

# MATHCOUNTS<sup>®</sup> Problem of the Week Archive

## ***The Growing Ground Swell – September 16, 2019***

### ***Problems***

You may not have realized it, but Oregon has four of the 18 most active volcanoes in the United States. What percent of the country's most active volcanoes is *not* in Oregon? Express your answer to the nearest whole percent.

In addition to the known volcanoes in Oregon, a bulge that is rising out of the ground is catching the eye of scientists. The land area that the bulge covers is quite significant. It is estimated to cover 100 square miles. If the land area were in the shape of a square with an area of 100 square miles, what would be the perimeter of that square, in miles? If the land area were instead in the shape of a perfect circle with an area of 100 square miles, what would be the circumference of that circle, in miles? Express this answer to the nearest whole mile.

It is believed that the bulge that is forming is probably a result of a pool of magma collecting below the earth's surface, and that the amount of magma is equal in size to a lake 1 mile across and 65 feet deep. Though lake bottoms are not in the perfect shape of a cone, we'll assume it is the shape of a cone for estimation purposes. What is the volume, in cubic feet, of a right cone with a diameter of 1 mile and a height of 65 feet? Express your answer to the nearest million cubic feet.