**MATHCOUNTS® Problem of the Week Archive**

**Shamrock – March 15, 2021**

**Problems**

Below is a picture of the shamrock Sharon drew for St. Patrick’s Day.

![Shamrock Diagram]

It consists of 3 congruent circles, each with a radius of 3 inches, that are tangent and a stem (line) that runs from the bottom of the upper circle to 6 inches below the point where the lower two circles touch. What is the length of the portion of the stem (line) that runs from the bottom of the upper circle to the point of tangency between the lower two circles? Express your answer in simplest radical form.

What is the length of the outer perimeter of the shape formed by the leaves of the shamrock? Express your answer in terms of $\pi$.

What is the area of the space between the three leaves? Express your answer in simplest radical form, in terms of $\pi$.

* Check the Problem of the Week Archive next week for solutions to these and previous problems. *