

NORTH MONTCO TECHNICAL CAREER CENTER

PDE MATH ELIGIBLE CONTENT CROSSWALK TO ASSESSMENT ANCHORS

Eligible Content	Assessment Anchors	Assessment Anchor	Academic Standard
<b>Reporting Category: M11.A Numbers and Operations</b>			
<p><b>M11.A.1.1.1</b> Find the square root of an integer to the nearest tenth using either a calculator or estimation.</p> <p><b>M11.A.1.1.2</b> Express numbers and/or simplify expressions using scientific notation (including numbers less than 1).</p> <p><b>M11.A.1.1.3</b> Simplify square roots. (e.g., <math>\sqrt{24} = 2\sqrt{6}</math>)</p>	<p><b>M11.A.1.1</b> Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation).</p>	<p><b>M11.A.1</b> Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.</p>	<p>2.1.8.A, 2.1.8.B 2.1.11.A</p>
<p><b>M11.A.1.2.1</b> Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.</p>	<p><b>M11.A.1.2</b> Apply number theory concepts to show relationships between real numbers in problem solving settings.</p>	<p><b>M11.A.1</b> Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.</p>	<p>2.1.8.E</p>
<p><b>M11.A.1.3.1</b> Locate/identify irrational numbers at the approximate location on a number line.</p> <p><b>M11.A.1.3.2</b> Compare and/or order any real numbers (rational and irrational may be mixed).</p>	<p><b>M11.A.1.3</b> Estimate the value of an irrational number.</p>	<p><b>M11.A.1</b> Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.</p>	<p>2.2.8.C</p>
<p><b>M11.A.2.1.1</b> Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).</p> <p><b>M11.A.2.1.2</b> Solve problems using direct and inverse proportions.</p> <p><b>M11.A.2.1.3</b> Identify and/or use proportional relationships in problem solving settings.</p>	<p><b>M11.A.2.1</b> Apply ratio and/or proportion in problem-solving situations.</p>	<p><b>M11.A.2</b> Understand the meanings of operations, use operations and understand how they relate to each other</p>	<p>2.2.11.A 2.8.11.P</p>

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<b>Reporting Category: M11.A Numbers and Operations</b>			
<p><b>M11.A.2.2.1</b> Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value (may contain all types of real numbers - exponents should not exceed power of 10).</p> <p><b>M11.A.2.2.2</b> Simplify/evaluate expressions involving multiplying with exponents (e.g. <math>x^6 \cdot x^7 = x^{13}</math>), powers of powers (e.g., <math>(x^6)^7 = x^{42}</math>) and powers of products <math>(2 \times 2)^3 = 8 \times 6</math> (positive exponents only).</p>	<p><b>M11.A.2.2</b> Use exponents, roots and/or absolute value to solve problems.</p>	<p><b>M11.A.2</b> Understand the meanings of operations, use operations and understand how they relate to each other.</p>	2.1.11.A
<p><b>M11.A.3.1.1</b> Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).</p>	<p><b>M11.A.3.1</b> Apply the order of operations in computation and in problem-solving situations.</p>	<p><b>M11.A.3</b> Compute accurately and fluently and make reasonable estimates.</p>	2.2.8.A
<p><b>M11.A.3.2.1</b> Use estimation to solve problems.</p>	<p><b>M11.A.3.2</b> Use estimation strategies in problem-solving situations</p>	<p><b>M11.A.3</b> Compute accurately and fluently and make reasonable estimates.</p>	2.2.11.B, 2.2.11.D
<b>Reporting Category: M11.B Measurement</b>			
<b>Not assessed at grade 11.</b>		<p><b>M11.B.1</b> Demonstrate an understanding of measurable attributes of objects and figures, and the units, systems and processes of measurement.</p>	
<p><b>M11.B.2.1.1</b> Measure and/or compare angles in degrees (up to <math>360^\circ</math>) (protractor must be provided or drawn).</p>	<p><b>M11.B.2.1</b> Use and/or compare measurements of angles.</p>	<p><b>M11.B.2</b> Apply appropriate techniques, tools and formulas to determine measurements.</p>	2.3.11.A 2.3.11.B

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<b>Reporting Category: M11.B Measurement</b>			
<p><b>M11.B.2.2.1</b> Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p><b>M11.B.2.2.2</b> Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p><b>M11.B.2.2.3</b> Estimate area, perimeter or circumference of an irregular figure.</p> <p><b>M11.B.2.2.4</b> Find the measurement of a missing length given the perimeter, circumference, area or volume.</p>	<p><b>M11.B.2.2</b> Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system.)</p>	<p><b>M11.B.2</b> Apply appropriate techniques, tools and formulas to determine measurements.</p>	<p>2.3.8.A, 2.3.8.D</p>
<p><b>M11.B.2.3.1</b> Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume.</p> <ul style="list-style-type: none"> <li>• How does changing the length of the radius of a circle affect the circumference of the circle?</li> <li>• How does changing the length of the edge of a cube affect the volume of the cube?</li> <li>• How does changing the length of the base of a triangle affect the area of the triangle?</li> </ul>	<p><b>M11.B.2.3</b> Describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure.</p>	<p><b>M11.B.2</b> Apply appropriate techniques, tools and formulas to determine measurements.</p>	<p>2.3.8.E</p>
<b>Reporting Category: M11.C Geometry</b>			
<p><b>M11.C.1.1.1</b> Identify and/or use the properties of a radius, diameter and/or tangent of a circle (given numbers should be whole.)</p> <p><b>M11.C.1.1.2</b> Identify and/or use the properties of arcs, semicircles, inscribed angles and/or central angles.</p>	<p><b>M11.C.1.1</b> Identify and/or use parts of circles and segments associated with circles.</p>	<p><b>M11.C.1</b> Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.</p>	<p>2.9.11.F</p>

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<b>Reporting Category: M11.C Geometry</b>			
<p><b>M11.C.1.2.1</b> Identify and/or use properties of triangles (e.g., medians, altitudes, angle bisectors, side/angle relationships, Triangle Inequality Theorem).</p> <p><b>M11.C.1.2.2</b> Identify and/or use properties of quadrilaterals (e.g., parallel sides, diagonals, bisectors, congruent sides/angles and supplementary angles).</p> <p><b>M11.C.1.2.3</b> Identify and/or use properties of isosceles and equilateral triangles.</p>	<p><b>M11.C.1.2</b> Recognize and/or apply properties of angles, triangles and quadrilaterals.</p>	<p><b>M11.C.1</b> Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.</p>	<p>2.9.8.D 2.9.11.C</p>
<p><b>M11.C.1.3.1</b> Identify and/or use properties of congruent and similar polygons or solids.</p>	<p><b>M11.C.1.3</b> Use properties of congruence, correspondence and similarity in problem-solving settings involving two- and three-dimensional figures.</p>	<p><b>M11.C.1</b> Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.</p>	<p>2.9.11.B</p>
<p><b>M11.C.1.4.1</b> Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).</p>	<p><b>M11.C.1.4</b> Solve problems involving right triangles using the Pythagorean Theorem.</p>	<p><b>M11.C.1</b> Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.</p>	<p>2.10.11.B</p>
<b>Not assessed at grade 11.</b>		<p><b>M11.C.2</b> Identify and/or apply concepts of transformations or symmetry.</p>	
<p><b>M11.C.3.1.1</b> Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).</p> <p><b>M11.C.3.1.2</b> Relate slope to perpendicularity and/or parallelism (limit to linear algebraic expressions; slope formula provided on the reference sheet).</p>	<p><b>M11.C.3.1</b> Solve problems using analytic geometry.</p>	<p><b>M11.C.3</b> Locate points or describe relationships using the coordinate plane.</p>	<p>2.9.11.G</p>

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<b>Reporting Category: M11.D Algebraic Concepts</b>			
<p><b>M11.D.1.1.1</b> Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p> <p><b>M11.D.1.1.2</b> Determine if a relation is a function given a set of points or a graph.</p> <p><b>M11.D.1.1.3</b> Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).</p>	<p><b>M11.D.1.1</b> Analyze and/or use patterns or relations.</p>	<p><b>M11.D.1</b> Demonstrate an understanding of patterns, relations and functions.</p>	<p>2.8.11.Q, 2.8.11.A, 2.8.11.O</p>
<p><b>M11.D.2.1.1</b> Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p><b>M11.D.2.1.2</b> Identify or graph functions, linear equations or linear inequalities on a coordinate plane.</p> <p><b>M11.D.2.1.3</b> Write, solve and/or apply a linear equation (including problem situations).</p> <p><b>M11.D.2.1.4</b> Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).</p> <p><b>M11.D.2.1.5</b> Solve quadratic equations using factoring (integers only – not including completing the square or the Quadratic Formula).</p>	<p><b>M11.D.2.1</b> Write, solve and/or graph linear equations and inequalities using various methods.</p>	<p><b>M11.D.2</b> Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.</p>	<p>2.8.8.F 2.8.11.D 2.8.11.H 2.8.11.J 2.8.11.N 2.8.11.L, 2.8.11.K</p>

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<b>Reporting Category: M11.D Algebraic Concepts</b>			
<p><b>M11.D.2.2.1</b> Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).</p> <p><b>M11.D.2.2.2</b> Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form <math>ax^2+bx+c</math> where <math>a</math> is not equal to 0).</p> <p><b>M11.D.2.2.3</b> Simplify algebraic fractions.</p>	<p><b>M11.D.2.2</b> Simplify expressions involving polynomials.</p>	<p><b>M11.D.2</b> Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.</p>	2.8.11.S
<p><b>M11.D.3.1.1</b> Identify, describe and/or use constant or varying rates of change.</p> <p><b>M11.D.3.1.2</b> Determine how a change in one variable relates to a change in a second variable (e.g., <math>y=4/x</math>, if <math>x</math> doubles, what happens to <math>y</math>?).</p>	<p><b>M11.D.3.1</b> Describe and/or determine change.</p>	<p><b>M11.D.3</b> Analyze change in various contexts.</p>	2.8.8.J 2.11.8.B
<p><b>M11.D.3.2.1</b> Apply the formula for the slope of a line to solve problems (formula given on reference sheet).</p> <p><b>M11.D.3.2.2</b> Given the graph of the line, 2 points on the line, or the slope and a point on a line, write or identify the linear equation in point-slope, standard and/or slope-<b>intercept form</b>.</p> <p><b>M11.D.3.2.3</b> Compute the slope and/or y-intercept represented by a linear equation or graph.</p>	<p><b>M11.D.3.2</b> Compute and/or use the slope of a line.</p>	<p><b>M11.D.3</b> Analyze change in various contexts</p>	2.8.11.J 2.8.11.L
<p><b>M11.D.4.1.1</b> Match the graph of a given function to its table or equation.</p>	<p><b>M11.D.4.1</b> Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables.</p>	<p><b>M11.D.4</b> Describe or use models to represent quantitative relationships.</p>	.8.11.K 2.8.11.Q

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<b>Reporting Category: M11.E Data Analysis and Probability</b>			
<p><b>M11.E.1.1.1</b> Create and/or use appropriate graphical representations of data, including box-and-whisker plots, stem-and-leaf plots or scatter plots.</p> <p><b>M11.E.1.1.2</b> Analyze data and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots or scatter plots).</p>	<p><b>M11.E.1.1</b> Appropriately display and/or use data in problem-solving settings.</p>	<p><b>M11.E.1</b> Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.</p>	<p>2.6.11.A, 2.6.8.E</p>
<p><b>M11.E.2.1.1</b> Calculate or select the appropriate measure of central tendency (mean, mode or median) of a set of data given or represented on a table, line plot or stem-and-leaf plot.</p> <p><b>M11.E.2.1.2</b> Calculate and/or interpret the range, quartiles and interquartile range of data.</p> <p><b>M11.E.2.1.3</b> Describe how outliers affect measures of central tendency.</p>	<p><b>M11.E.2.1</b> Use measures of central tendency to describe a set of data.</p>	<p><b>M11.E.2</b> Select and/or use appropriate statistical methods to analyze data.</p>	<p>2.6.8.A 2.6.11.A</p>
<p><b>M11.E.3.1.1</b> Find probabilities for independent, dependent or compound events and represent as a fraction, decimal or percent).</p> <p><b>M11.E.3.1.2</b> Find, convert and/or compare the probability and/or odds of a simple event.</p>	<p><b>M11.E.3.1</b> Apply probability and/or odds to practical situations.</p>	<p><b>M11.E.3</b> Understand and/or apply basic concepts of probability or outcomes.</p>	<p>2.7.11.A 2.7.11.E</p>
<p><b>M11.E.3.2.1</b> Determine the number of permutations and/or combinations or apply the fundamental counting principle. (Formula provided on the reference sheet).</p>	<p><b>M11.E.3.2</b> Apply counting techniques in problem-solving settings.</p>	<p><b>M11.E.3</b> Understand and/or apply basic concepts of probability or outcomes.</p>	<p>2.7.8.A</p>

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<b>Reporting Category: M11.E Data Analysis and Probability</b>			
<b>M11.E.4.1.1</b> Estimate or calculate to make predictions based on a circle, line, bar graph or given situation. <b>M11.E.4.1.2</b> Use probability to predict outcomes.	<b>M11.E.4.1</b> Make predictions using data displays and probability.	<b>M11.E.4</b> Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.	2.7.8.E 2.6.11.D
<b>M11.E.4.2.1</b> Draw, find and/or write an equation for a line of best fit for a scatter plot. <b>M11.E.4.2.2</b> Make predictions using the equations or graphs of best-fit lines of scatter plots.	<b>M11.E.4.2</b> Analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions.	<b>M11.E.4</b> Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.	2.6.11.C 2.6.11.D