Unit 4 Practice Problems

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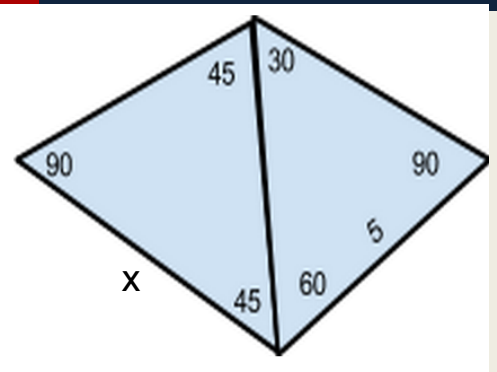
Problem #1



What is the length of side x?

To solve this, we must look at the side with a length of 5. It is a 30-60-90 triangle, so we know that the two other sides are 5 radical 3 and 10. The side that measures 10 is the hypotenuse of the other triangle, a 45-45-90. That means 10 is the shorter sides times radical 2. In other words, radical 50 is each of the sides. Radical 50 simplifies to be 5 radical 2. The answer is 5 radical 2.

Problem #2

Susan lives in a lot shaped like an equilateral triangle, with each side being 80 feet. She decided to build a pyramid taking up the entire lot, with the triangular walls meeting at 20 feet above the ground in the center. What is the distance from the peak to a midsegment of the base.

Ok, we know that the height is 20, and the length to the centroid is 1/2 of the altitude. The altitude is 40 radical 3, and half of that is 20 radical 3. 20 radical 3 squared is 1200, and 20 squared is 400. That means the length they are asking for is the square root of 1600. The square root of 1600 simplifies to be 40.