



8 <sup>th</sup> GRADE MATHEMATICS	
Cardinal Newman Standards: Catholic Identity Integration	
<ul style="list-style-type: none"> <li>• <b>CS.M.712.GS1:</b> Demonstrate the mental habits of precise, determined, careful, and accurate questioning, inquiry, and reasoning in the pursuit of transcendent truths. <i>(CCSSM.8.NS.2; EE.2; EE.4; EE.5; EE.8; F.4; G.5; G.7; SP.1; SP.3)</i></li> <li>• <b>CS.M.712.IS1:</b> Explain the nature of rational discourse and argument and the desirability of precision and deductive certainty which mathematics makes possible and is not possible to the same degree in other disciplines. <i>(CCSSM.8.EE.1; EE.5; EE.6; EE.7; F.2; F.3; F.5; G.3; G.5; G.6; SP.3; SP.4)</i></li> <li>• <b>CS.M.712.IS3:</b> Recognize how mathematical arguments and processes can be extrapolated to other areas of study, including theology and philosophy. <i>(CCSSM.8.EE.5; EE.8; F.5; G.5; G.9; SP.1; SP.4)</i></li> <li>• <b>CS.M.712.DS3:</b> Advocate for the pursuit of understanding for its own sake and the intrinsic value or discovery of the true and the beautiful often at the requirement of great sacrifice, discipline, and effort. <i>(CCSSM.8.NS.2; EE.2; EE.3; EE.4; EE.5; EE.6; EE.7; F.3; F.4; F.5; G.4; G.7; G.8; SP.1; SP.3; SP.4)</i></li> </ul>	
Priority Skills	Supporting Skills
<ul style="list-style-type: none"> <li>• Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.</li> <li>• Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities.</li> <li>• Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.</li> <li>• Verify experimentally the properties of rotations, reflections, and translations.</li> <li>• Interpret the equation <math>y = mx + b</math> as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.</li> <li>• Solve real-world and mathematical problems leading to two linear equations in two variables.</li> <li>• Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.</li> <li>• Construct and interpret a two-way table</li> <li>• Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations</li> <li>• Understand that a function is a rule that assigns to each input exactly one output.</li> <li>• Know and apply the properties of integer exponents to generate equivalent numerical expressions</li> <li>• 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</li> </ul>



Priority Skills	Supporting Skills
<ul style="list-style-type: none"> <li>• Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.</li> <li>• 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.</li> </ul>	<p><i>(see previous page)</i></p>
Essential Questions	
<ul style="list-style-type: none"> <li>• How can we use numbers in different ways to solve real world problems?</li> <li>• How can our ability to interpret scatter plots help us understand relationships?</li> <li>• What can our work with Mathematics teach us about perseverance, wisdom, wonder, reasoning and truth?</li> <li>• How does the pursuit of truth inherent in Mathematics bring us closer to God?</li> <li>• What strategies can I use to consistently and efficiently create graphs and tables to organize data sets?</li> </ul>	
Vital Vocabulary	
<ul style="list-style-type: none"> <li>• Approximate, Bivariate, Coefficient, Cone, Congruence, Cylinder, Deductive (Reasoning), Dilation, Domain, Function, Intercept, Inverse, Investigate, Irrational, Linear, Nonlinear, Proportional, Radical, Rational, Reflection, Rotation, Scatter Plot, Slope, Sphere, Translation, Variable</li> </ul>	

*Additional Resources:* [Cardinal Newman Mathematics Resources, Appendix F](#)