



# Hattiesburg Public School District

## Grade 8 Mathematics Units

### 2015 – 2016



Unit 1: Numerical Expressions	Time Frame: 45 Days (Aug 10 – Oct 8, 2015)
Content Standards	Standards for Mathematical Practice
<b>Major Standards</b>	
<p><b>8.EE.1</b> Know and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, <math>3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27</math>.</i></p> <p><b>8.EE.2</b> Use square root and cube root symbols to represent solutions to equations of the form <math>x^2=p</math> and <math>x^3=p</math>, where <math>p</math> is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that <math>\sqrt{2}</math> is irrational.</p> <p><b>8.EE.3</b> 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. <i>For example, estimate the population of the United States as 3 times <math>10^8</math> and the population of the world as 7 times <math>10^9</math>, and determine that the world population is more than 20 times larger.</i></p> <p><b>8.EE.4</b> 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.</p>	<p>(1) Make sense of problems and persevere in solving them.</p> <p>(2) Reason abstractly and quantitatively.</p> <p>(3) Construct viable arguments and critique the reasoning of others.</p> <p>(4) Model with mathematics.</p> <p>(5) Use appropriate tools strategically.</p> <p>(6) Attend to precision.</p> <p>(7) Look for and make use of structure.</p> <p>(8) Look for and express regularity in repeated reasoning.</p> <p><b>8.EE.1-MP 2, 5, 6, 7</b></p> <p><b>8.EE.2- MP 2, 5, 6, 7</b></p> <p><b>8.EE.3- MP 2, 5, 6</b></p> <p><b>8.EE.4- MP 2, 5, 6</b></p> <p><b>8.NS.1-MP 2, 6, 7</b></p> <p><b>8.NS.2-MP 2, 4, 7, 8</b></p>



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#### Supporting Standards

**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.

**8.NS.2** Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g.,  $\pi^2$ ). *For example, by truncating the decimal expansion of  $\sqrt{2}$ , show that  $\sqrt{2}$  is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

#### Additional Standards

#### Pre-requisite Standards

##### 8.EE.1

- Understand skills with the place-value system.
- Understand skills with basic operations with negative/positive integers.
- Identify and use rules and terms relevant to exponents.
- Distinguish between scientific notation and standard form.

##### 8.EE.2

- Use the rules for exponents.
- Use the Inverse Property for exponents.
- Understand the rules for evaluating square roots.



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- 8.EE.3**
- Understand and use properties of exponents.
  - Transfer between standard form and scientific notation.
  - Understand the place-value system (hundredths, tenths, ones, hundreds, etc.).
  - Identify relevant and necessary information in a T-table.
- 8.EE.4**
- Understand and use properties of exponents.
  - Transfer between standard form and scientific notation.
  - Understand the place-value system (hundredths, tenths, ones, hundreds, etc.).
- 8.NS.1**
- Identify how fractions and decimals are related to one another.
  - Identify fractions in simplest form.
  - Classify decimals as repeating, terminating, or non-terminating.
  - Convert decimals to fractions and fractions to decimals.
  - Order real numbers from least to greatest and greatest to least.
- 8.NS.2**
- Identify how fractions and decimals are related to one another.
  - Identify fractions in simplest form.
  - Classify decimals as repeating, terminating, or non-terminating.
  - Convert decimals to fractions and fractions to decimals.
  - Order real numbers from least to greatest and greatest to least.

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Topic	Lesson Topic	Lesson Topic	Lesson Topic	Lesson Topic



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<p>Real Number System  <b>Standard Ref</b>            8.NS.1  <b>Resource/Strategy</b>  <a href="https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit">https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit</a></p>	<p>Approximating Irrationals  <b>Standard Ref</b>            8.NS.2  <b>Resource/Strategy</b>  <a href="https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit">https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit</a></p>	<p>Integer Exponents  <b>Standard Ref</b>            8.EE.1  <b>Resource/Strategy</b>  <a href="https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit">https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit</a></p>	<p>Square Roots/Cube Roots  <b>Standard Ref</b>            8.EE.2  <b>Resource/Strategy</b>  <a href="https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit">https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit</a></p>	<p>Formative Assessment Lesson (FALs)  <b>Standard Ref</b>            8.EE  <b>Resource/Strategy</b>            Applying Properties of Exponents (C)  <a href="http://www.map.mathshell.org">www.map.mathshell.org</a></p>
<b>Lesson 6</b>	<b>Lesson 7</b>			
<p><b>Lesson Topic</b>            Scientific Notation  <b>Standard Ref</b>            8.EE.3  <b>Resource/Strategy</b>  <a href="https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit">https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit</a></p>	<p><b>Lesson Topic</b>            Scientific Notations with Operations and Magnitudes  <b>Standard Ref</b>            8.EE.4  <b>Resource/Strategy</b>  <a href="https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit">https://docs.google.com/document/d/1uM3pZuKUJugPiGKTLbQXvJAPt_qod2PYicWIKkUapM8/edit</a></p>			