Unit II – First Degree Relations with One Placeholder
Part E – Problem Solving Using One Placeholder
Lesson 5 – "Geometric Figure" Problems

For each of the following story problems, answer the five analysis questions to find the open sentence needed to solve. Then solve and use common sense to check your answer.

1. The length of the longest side of a triangle is twice the length of the shortest side. The remaining side is, two inches longer than the shortest side. If the perimeter is twenty-six, how long is each side?

2. An isosceles triangle has two angles whose measures are equal. If the third and largest angle of a certain isosceles triangle measure sixty-eight degrees, what are the measures of the other two equal angles?

3. An isosceles triangles also has two sides with the same length. The third and shortest side of a certain isosceles triangle is one-half the length of each of the equal sides. The perimeter of the triangle is eighty inches. What is the length of each side?

4. The length of a rectangle is, ten centimeters longer than its width. The perimeter of the rectangle is sixty-eight centimeters. Find the length and the width of the rectangle.

5. The smallest angle in a triangle is, sixty-four degrees less than the measure of the largest angle. The measure of the remaining angle is, 8 degrees more than the measure of the smallest angle. Find the measure of each angle.

6. The degree measure of the larger of two complementary angles is, fifteen degrees less than twice the measure of the smaller. Find the measure of each angle.

7. Two angles are complementary. The measure of one angle is, two-thirds the measure of the other. Find the measure of the supplement of the larger angle.

8. An equilateral triangle has three sides all the same length. A regular hexagon has six sides all the same length. The perimeter of a certain equilateral triangle is, four times the perimeter of a certain regular hexagon. The length of a side of the triangle is, ten centimeters more than, six times the length of a side of the hexagon. What is the perimeter of the triangle? What is the perimeter of the hexagon?

9. The length of a rectangular playground is, four times its width. The perimeter of the playground is two hundred fifty feet. Find the area of the rectangular playground. (The area of a rectangle is found by multiplying its length by its width and the area is expressed in square units of measure)

10. The width of a rectangle is three-fourths of its length. If we increase the length by eight feet and the width by six feet, the area is increased by ninety-six square feet. What are the dimensions of the original rectangle?

EXTRA PRACTICE — Answer Key

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For each of the following story problems, answer the five analysis questions to find the open sentence needed to solve. Then solve and use common sense to check your answer.

1. The shortest side is 6 inches. The longest side is 12 inches. The remaining side is 8 inches

2. The angles of the triangle are 56 degrees, 56 degrees, and 68 degrees

3. The sides of the triangle are 32, 32, and 16.

4. The width of the rectangle is 12 cm
   The length of the rectangle is 22 cm

5. The measure of the largest angle is 100 degrees
   The measure of the smallest angle is 36 degrees
   The measure of the remaining angle is 44 degrees

6. The measure of the smaller angle is 35 degrees
   The measure of the larger angle is 55 degrees

7. The larger of two complimentary angles is 54 degrees
   The smaller of two complimentary angles is 36 degrees
   The supplement of the larger of two complimentary angles is 126 degrees

8. Length of side of hexagon is 5 cm
   Length of side of equilateral triangle is 40 cm
   Perimeter of regular hexagon 30 cm
   Perimeter of equilateral triangle 120 cm

9. Width of rectangular playground is 25 feet
   Length of rectangular playground is 100 feet
   The area of the rectangular playground is 2500 square feet

10. The length of the rectangle is 4 feet
    The width of the rectangle is 3 feet