**Curriculum Coverage in 8th Grade Mathematics for the 2018-2019 School Year as Outlined by TN Standards**

**TN Standards Major Work of the Grade:**

* **Radical and integer exponents**
* **Functions**
* **Expressions and Equations**
* **Pythagorean Theorem**

**Supporting:**

* **Rational Numbers**
* **Transformation**
* **Volume of cylinders, cones, and spheres**
* **Scatterplots**
* **Probability**

**The Standards for Mathematical Practice**

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| **MP1. Make sense of problems and persevere in solving them.** | **MP2. Reason abstractly and quantitatively.** | **MP3. Construct viable arguments and critique the reasoning of others.** | **MP4. Model with mathematics.** |
| **MP5. Use appropriate tools strategically.** | **MP6. Attend to precision.** | **MP7. Look for and make use of structure.** | **MP8. Look for and express regularity in repeated reasoning.** |

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| **TN Standards** | **Learning Outcomes** | **Instructional Focus** | **Content Resources** |
| **Real Number System**  **(Allow 2 weeks for instruction, review, and assessment)** | | | |
| * **8.NS.A.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 or terminates and convert a decimal expansion which repeats eventually or terminates into a rational number. * **8.NS.A.2** Use rational approximations of irrational numbers to compare the size of irrational numbers locating them approximately on a number line diagram. | I can define rational and irrational numbers  I can show that the decimal expansion of rational numbers repeats eventually or terminates.  I can convert a decimal expansion which repeats eventually or terminates into a rational number.  I can show informally that every number has a decimal expansion.  I can approximate irrational numbers as rational numbers and locate on a number line. |  | **Go Math Lesson:**  \* Lesson 1.1 Rational and Irrational (pg.7)  \* Lesson 1.2 Set of Real Numbers (pg.15)  \* Lesson 1.3 Ordering Real Numbers (pg.21)  **Engage NY Task:**  [Module 7, Topic A, B, D](https://www.engageny.org/resource/grade-8-mathematics-module-7)  [Square and Cube Roots](https://www.engageny.org/resource/grade-8-mathematics-module-7)  [Decimal Expansions of Numbers](https://www.engageny.org/resource/grade-8-mathematics-module-7)  [Applications of Radicals and Roots](https://www.engageny.org/resource/grade-8-mathematics-module-7) |
| **Integer Exponent Rules**  **(Allow 2 weeks for instruction, review, and assessment)** | | | |
| * **8.EE***.***A.1** Know and apply the properties of integer exponents to generate numerical expressions. * **8.EE.A.2** Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. | I can know and demonstrate that a number raised to the exponent of 0 is always 1.  I can know and demonstrate that a number with a negative exponent is the reciprocal (to make the exponent positive)  I can apply the properties of integer exponents:  -to multiply numbers with like bases, add the exponents  -to divide numbers with like bases, subtract the exponents  -to raise a power to a power, keep the base, multiply the exponents |  | **Go Math Lesson:**  **\*** Lesson 2.1 Integer Exponents (pg. 33)  **Engage NY Task:**  [Module 1, Topic A, Exponential Notation and Properties of Integer Exponents](https://www.engageny.org/resource/grade-8-mathematics-module-1-topic-overview) |
|  | I can solve the equation x2 = p, by using the inverse operation (square root)  I can solve the equation x3 = p, by using the inverse operation (cube root)  I can demonstrate knowledge of perfect squares from 1 – 13  I can demonstrate knowledge of perfect cubes from 1 – 5. |  |  |
| **Scientific Notation**  **(Allow 2 weeks for instruction, review, and assessment)** | | | |
| * **8.EE.A.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. * **8.EE.A.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 very large or very small quantities. | I can understand that scientific notation is a number between 1 and 10 times a power of 10.  I can expand numbers written in scientific notation form to standard form.  I can change numbers from standard form to scientific notation.  I can express how many times a number is than the other (by dividing).  I can perform multiplication and division on numbers written in scientific notation by following the specified instructions.  I can perform addition or subtraction on numbers written in scientific notation by expanding to standard form and then performing the operation. | **8.EE.A.3**  **Instructional Focus:**  Students should extend their understanding of the properties of exponents by solving real-world and mathematical problems involving numbers written in Scientific Notation. Students should also be able to compare numbers involving Scientific Notation and explain the comparison between the numbers by determining how many times larger or smaller one is than the other. Additionally, students should understand and explain the benefits of using Scientific Notation. This standard lays the foundational coursework for the sequential standard for which students will perform operations with numbers expressed in Scientific Notation.  **8.EE.A.4**  **Instructional Focus:**  Students should extend their understanding of performing operations with numbers in Scientific Notation to solving contextual problems that involve both numbers in Scientific Notation form and decimal form. Additionally, students should be able to perform calculations using technology that produce a solution in Scientific Notation and be able to interpret the solution and explain their reasoning using precise mathematical vocabulary. | **Go Math Lesson:**  \* Lesson 2.2 Scientific Notation with Positive Powers of 10 (pg. 39)  \* Lesson 2.3 Scientific Notation with Negative Powers of 10 (pg. 45)  \* Lesson 2.4 Operations with Scientific Notation (pg. 51)  **Engage NY Task:**  [Module 1, Topic B, Magnitude and Scientific Notation](https://www.engageny.org/resource/grade-8-mathematics-module-1-topic-b-overview) |
| **Solving Linear Equations**  **(allow 3 weeks for instruction, review, and assessment)** | | | |
| * **8.EE.C.7** Solve linear equations in one variable.   b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.  a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equations into simpler forms, until an equivalent equation of the form x = a, a = a, or a =b results (where a and b are different numbers). | I can understand, discuss, and use the correct academic vocabulary when talking about algebraic equations.  I can solve equations using inverse operations.  I can solve 1 –step and 2-step equations using inverse operations.  I can simplify algebraic expressions by using the distributive property and/or collecting like terms.  I can solve equations whose solutions require expanding expressions using the distributive property and/or collecting like terms.  I can solve equations with variables on both sides of the equal sign.  I can solve equations with Variables on both sides AND combining like terms and distributive property  I can give examples of linear equations in one variable with one solution and show that the given example equation has one solution by successively transforming the equation into an equivalent equation of the form x = a  I can give examples of linear equations in one variable with infinitely many solutions and show that the given example has infinitely many solutions by successively transforming the equation into an equivalent equation of the form a=a  I can give examples of linear equations in one variable with no solution and show that the given example has no solution by successively transforming the equation into an equivalent equation of the form b=a, where a and b are different numbers. | **8.EE.C.7**  **Instructional Focus:**  Students should extend their understanding of solving linear equations utilizing a variety of multiple properties of operations by explaining their solution approach using precise mathematical vocabulary in verbal and written forms.  Students should solidify their conceptual understanding of what it means when the solution for a linear equation results in one, zero, or infinitely many solutions. Students should understand that when x = a, there is only one solution and that substituting the value of a into the equation will result in a true equation. Students should also be able to understand that when a=a, there are infinitely many solutions, and substituting any number into the equation will result in a true equation. In the same manner, when a=b (where a and b are different numbers), there are no solutions, and any number substituted into the equation will result in a false equation.  The culmination of these standards will be the building block for future work solving pairs of simultaneous linear equations. | **Go Math Lesson:**  \* Lesson 7.1 Equations with Variables on Both Sides (pg.197)  \* Lesson 7.2 Equations with Rational Numbers (pg.203)  \* Lesson 7.3 Equations with the Distributive Property (pg.209)  \* Lesson 7.4 Equations with Many Solutions or No Solutions (pg.215)  **Engage NY Task:**  [Module 4, Topic A, Writing and Solving Linear Equations](https://www.engageny.org/resource/grade-8-mathematics-module-4-topic-overview) |
| **Resource Toolbox:**  **Additional Resources**  [Mathematics Assessment Project](http://map.mathshell.org/materials/index.php)  [Illustrative Mathematics](http://www.illustrativemathematics.org/standards/k8)  [Virtual Nerd](http://www.virtualnerd.com/)  [Khan Academy](https://www.khanacademy.org/)  [Internet 4 Classrooms](http://www.internet4classrooms.com/skills-8th-mathbuilders.htm)  [Teacher Tube](http://www.teachertube.com/)  [Kuta Software](http://www.kutasoftware.com/free.html)  [Illuminations](http://illuminations.nctm.org/) |  |  |  |