Washington State Math Championship – 2009
Geometry – 5th

1. If the area of a square is 40 square units and you double the dimensions of both the length and the width, what will the area of the new square be?

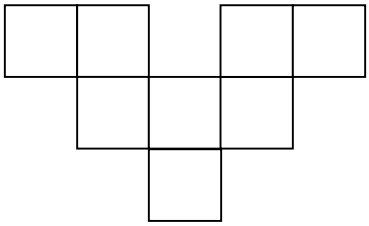
2. If you walk 50 yards south, then 40 yards east, and finally 20 yards north, how far are you from your starting point? Express your answer in yards.

3. In a given plane, if you are given two points that are two of the three vertices of an equilateral triangle, how many different points are possible for the third vertex?

4. Angles *A*, *B,* and *C* are the three angles that make up a scalene triangle. *A* is twice as big as *C,* and *B* is 20 degrees greater than *A*. What is the degree measure of angle *C*?

5. A rectangular prism with a square base has a volume of 144 cubic centimeters. If the height is four centimeters, what is the length of the base in centimeters?

6. If the area of the figure below is 200 square units, what is the perimeter of the figure?



7. A digital (rectangular) picture often measures four inches by six inches. Suppose I wanted to create a frame for a digital picture that extends one inch from each side of the picture. What would the area, in square inches, of *only* the frame be?

8. If the length of each side of a scalene triangle is a prime number and the perimeter is also a prime number, what is the smallest possible perimeter of the triangle?

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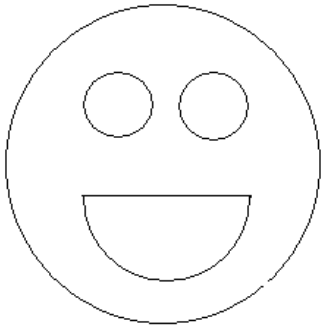
9. Mr. Smiley, as shown below, is made up of two circular eyes, each with radius one centimeter, and a semicircular mouth with radius three centimeters inside a circular face with radius ten centimeters. To the nearest square centimeter, how much of Mr. Smiley's face is not taken up by his eyes or mouth?



10. A wheel of radius eight inches rolls smoothly down a hill, hitting a rock at the bottom after making 25 complete rotations. To the nearest inch, how many inches is the wheel from the spot where it began rolling to the rock?