**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**

|  |  |  |  |
| --- | --- | --- | --- |
| **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.** |

|  |  |  |  |
| --- | --- | --- | --- |
| **TN Standards** | **Learning Outcomes** | **Instructional Focus** | **Content Resources** |
| **Functions****(Allow 9 weeks for instruction, review, and assessment)** |
| * **8.F.B.5** Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
* **8.F.A.1** Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
* **8.F.A.2** Compare properties of two functions each represented in a different way. (algebraically, graphically, numerically in tables, or by verbal description).
* **8.F.A.3** Know and interpret the equation y = mx+b as defining a linear function, whose graph is a straight line, give examples of functions that are not linear.
* **8.F.B.4** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
* **8.EE.B.6** Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; know and derive the equation *y = mx* for a line through the origin and the equation *y = mx + b* for a line intercepting the vertical axis at *b*.
* **8.EE.B.5** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.
* **8.SP.A.1** Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and non-linear association.
* **8.SP.A.2** Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association informally fit a straight line and informally assess the model fit by judging the closeness of the data points to the line.
* **8.SP.A.3** Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hour as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
 | I can analyze a qualitative graph (e.g., where the function is increasing or decreasing, linear or nonlinear).I can sketch a graph that exhibits the features of a verbal scenario or context.I can determine if a relation is a function. (mapping, ordered pairs, table, graph)I can complete a function table and graph it.I can find the slope of a line between a pair of distinct points (ordered pairs)I can determine the slope of a graph (rise over run). I can use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.I can recognize that slope is determined by the constant rate of change and determine if an XY table is linear or not (does it have a constant rate of change)I can recognize that the y-intercept is the initial value where x = 0.I can determine the y intercept of the graph of a linear function.I can derive an equation of the form y = mx + b for a linear function.I can graph an equation in the form y = mx+b.I can determine the rate of change (slope) from two (x,y) values, a verbal description, values in a table, or graph and compare which has the greatest rate of change.I can construct a function to model a linear relationship between two quantities.I can provide examples of nonlinear functions using multiple representations (tables, graphs, and equations).I can re-write an equation in slope intercept form.I can interpret the data on a scatterplot.I can determine patterns on a scatterplot such as clustering, outliers, positive or negative association, linear or non-linear association.I can determine the strength of a linear association by observing how close the data points are to the line of best fit.I can use the line of best fit in order to solve problems in the context of bivariate data including the interpretation of the slope and y intercept. | **8.EE.B.5****Instructional Focus:** Students should employ their knowledge of unit rates and proportional relationships to compare two different proportional relationships in complex situations. Students should be able to write and verbalize their explanation of unit rate as the slope of a graph in a complex problem. Additionally, students should display procedural fluency by understanding that when provided information presented in a table and information presented in equation form, the two may be easier compared by graphing both relationships. As students solidify this procedural fluency, students should be able to justify their reasoning with written and verbal explanation. **8.EE.B.6****Instructional Focus:** Students should move beyond finding the slope of a line. They should use multiple representations to demonstrate and explain why any two points on a non-vertical line generate the same slope by using similar slope triangles. Additionally, students should be able to graph the equation of a line, identify the slope, and create a visual representation that shows that the slope is the same between any two points on a line using similar triangles formed by the vertical and horizontal lines from a point on a non-vertical line. As, students solidify their understanding of this concept, they should be able to derive the equations y=mx for a line through the origin and the equation y=mx+b for a line intercepting the vertical axis at b by making use of structure from tables, equations, and graphs.  | **Go Math Lesson:** \* Lesson 3.1 Representing Proportional Relationships (pg.71)\* Lesson 3.2 Rate of Change and Slope (pg. 77)\* Lesson 3.3 Interpreting the Unit Rate as Slope (pg. 83)\* Lesson 4.1 Representing Linear Nonproportional Relationships (pg. 95)\* Lesson 4.2 Determining Slope and y-intercept (pg. 101)\* Lesson 4.3 Graphing Linear Nonproportional Relationships using Slope and y-intercept (pg. 107)\* Lesson 4.4 Proportional and Nonproportional Situations (pg. 113)\* Lesson 5.1 Writing Linear Equations from Situations and Graphs (pg. 127)\* Lesson 5.2 Writing Linear Equations from a table (pg. 133)\* Lesson 6.1 Identifying and Representing Functions (pg. 153)\* Lesson 6.2 Describing Functions (pg. 161)\* Lesson 6.3 Comparing Functions (pg. 167)\* Lesson 6.4 Analyzing Graphs (pg. 173)\* Lesson 5.3 Linear Relationships and Bivariate Data (pg. 139) **Engage NY Task:** [Module 4, Topic B, C](https://www.engageny.org/resource/grade-8-mathematics-module-4)[Linear Equations in two variables and their graphs](https://www.engageny.org/resource/grade-8-mathematics-module-4)[Slope and equations of lines](https://www.engageny.org/resource/grade-8-mathematics-module-4)[Module 5, Topic A, Functions](https://www.engageny.org/resource/grade-8-mathematics-module-5-topic-overview)[Module 6, Topic A – D](https://www.engageny.org/resource/grade-8-mathematics-module-6)[Linear Functions](https://www.engageny.org/resource/grade-8-mathematics-module-6)[Bivariate Numerical Data](https://www.engageny.org/resource/grade-8-mathematics-module-6)[Linear and Nonlinear Models](https://www.engageny.org/resource/grade-8-mathematics-module-6)[Bivariate Categorical Data](https://www.engageny.org/resource/grade-8-mathematics-module-6)  |

|  |
| --- |
| **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/)  |