# Unit III – First Degree Relations with Two Placeholders
Part F – Problem Solving Using Two Placeholders
Lesson 4 – "Geometric Figure" Problems

For each of the following story problems, answer the four analysis questions to find the system of equations needed to solve. Then solve and use common sense to check your answer.

1. If five times the width of a rectangle equals, four times the length, and the perimeter of the rectangle is fifty-four, find the width and the length.

2. The degree measure of one of two complementary angles is, 30 degrees less than, twice that of the other. What is the degree measure of each of the angles?

3. A circular piece of metal is to be cut into three pieces of one size, and five pieces of a larger size, so that the central angle of each of the larger pieces has a degree measure, six less than twice the degree measure of the central angle of each smaller piece. What is the degree measure of the central angle of one of the larger pieces?

    Note: A central angle is an angle formed by two radii, with the vertex at the center of the circle. In the diagram, x is the measure of the central angle AOC, and, 360 degrees is the sum of all central angles of a circle.
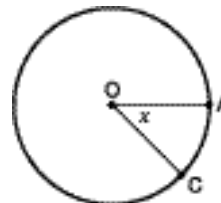
4. The degree measure of each of the two equal angles of an isosceles triangle is six less than the degree measure of the third angle (the vertex angle). Find the degree measure of the angles of the triangle.

5. The perimeter of a rectangle is 80 cm. Three times the length of the rectangle is equal to, seven times the width. What are the dimensions of the rectangle?

6. Two angles are supplementary. The measure of the larger is, sixty more than, three times the measure of the smaller. Find the measure of each angle.

7. A rectangle with a perimeter of 24cm is twice as long as it is wide. Find its dimensions.

8. 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.

9. A rectangle and a square have the same width. The rectangle, is 6 cm. longer than a side of the square. One perimeter is twice the other. Find the dimensions of the rectangle.

10. The measure of the larger of two complementary angles is twice the measure of the smaller. Find the measure of each angle.

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For each of the following story problems, answer the four analysis questions to find the system of equations needed to solve. Then solve and use common sense to check your answer.

1. Length is 15. Width is 12.

2. The two angles are 40 and 50 degrees

3. Small angle is 30° and the large angle is 54°

4. The angles are 64, 58 and 58.

5. Length is 28 and width is 12.

6. The two angles are 30 and 150.

7. The length is 8 and the width is 4.

8. One angle is 36. The compliment of the angle is 54.
    The supplement of 54 (the larger angle) is $180 - 54$ or 126.

9. The dimensions of the rectangle are 9 and 3.

10. The angles are 30 and 60.