
3. 12 hours  
4. 20 hours  
5. 4.5 hours  
6. 1 1/3 hours, or 1 hour 20 minutes  
7. exp. – 50 mph  
   comm. – 25 mph  
8. 3.25 hours, 195 miles from B  
9. 200 miles  
10. $8,000 @ 11%  
    $11,000 @ 12%  
11. $14,000 @ 6%  
    $10,000 @ 9%  
12. $5,000 @ 6%  
    $11,000 @ 8%  
13. 474 students  
    726 regular admission  
14. 30 rhod., 70 azaleas  
15. 2 lbs. decaf, 3 lbs. reg.  
16. 8 pounds  
    3 pounds  
17. 3 pounds  
18. 60 pounds  
19. 7 pounds  
    80 liters  
20. 80 liters  
21. 6 ounces  
22. 84 liters  
    7 pounds  
23. 7 pounds  
24. 8 pounds  
25. 4 liters