Algebra 1: Problem Set 6 Solving word problems

1. One number is six more than three times another. The sum of the two numbers is 98. Find the numbers.

2. A beginning tennis class has twice as many students as the advanced class. The intermediate class has three more students than the advanced class. How many students are in the advanced class if the total enrollment for the three tennis classes is 43?

3. The length of one leg of a right triangle is seven inches more than the length of the other leg. The hypotenuse is 13 inches. Find the lengths of the legs.

4. Joan and Sally live five miles apart. They decide to meet for lunch in one-half hour at a restaurant that is located between them. They leave their homes at the same time and Joan walks two miles per hour faster than Sally. How fast does each walk if they both arrive at the restaurant in exactly the one-half hour?

Solutions to Odd Problems:

1. Let x = the 2nd number
   3x + 6 = the 1st number
   x + (3x + 6) = 98
   4x + 6 = 98
   4x = 92
   x = 23
   The numbers are 23 and 75.

3. Let x = the length of one leg
   x + 7 = the length of the other leg
   Using the Pythagorean Theorem,
   $$x^2 + (x+7)^2 = 13^2$$
   $$x^2 + x^2 + 14x + 49 = 169$$
   $$2x^2 + 14x - 120 = 0$$
   $$x^2 + 7x - 60 = 0$$
   $$(x+12)(x-5) = 0$$
   $$x = -12 \quad or \quad x = 5$$

   The lengths are 5 inches and 12 inches.

Answers to Even Problems:

2. There are 10 students in the advanced class.
4. Sally walks at 4 mph and Joan walks at 6 mph.