## $8^{th}$ *Grade UNIT 4 OVERVIEW: Scientific Notation*

| Unit Outcomes | Key Vocabulary |
|---|---|
| At the end of this unit, your student should be able to: | Terms to deepen the student's understanding |
| ✓ Understand powers of 10, convert numbers into scientific notation and vice versa<br>✓ Write large and small numbers in scientific notation and compare large and small numbers in scientific notation and standard form<br>✓ Operate with numbers in scientific notation<br>✓ Solve problems using exponents and scientific notation and make a connection between scientific notation and real-life applications | ✓ Irrational Numbers<br>✓ Power<br>✓ Rational Numbers<br>✓ Scientific notation<br>✓ Standard Form of a Number |

| Key Standards Addressed | Where This Unit Fits |
|---|---|
| Connections to Common Core/NC Essential Standards | Connections to prior and future learning |
| 8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2$ x $3^{-3}$ = $3^{-3}$ = $1/3^3$ = 1/27.*<br><br>8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as $3 \times 10^8$ and the population of the world as $7 \times 10^9$, and determine that the world population is more than 20 times larger.*<br><br>8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.<br><br>8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. | **Coming into this unit, students should have a strong foundation in:**<br>✓ Solving expressions with exponents<br>✓ Understanding what it means to "square" a number<br>✓ Performing operations with numbers expressed in scientific notation<br>✓ Solving equations with exponents<br><br>**This unit builds to the following future skills and concepts:**<br>✓ Solving equations with exponents |

## WAKE COUNTY PUBLIC SCHOOL SYSTEM

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| **Additional Resources**<br>Materials to support understanding and enrichment | **"Learning Checks"**<br>Questions Parents Can Use to Assess Understanding |
|---|---|
| ✓ Teaching videos made by Wake County teachers<br>✓ WCPSS YouTube Channel – Math Playlist<br>✓ Scientific Notation Overview<br>✓ Scientific Notation Practice<br>✓ Scientific Notation Videos<br>✓ Scientific Notation Practice #2<br>✓ Why use Scientific Notation?<br>✓ Equations with Scientific Notation Overview | ✓ Why do you convert a number from standard form into scientific notation and vice versa?<br>✓ Why is it easier to work with very large and very small numbers when they are in scientific notation?<br>✓ How can you use the property for multiplying powers with the same base to write numbers in scientific notation to answer future application problems?<br>✓ How do you choose units of appropriate size for measurements of very large or very small quantities? |

\* **Please note**, the unit guides are a work in progress. If you have feedback or suggestions on improvement, please feel free to contact wakemiddle@wcpss.net.