

Grade 8 Standards Parent Resource

Unit 5: The Real Number System

Unit 5 includes 2 topics of study, listed below. This resource is for Topic 1.

Topic 1

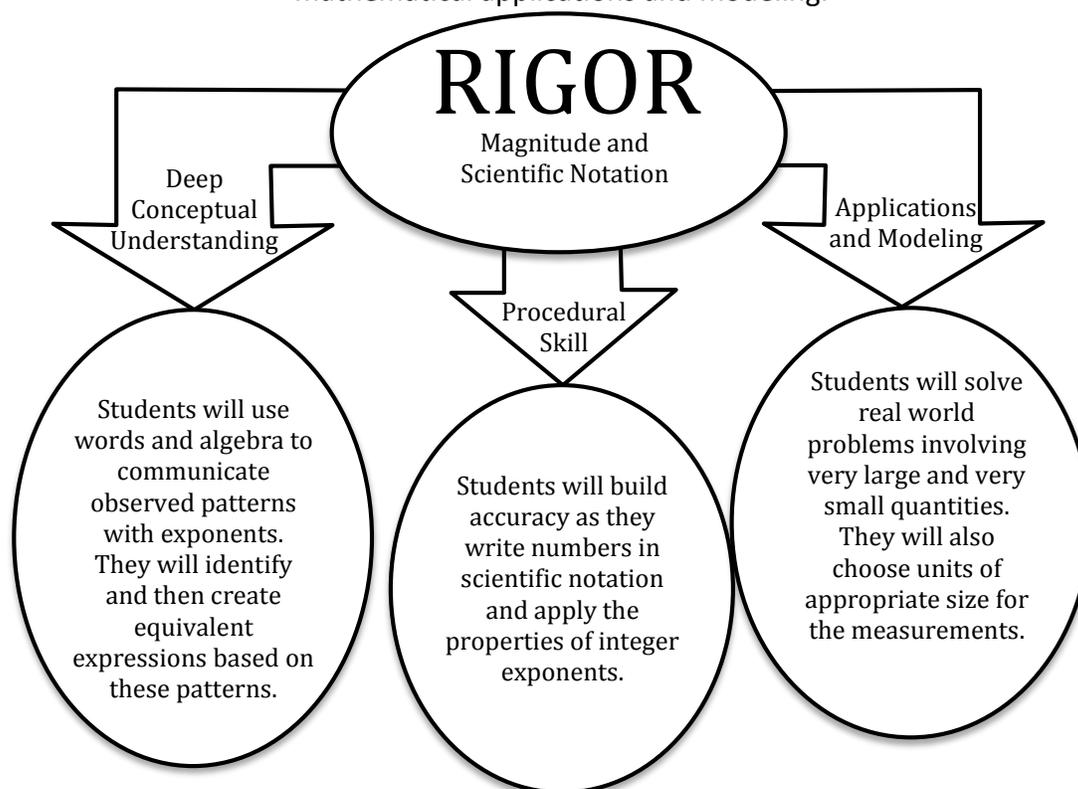
Topic 2

Magnitude and Scientific Notation

Rational and Irrational Numbers

Topic	Learning Goals by Common Core State Standard <i>Students will be able to...</i>
Magnitude and Scientific Notation	<ul style="list-style-type: none">• 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.• Know and apply the properties of integer exponents to generate equivalent numerical expressions.• 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. <p><i>Instructional videos in the hyperlinks above are meant to support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.</i></p>

The Common Core State Standards require a balance of three fundamental components that result in rigorous mathematics acquisition: deep conceptual understanding, procedural skill, and mathematical applications and modeling.



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Unit 5: The Real Number System

Topic 1: Magnitude and Scientific Notation

Learning Experiences by Common Core State Standard



In school, your child will...



At home, your child can...

Topic 1: Magnitude and Scientific Notation

- 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.

Mercury has a mass of 3.30×10^{23} kg, making it the lightest planet in our Solar System. The mass of the Earth is 5.9736×10^{24} kg. About how many times more massive is the mass of Earth than Mercury?



<http://www.universetoday.com/34024/mass-of-the-planets/>

- Know and apply the properties of integer exponents to generate equivalent numerical expressions.

5^{24}	$5^{(6-4)}$	$(5^6)^{-4}$	$\frac{5^6}{5^4}$	5^2	$\frac{5^6}{5^{-4}}$	5^{-2}	$\frac{5^4}{5^{-6}}$
Equivalent to $5^6 \times 5^{-4}$				Not Equivalent to $5^6 \times 5^{-4}$			

- 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.

- Explore more about how scientific notation is used in the real world by visiting [Mass of the Planets](#).
- Examine the Richter scale and see how scientific notation is used in describing the magnitude of earthquakes. Visit the CK12 PLIX (Play Learn Interact Xplore): [Scientific Notation: Richter Scale Exponents](#). To access the PLIX, you will need to create a free user account.
- Investigate the [populations of countries](#) that are being discussed in current events. Record the populations in scientific notation and express how many times as much one is than the other.

Additional Resources

- [Khan Academy: Negative Exponent Intuition](#) tutorial uses patterning to explore negative exponents. (video tutorial)
- [Learn Zillion: Use Patterns to Write Equivalent Expressions](#) (video tutorial)
- [Khan Academy: Properties of Exponents](#) (online check)
- [King Kong scientific notation game](#) (online game)
- [Converting Small Numbers into Scientific Notation](#) (online game)
- [Grade 8 Standards Unit 5 Topic 1 Magnitude and Scientific Notation](#) (flexbook)

Additional Practice links support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.