Unit VIII – Quadratic Equations
Part C – Problem Solving With Quadratic Relations
Lesson 1 – "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. The length of each of two opposite sides of a square are doubled, and the length of each of the other two sides are increased by four centimeters. The area of the resulting rectangle is 128 square centimeters greater than that of the original square. Find the length of a side of that square.

2. The length of a rectangle is twice the width. The area is 328 square centimeters. Find the length and the width.

3. The outside of a picture frame measures twelve centimeters by twenty centimeters. The picture showing has an area of 84 square centimeters. Find the width of the frame.

4. The width of a rectangular feed lot on Lester's farm is eight meters less than the length. The area is twenty square meters. Find the width and the length.

5. A rectangular field is sixty meters by eighty meters. Part of the field is torn up to install a BMX race track (uniform width) around it. The area of the new field is one-half of the old area. How wide is the race track?

EXTRA PRACTICE — Answer Key

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1. 8

2. width = $2\sqrt{41}$
    length = $4\sqrt{41}$

3. width = 3.1cm

4. width = 2
    length = 10

5. 10 meters is the width of the BMX track