

## MATH *Connections* Correlation to Oregon's Mathematical Essential Academic Learning Requirements    Benchmark 3 – Grade 10

Correlation Key:

“X” Coverage = Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept.

“O” In-depth coverage = Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.

MATH <i>Connections</i> Book	MC 1A				MC 1B				MC 2A				MC2B				MC3A				MC3B			
MATH <i>Connections</i> Book Chapter	1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	7	8		
<b>CCG: NUMBERS</b> - Understand numbers, ways of representing numbers, relationships among numbers, and number systems.																								
Compare real numbers.	O	O	X									X								O	O			
Order and compare numbers expressed in scientific notation to each other and to other forms of real numbers.		O																						
Recognize that the set of real numbers contains the set of irrational numbers and the set of rational numbers and know the difference between them.																					O			
Locate real numbers on a number line (including approximations of irrational numbers).	X		O	O																	O			
Apply equivalent forms of real numbers to solve problems.		X																			O			
<b>CCG: COMPUTATION AND ESTIMATION</b> - Compute fluently and make reasonable estimates.																								
Compute with real numbers, including absolute value and numbers expressed in scientific notation.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O			
Compute with integer exponents and whole number roots.		O			X				O				O			O								
Mentally multiply and divide by powers of 10 to estimate results of computations involving numbers expressed in scientific notation.		O																						
Develop and use strategies to estimate the results of real number computations, determine the			X	O	O				O							O					O			

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amount of error, and judge the reasonableness of results.																						
Estimate the results of computations with integer powers and roots of real numbers.					O																	
<b>CCG: OPERATIONS AND PROPERTIES</b> - Understand meanings of operations and how they relate to one another.																						
Recognize that taking the nth root of a number corresponds to prime factorization.					X												O					
Use the inverse operations of nth power and nth root to solve problems and check solutions.																	O					
Apply the associative, commutative, and distributive properties to simplify computations with real numbers.		O	X							O	X		O		O							
Use properties of numbers to demonstrate whether assertions are true or false.		O								X										O	O	
<b>CCG: STATISTICS</b> - Select and use appropriate statistical methods to analyze data																						
Estimate from a graph or a set of data the mean and standard deviation of a normal distribution and draw conclusions about the distribution of data using measures of center and spread (e.g., analyze a variety of summary statistics and graphical displays) fit on a scatter plot.	O			O						X							O					
Analyze bivariate data and identify the type of function (linear, quadratic, exponential) that could be used to model the data.		X		O	O												O					
<b>CCG: PROBABILITY</b> - Understand and apply basic concepts of probability.																						
Compute the probability of a compound event (e.g., toss a coin three times to find the probability of two heads).										X										O		
Determine probabilities of dependent and independent events (e.g., use colored marbles with and without replacement).																				O		
Use conditional probability to solve problems (e.g., from a sample set for the roll of two										X										O		

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tetrahedral die; given that a sum is even, what is the probability that the sum is 6)?																						
Determine all possible outcomes of a particular event or all possible arrangements of objects in a given set by applying counting strategies, combinations, and permutations.								O										O				
<b>CCG: COLLECT AND DISPLAY DATA</b> - Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.																						
Determine appropriate designs for simulations (surveys, observational studies, and experiments) and modeling to study a problem and construct empirical probability of distributions to represent results.								O										O				
Use matrices, histograms, scatter plots, stem-and-leaf plots, and box-and-whisker plots to interpret data.	O												X									
Identify examples of populations that are normally distributed.																		O				
<b>CCG: DATA ANALYSIS AND PREDICTIONS</b> - Develop and evaluate inferences and predictions that are based on data.																						
Make inferences and predictions from data in histograms, scatter plots, and parallel box plots.	O												X									
Make predictions about populations based on reported sample statistics.	O			O														O				
Understand that inferences about a population drawn from a sample involve uncertainty and that the role of statistics is to measure that uncertainty.				x														O				
<b>CCG: PATTERNS AND FUNCTIONS</b> - Understand patterns, relations, and functions.																						
Represent and generalize sequences resulting from linear, quadratic, and exponential relationships using recursive or explicit formulas, tables of values, and graphs.		O					O														O	
Produce a valid conjecture using inductive reasoning by generalizing from a pattern of													O								O	



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quadratic, and exponential functions.																						
Determine when data represented in a table or graph represents a linear, quadratic, or exponential relationship.		O			O											O						
<b>CCG: CHANGE</b> - Analyze change in various contexts																						
Approximate and interpret rates of change in graphical and numeric data.		O	O	X	O											O						
Analyze the nature of change of each variable in a non-linear relationship as suggested by a table of values, a graph or a formula.		O														O						
<b>CCG: UNITS AND TOOLS</b> - Understand measurable attributes of objects and the units, systems, and processes of measurement.																						
Determine the appropriate units, scales, and tools for problem situations involving measurement.		X								X						X						
Solve problems involving unit conversions (e.g., mi/hr to ft/sec) given the unit equivalencies.		O									O						O	O				
Determine the precision of a given measuring tool (e.g., one degree for a standard protractor).										X	X											
<b>CCG: DIRECT AND INDIRECT MEASUREMENT</b> - Apply appropriate techniques, tools, and formulas to determine measurements.																						
Develop and use strategies and formulas for calculating surface area and volume of cones and spheres. Use formulas to solve problems involving finding missing dimensions given perimeter, area, surface area, and volume of polygons, circles, prisms, pyramids, cones, cylinders, and spheres.										O	O			O	O							
Develop and understand, and use the formula for determining arc length (e.g., portion of a circle).														O								
Determine perimeter and area of shapes of circles and polygons (annulus, etc.) in context.														O								
Determine the surface area and volume of a complex figure composed of a combination of two or more geometric figures or a figure derived														O								

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from a regular solid (e.g., hemisphere, frustum of a cone).																						
Compare and contrast the formulas for surface area and volume of cylinders and cones.													○									
Determine a shape that has minimum or maximum perimeter, area, surface area, or volume under specified conditions.										○									○			
Make and use scale drawings and models to solve problems.										○	○											
<b>CCG: PROPERTIES AND RELATIONSHIPS</b> - Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.																						
Determine defining properties that characterize classes of three-dimensional figures and their component parts.													○									
Recognize and represent three-dimensional figures and their component parts.													○									
Justify and use theorems involving the angles formed by parallel lines cut by a transversal.										○												○
Develop, understand, and apply properties of circles and of inscribed and circumscribed polygons.												○										
Use measures of sides and of interior and exterior angles of polygons to classify figures and solve problems.										○												
Prove congruence of two triangles or their corresponding component parts.											○											○
Determine the measures of corresponding angles, sides, and corresponding part of congruent and similar figures.											○											
Use angle, side length, and triangle inequality relationships to solve problems.										○	○	○										
Use trigonometric functions, and angle and side relationships of special right triangles (30- 60-												○										

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right triangles and isosceles right triangles) to solve for an unknown length and determine distances and solve problems.																						
Investigate relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.													○									
Construct and judge the validity of a logical argument and give counterexamples to disprove a statement.													○							○	○	○
Justify and use theorems involving the properties of triangles, quadrilaterals, circles, and their component parts to verify congruence and similarity.											○											○
<b>CCG: MODELING</b> - Use visualization, spatial reasoning, and geometric modeling to solve problems.																						
Model, sketch, label and where appropriate construct cones and spheres, and basic elements of geometric figures (e.g., altitudes, midpoints, medians, angle bisectors, and perpendicular bisectors) using compass and straightedge or technology.													○									
Describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect).													○	○								
Make a model of a three-dimensional figure from a two dimensional drawing and make a two-dimensional representation of a three-dimensional object through scale drawings, perspective drawings, blueprints or computer simulations.													○									
Recognize representations of three-dimensional objects from different perspectives and identify cross-sections of three-dimensional objects.													○									
<b>CCG: COORDINATE GEOMETRY</b> - Specify locations and describe spatial relationships using coordinate geometry and other representational systems.																						



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the concepts/strategies/ calculations to defend a solution.																							
<b>CCG: COMMUNICATION</b> - Communicate mathematical thinking coherently and clearly. Use the language of mathematics to express mathematical ideas precisely.																							
Use pictures, symbols, and/or vocabulary to convey the path to the identified solution.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>CCG: ACCURACY</b> - Accurately solve problems that arise in mathematics and other contexts.																							
Accurately solve problems using mathematics.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○