

## 2019 - 2020 8th Grade Instructional Mathematics Skills: Students Will Know/ Students Will Be Able To...

Report Card Skill: EXPONENT Rules	
<p><b>For this skill, students will know:</b></p> <ul style="list-style-type: none"> <li>• bases must be the same before exponents can be added, subtracted, or multiplied.</li> <li>• exponents are added with a product of powers.</li> <li>• exponents are multiplied with a power of a power.</li> <li>• exponents are subtracted with the quotient of powers.</li> <li>• a number raised to the zero (0) power is equal to one.</li> <li>• understand the relationship between negative exponents and reciprocals.</li> <li>• several properties may be used to simplify an expression.</li> </ul>	<p><b>For this skill, students will be able to:</b></p> <ul style="list-style-type: none"> <li>• apply the properties of integer exponents to generate equivalent numerical expressions.</li> </ul>

Report Card Skill: Solve EQUATIONS	
<p><b>For this skill, students will know:</b></p> <ul style="list-style-type: none"> <li>• the solution to an equation is the value of the variable, which makes a true equality when substituted back into the equation.</li> </ul>	<p><b>For this skill, students will be able to:</b></p> <ul style="list-style-type: none"> <li>• use inverse operations to solve linear equations containing rational number coefficients in one variable, including equations whose solutions require expanding expressions using the distributive property and combining like terms.</li> </ul>
<ul style="list-style-type: none"> <li>• equations have one solution when the variables do not cancel out.</li> <li>• equations have no solution when the variables cancel out and the constants are not equal.</li> <li>• equations have infinitely many solutions when both sides of the equation are the same.</li> </ul>	<ul style="list-style-type: none"> <li>• determine the number of solutions to an equation algebraically.</li> </ul>

Report Card Skill: FUNCTIONS: Write and Graph	
<b>For this skill, students will know:</b> <ul style="list-style-type: none"> <li>the connections (relationships) between proportional relationships, lines, and linear equations.</li> </ul>	<b>For this skill, students will be able to:</b> <ul style="list-style-type: none"> <li>compare graphs, tables, and equations of functions.</li> <li>identify the unit rate (slope) from tables, graphs, and equations.</li> <li>compare two functions represented in different ways.</li> </ul>
<ul style="list-style-type: none"> <li>triangles are similar when there is a constant rate of proportionality between them.</li> <li>why the slope (<math>m</math>) is the same between any two distinct points on a non-vertical line in the coordinate plane.</li> </ul>	<ul style="list-style-type: none"> <li>construct triangles between any two points on a line and compare the sides to understand that the slope is the same between any two points on a line.</li> <li>write and graph equations in slope-intercept form.</li> </ul>
<ul style="list-style-type: none"> <li>a function is a rule that assigns to each input exactly one output.</li> <li>the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.</li> </ul>	<ul style="list-style-type: none"> <li>identify functions from equations, graphs, and tables/ordered pair.</li> <li>use the vertical line test to determine if a relation is a function.</li> </ul>
<ul style="list-style-type: none"> <li>linear functions have a constant rate of change between any two points.</li> </ul>	<ul style="list-style-type: none"> <li>use equations, graphs, and tables to categorize functions as linear or nonlinear.</li> </ul>

Report Card Skill: TRANSFORMATIONS in the coordinate plane	
<b>For this skill, students will know:</b> <ul style="list-style-type: none"> <li>that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations</li> </ul>	<b>For this skill, students will be able to:</b> <ul style="list-style-type: none"> <li>identify transformations on coordinates</li> <li>perform translations, rotations, reflections, and dilations with coordinates</li> <li>describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates</li> </ul>

**Report Card Skill: PROBLEM SOLVING/REASONING****For this skill, students will know:**

- how to make sense of problems and persevere in solving them

**For this skill, students will be able to:**

- solve real-world problems through the application of algebraic and geometric concepts.
- seek the meaning of a problem and look for different ways to represent and solve it.

- how to construct viable arguments and critique the reasoning of others

- construct arguments using verbal or written explanations accompanied by expressions, equations, inequalities, models and graphs, tables, and other data displays.
- refine their mathematical communication skills through discussions that evaluate their own thinking and the thinking of their peers.

- different representations can be used to model mathematics

- model problem situations symbolically, graphically, tabularly, and contextually.
- explain the connections between different representations.
- consider the available tools when solving a mathematical problem and decide when certain tools may be helpful.