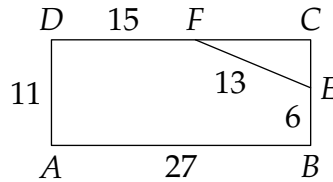


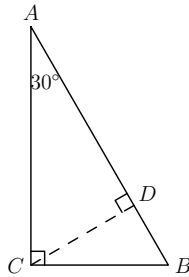


Try these problems before watching the lesson.

1. Kaylee cut a 20-cm by 20-cm piece of paper along a diagonal to form two congruent triangles. What is the length of the hypotenuse of one of the triangles? Express your answer in simplest radical form.
2. A triangular corner region is sliced off from a rectangular region as shown below. What is the area of the pentagonal region $ABEFD$ that remains?



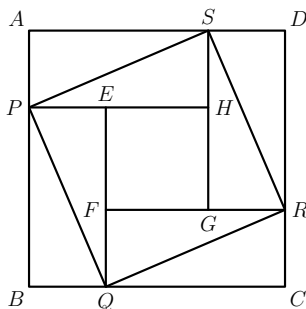
3. If altitude CD is $\sqrt{3}$ centimeters, what is the number of square centimeters in the area of $\triangle ABC$?



4. Point A is on circle C and point P is outside the circle such that $AP = 12$ and \overline{AP} is tangent to the circle. If the circle has area 256π square units, then how far is P from the center of the circle?

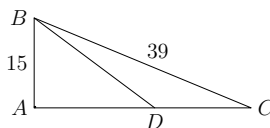
 *The Problem*

In the figure, square $ABCD$ is divided into eight congruent right triangles and square $EFGH$, as shown. If the area of square $ABCD$ is 1156 cm^2 and the area of square $PQRS$ is 676 cm^2 , what is the area of square $EFGH$?




 *Follow-up Problems*

- Two circles with radii 16 and 9 are tangent to each other, and are tangent to line ℓ at distinct points P and Q . Find the length of \overline{PQ} .
- In right triangle ABC , $BD = CD + 9$. If $AB = 15$ and $BC = 39$, what is AD ?



7. Two angles of a triangle measure 45 and 105 degrees. If the side of the triangle opposite the 45-degree angle measures 8 units, what is the sum of the lengths of the two remaining sides?
8. In pentagon $ABCDE$, $BC = CD = DE = 2$ units, $\angle E$ is a right angle and $m\angle B = m\angle C = m\angle D = 135^\circ$. The length of segment AE can be expressed in simplest radical form as $a + 2\sqrt{b}$ units. What is the value of $a + b$?

 *Share Your Thoughts*

Have some thoughts about the video? Want to discuss the problems on the Activity Sheet? Visit the MATHCOUNTS Facebook page or the Art of Problem Solving Online Community (www.artofproblemsolving.com).