Math 45 2.7 Angles, Triangles, and Geometry Formulas

Complementary angles: Two angles whose measures add to 90 degrees. Also called "complements" or "angle and complement of an angle".

Supplementary angles: Two angles whose measures add to 180 degrees. Also called "supplements" or "angle and supplement of an angle".

Angles of a triangle: The three angles of any triangle always add to 180 degrees.

CAUTION: Complementary and supplementary angles involve the sum of **two** angles, but the angles of a triangle involve the sum of **three** angles.

1) Find the measures of two complementary angles such that the measure of the larger angle is 6 degrees greater than twice the measure of the smaller angle.

2) Find the measures of two supplementary angles such that the measure of one angle is 26 degrees smaller than the measure of the other.

3) The measure of the largest angle of a triangle is 20 degrees more than twice the measure of the smallest angle, and the measure of the second angle is 10 degrees more than twice the measure of the smallest angle. Find the measures of all three angles.

4) The perimeter of a rectangular swimming pool is 80 feet. If the length is 10 feet more than the width, find the length and width of the pool.

5) A garden in the shape of a trapezoid between a sidewalk and curb has an area of 18 square feet. The height is 3 feet and the shorter base is 2 feet less than the length of the longer base. Find the length of each base of the trapezoid.

6) The smallest angle of an isosceles triangle used in the wood frame of a boat measures $12°$. The other two angles are larger. What are the measurements of the other two angles in this triangular part of the wood frame?

7) You are varnishing the background for a mural shaped like a right triangle. The base of the mural is 3 meters and the height of the mural is 15 meters. How many cans of varnish will you need if each can covers 10 square meters?

8) Erika is buying wallpaper for her bedroom. She remembers that the perimeter of the room is 54 ft. and that the room is twice as long as it is wide.
   a. Find the dimensions of the room
   b. If the walls are 8 ft high, how many square feet of wallpaper does she need to buy?
   c. Erika arrives at the store and finds that wallpaper is sold by the square yard. How many square yards of wallpaper does she need?

9) An isosceles triangle has a base of 17 cm. If the perimeter is 95 cm, find the length of each of the legs.

10) A rectangular field has been divided so that the length of one of the parcels is twice the other. The smaller parcel is a square and the larger parcel is a rectangle. If it takes 279 m of fencing to enclose the field and divide the two parcels, find the dimensions of the field.