Problem Solving
1. The average salary for computer programmers is $7,740 less than twice the average salary for carpenters. Combined, their average salaries are $74,160. Determine the average salary for each of those jobs. Write your answers in complete sentences.

Step 1 \[ x: \quad \] 
Step 2 \[ \] 
Step 3&4 Write an equation and solve.

2. Franklin’s Electrical Services sends two electricians and three apprentices out to wire a house. Each electrician is paid $38.00 per hour, and then $22.00 is added to their pay for travel expenses. The three apprentices working with the crew are each paid $18.00 per hour, but are not given the travel payment.

a. Choose and define a variable, then write an algebraic expression for the total cost of the job.

b. Simplify to an equivalent expression without parentheses.

c. How much was the cost of the job if it took 7 hours to complete? Write your answer in a complete sentence.

3. Handi-Man Rentals will rent an auger for a flat fee of $20 plus $12 per hour. Tool–Time rentals will rent the same auger or a flat fee of $26 plus $10 per hour.

a. Choose and define a variable, then write an equation to represent when the total rental cost will be the same for the two companies.

b. For what number of hours will the total rental cost be the same for the two companies? Answer in a complete sentence.

Percents
1. a) What is 62% of 70? 
   b) 90 is what percent of 60?

2. From 1990 to 1993 Girl Scout numbers increased from 2.48 million to 2.61 million. What is the percent increase? Round to the nearest whole number.

3. An antiques dealer purchases a restored radio and resells it for $350, which represents a 75% markup of the cost. How much did the dealer pay for the radio? Answer in a complete sentence.

4. A men’s clothing store listed the retail price of a suit at $249 and the sale price at $210. Was the store being honest when it said the sales was 20% off? Explain your results.
Ratio and Proportion

1. Marty has a scale model of a car. The scale is 1 in. : 32 in. If the model is 6.75 in. long, how long is the actual car? Answer in a complete sentence.

2. Hue’s boat used 5 gallons of gasoline in 4 hours. At this rate, how many gallons of gasoline will the boat use in 10 hours? Answer in a complete sentence.

Geometry

1. The volume of a box $V$ is given by the formula $V = lwh$, where $l$ is the length, $w$ is the width, and $h$ is the height.

   a. Solve the formula for $h$.

   b. What is the volume of a box with a length of 4m, height of 6m, and width of 14m? Draw a picture as part of the work. Be sure to include units in the answer.

   c. What is the height of a box with a volume of 50 cubic meters, length of 10 meters, and width of 2 meters? Draw a picture as part of the work. Be sure to include units in the answer.

2. The formula for the perimeter of a rectangle is $P = 2L + 2W$, where $L$ is the length and $W$ is the width. A rectangle has a perimeter of 24 inches. Find its dimensions if its length is 3 inches greater than its width. Draw a picture as part of the work. Be sure to include units in the answer.

3. The area of a circle is given by the formula $A = \pi r^2$, where $r$ is the radius.

   a. If the diameter of the circle is 8 cm, what is the area? Draw a picture as part of the work. Write your answer exact, then approximate to the nearest whole number. Be sure to include units in the answer.

   b. If increasing the radius of a circle by 1 inch gives the resulting circle an area of $100\pi$ square inches, what is the radius of the original circle? Draw a picture as part of the work. Be sure to include units in the answer.

Mixture/Interest

1. Ted mixed together 3 gallons of Brand A fruit drink and 9 gallons of Brand B fruit drink which contains 44% fruit juice. Find the percent of fruit juice in Brand A if the mixture contained 36% fruit juice.

2. Bob invested $20,000, part at 14% and part at 13%. If the total interest at the end of the year is $2,720, how much did he invest at each rate?
Solutions

**Problem Solving**
1. x represents the average salary for carpenters
   2x - 7740 represents the average salary for computer programmers
   x + 2x - 7740 = 74160
   The average salaries are $27,300 for carpenters and $46,860 for computer programmers

2. a) \(2(38t + 22) + 3(18t)\); \(t\) represents the # of hours to do the job
    b) \(130t + 44\)  
    c) The total cost of the job is $954.

3. a) \(20 + 12t = 26 + 10t\); \(t\) represents the rental time in hours  
    b) If you rented an auger for 3 hours, the cost would be the same at both companies.

** Percents**
1. a) 43.4  
2. b) 150\%  
3. The dealer paid $200 for the radio.
4. No, the store was not being honest. Explanations will vary.

**Ratio and Proportion**
1. The actual length of the car is 216in or 18ft.
2. The boat will use \(12\frac{1}{2}\) gallons in 10 hours.

**Geometry**
1. a. \(h = \frac{V}{lw}\)  
   b. The volume is \(336m^3\).  
   c. The height is \(2\frac{1}{2}m\).
2. The width is \(4\frac{1}{2}in\) and the length is \(7\frac{1}{2}in\).
3. a. \(16\pi \text{ cm}^2\); \(50 \text{ cm}^2\)  
   b. The radius is 9in.

**Mixture/Interest**
1. Brand A fruit drink has 12\% fruit juice.
2. Bob invested $12,000 at 14\% and $8,000 at 13\%.