

Grade: 7

Topic: Scientific Notation

Lesson Title: How do you measure how big a country is?

Subject Area(s)	7 th Grade Math
Time Needed	2 one-hour class periods
TN standard	7.1.1d Understand numbers, ways of representing numbers, relationships among numbers, and number systems - use exponential notation
Learning objectives:	Students will be able to use and understand scientific notation with the real-world examples of East Asian population examples. Students will also compare the population size with the land size for each country and the United States.
Prior Knowledge or Skills	Students have been introduced to scientific notation earlier in the school year, however; a majority of them do not yet understand how to use scientific notation in real-world context. This lesson will help them have a more concrete understanding of scientific notation.
Materials/Resources Needed:	http://en.wikipedia.org/wiki/List_of_East_Asian_countries_by_population Map outlines of countries
Preparation	Copy individual country maps onto transparencies for ease in laying one over the other to compare size.
Procedures	<p>Attention-getter/Assess prior knowledge</p> <p>Divide the class into groups of five. Distribute map outlines of North Korea, South Korea, China, Japan, and the United States . Ask students to estimate relative sizes by comparing the East Asian countries by side with the United States and by laying the other countries over or under the United States. Have students list comparisons, e.g., “United States is approximately twice, as large as _____ in area. – or- North Korea is approximately one-third/fourth/fifth/sixth, etc. as large as the United States.” After students complete their lists, have them compare them and reexamine any areas on which they differed.</p>

	Direct Instruction/ Guided Practice	<p>Remind the students of the steps for writing a number in scientific notation and show them how to write the population of the United States in scientific notation.</p> <p>Now have them finish writing the rest of the countries population in scientific notation in their groups.</p> <p>Then they will order the countries based on population size in a table format.</p> <p>Now ask them to go back to their outline maps and list the countries in order by their area in a table format. Show overhead table of countries by exact population size. Have students rewrite the table showing area in scientific notation</p>
	Independent Practice	<p>On the second day, review how to use tables of data in Excel to create bar graphs using the example of Olympic BMX finalists created in a previous lesson.</p> <p>Have them in their groups review the data they put into tables the previous day. Issue the laptops and have them put this data into the computer and graph the data individually.</p> <p>Finally have them graph this data on the laptop in Excel in two separate bar graphs. Post rubric in the front and teacher model for students to guide students in completing their product.</p>
Assessment:		All group work will be assessed for participation and for product. Each individual will be required to graph the data individually in Excel.
Resources/Credits:		I used the askasia.org website to look for ideas. When I reviewed the lesson plan, 'Korean Geography Where in the World are We?' I was inspired for this lesson. I adapted the first part of the lesson for comparing the countries side by side from this lesson.
Differentiation/ Accommodations/ Extensions		<p>We will come back to this data later when we work with ratios. We will discuss how to compute population per square mile using the formula option in Excel to compute this number for us. Then we will make a third graph of this new data.</p> <p>Differentiate for advanced learners: Have a group of students research the area and population of other countries of their choosing and present the information to the class on a poster that includes the U.S. and East Asian countries.</p>