

RAFT IDEAS

Topics: Multiplication,
Large Numbers, Scientific
Terminology

Materials List

- ✓ Medical graph paper marked in millimeters
- ✓ Scissors
- ✓ Pencil

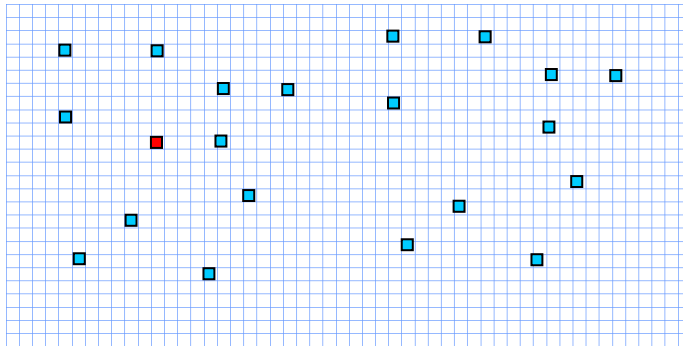
This activity can be used to teach:

- Place Value
(Common Core Math Standards: Number and Operations in Base Ten, Grade 4, 1 & 2; Grade 5, 1 & 2)
- Ratio and Proportions
(Common Core Math Standards: Grade 6, Ratios and Proportional Relationships, 1 & 3)
- Problem Solving and Reasoning
(Common Core Math Standards: Mathematical Practices Grades 4-8)



One in a Million

There is Just Not Very Much There



Look very carefully! Can you find the 1 marked square in a million?

To Do and Notice

(Teacher suggestion: complete this task in groups or as a whole class)

1. Notice that the graph paper has light markings at 1mm and darker markings at 5mm. Each darker square contains a 5 x 5 grid of tiny squares (25).
2. Do the math to figure how large an area would contain 10,000 of the tiny squares.
3. Measure and cut a section of graph paper containing 10,000 tiny squares.
4. Figure how many 10,000 sections would be required to total 1 million tiny squares, and cut out the required number of sections.
5. Place the sections on a wall so that all can be viewed at 1 time. A million is a lot!
6. Choose 1 person in the group to color 1 tiny square using pencil while no one else is looking.
7. Have the group search for the marked square. How long does it take to find the “One in a Million”?

The Content Behind the Activity

One million is written as a 1 followed by 6 zeros, also written 1×10^6 or 10^6 . Understanding a million, like anything else, comes from experience. A million is a difficult concept for many students to grasp, because they rarely see that many of anything collected in one place. Seeing a million things together (even tiny squares) helps students visualize large numbers so the concept is easier to internalize, a necessary step for large number sense. Scientists use the term parts per million, written “**ppm**”, to note concentration of dissolved matter, commonly heard when referencing salinity, dosages, and pollution. Very “salty” ocean water, for example, contains a large amount of dissolved particles: 35,000 ppm.

Taking it Further

For another activity to reinforce the concept of large numbers like one million, see the RAFT Idea Sheet *Counting to a Million*.

Web Resources (Visit www.raft.net/raft-idea?isid=252 for more resources!)

- Another description that illustrates ppm and beyond can be found at: <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/P/Ppm.html>
- Teacher designed math courses from the New Jersey Center for Teaching & Learning – <https://njctl.org/courses/math>