

## General and Specific Learning Outcomes by Strand Applied Mathematics

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Number

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
General Outcome Develop number sense.	General Outcome Develop number sense.			
Specific Outcomes	Specific Outcomes	Specific Outcomes		Specific Outcomes
<p>8.N.1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially, and symbolically (limited to whole numbers). [C, CN, R, V]</p> <p>8.N.2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers). [C, CN, ME, R, T]</p> <p>8.N.3. Demonstrate an understanding of percents greater than or equal to 0%. [CN, PS, R, V]</p> <p>8.N.4. Demonstrate an understanding of ratio and rate. [C, CN, V]</p> <p>8.N.5. Solve problems that involve rates, ratios, and proportional reasoning. [C, CN, PS, R]</p>	<p>9.N.1. Demonstrate an understanding of powers with integral bases (excluding base 0) and whole-number exponents by</p> <ul style="list-style-type: none"> <li>■ representing repeated multiplication using powers</li> <li>■ using patterns to show that a power with an exponent of zero is equal to one</li> <li>■ solving problems involving powers</li> </ul> <p>[C, CN, ME, PS, R]</p> <p>9.N.2. Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole-number exponents. [C, CN, ME, PS, R, T]</p>	<p>10I.A.1. Demonstrate an understanding of factors of whole numbers by determining</p> <ul style="list-style-type: none"> <li>■ prime factors</li> <li>■ greatest common factor</li> <li>■ least common multiple</li> <li>■ square root</li> <li>■ cube root</li> </ul> <p>[CN, ME, R]</p> <p>10I.A.2. Demonstrate an understanding of irrational numbers by</p> <ul style="list-style-type: none"> <li>■ representing, identifying, and simplifying irrational numbers</li> <li>■ ordering irrational numbers</li> </ul> <p>[CN, ME, R, V]</p> <p>10I.A.3. Demonstrate an understanding of powers with integral and rational exponents. [C, CN, PS, R]</p>		<p>12A.FM.1. Solve problems that involve compound interest in financial decision making. [C, CN, PS, T, V]</p> <p>12A.FM.2. Analyze costs and benefits of renting, leasing, and buying. [CN, PS, R, T]</p> <p>12A.FM.3. Analyze an investment portfolio in terms of</p> <ul style="list-style-type: none"> <li>■ interest rate</li> <li>■ rate of return</li> <li>■ total return</li> </ul> <p>[ME, PS, R, T]</p> <p>12A.L.1. Analyze puzzles and games that involve numerical and logical reasoning, using problem-solving strategies. [CN, ME, PS, R, T]</p>

# Applied Mathematics

## Number

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
General Outcome Develop number sense.	General Outcome Develop number sense.			
Specific Outcomes	Specific Outcomes			
<p>8.N.6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically. [C, CN, ME, PS]</p> <p>8.N.7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically. [C, CN, PS, R, V]</p> <p>8.N.8. Solve problems involving positive rational numbers. [C, CN, ME, PS, R, T, V]</p>	<p>9.N.3. Demonstrate an understanding of rational numbers by</p> <ul style="list-style-type: none"> <li>■ comparing and ordering rational numbers</li> <li>■ solving problems that involve arithmetic operations on rational numbers</li> </ul> <p>[C, CN, ME, PS, R, T, V]</p> <p>9.N.4. Explain and apply the order of operations, including exponents, with and without technology. [ME, PS, T]</p> <p>9.N.5. Determine the square root of positive rational numbers that are perfect squares. [C, CN, ME, PS, R, T]</p> <p>9.N.6. Determine an approximate square root of positive rational numbers that are non-perfect squares. [C, CN, ME, PS, R, T]</p>			

# Applied Mathematics

## Patterns and Relations (Patterns)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<p><b>General Outcome</b> Use patterns to describe the world and solve problems.</p>	<p><b>General Outcome</b> Use patterns to describe the world and solve problems.</p>			
<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>
<p>8.PR.1. Graph and analyze two-variable linear equations. [C, ME, PS, R, T, V]</p>	<p>9.PR.1. Generalize a pattern arising from a problem-solving context using linear equations, and verify by substitution. [C, CN, PS, R, V]</p> <p>9.PR.2. Graph linear relations, analyze the graph, and interpolate or extrapolate to solve problems. [C, CN, ME, PS, R, T, V]</p>	<p>10I.R.1. Interpret and explain the relationships among data, graphs, and contexts. [C, CN, R, T, V]</p>	<p>11A.L.1. Analyze and prove conjectures, using inductive and deductive reasoning, to solve problems. [C, CN, PS, R, T]</p>	<p>12A.L.2. Solve problems that involve the application of set theory. [CN, PS, R, T, V]</p> <p>12A.L.3. Solve problems that involve conditional statements. [C, CN, PS, R, T]</p>

# Applied Mathematics

## Patterns and Relations (Variables and Equations)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<p><b>General Outcome</b> Represent algebraic expressions in multiple ways.</p>	<p><b>General Outcome</b> Represent algebraic expressions in multiple ways.</p>			
<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	
<p>8.PR.2. Model and solve problems using linear equations of the form</p> <ul style="list-style-type: none"> <li>■ <math>ax = b</math></li> <li>■ <math>\frac{x}{a} = b, a \neq 0</math></li> <li>■ <math>ax + b = c</math></li> <li>■ <math>\frac{x}{a} + b = c, a \neq 0</math></li> <li>■ <math>a(x + b) = c</math></li> </ul> <p>concretely, pictorially, and symbolically, where <math>a, b,</math> and <math>c</math> are integers. [C, CN, PS, V]</p>	<p>9.PR.3. Model and solve problems using linear equations of the form</p> <ul style="list-style-type: none"> <li>■ <math>ax = b</math></li> <li>■ <math>ax + b = c</math></li> <li>■ <math>ax = b + cx</math></li> <li>■ <math>a(x + b) = c</math></li> <li>■ <math>ax + b = cx + d</math></li> <li>■ <math>a(bx + c) = d(ex + f)</math></li> <li>■ <math>\frac{a}{x} = b, x \neq 0</math></li> </ul> <p>where <math>a, b, c, d, e,</math> and <math>f</math> are rational numbers. [C, CN, ME, PS, V]</p> <p>9.PR.4. Explain and illustrate strategies to solve single variable linear inequalities with rational number coefficients within a problem-solving context. [C, CN, ME, PS, R, V]</p> <p>9.PR.5. Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2). [C, CN, R, V]</p>	<p>10I.A.3. Demonstrate an understanding of powers with integral and rational exponents. [C, CN, PS, R]</p> <p>10I.A.4. Demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials, and trinomials), concretely, pictorially, and symbolically. [C, CN, R, V]</p> <p>10I.A.5. Demonstrate an understanding of common factors and trinomial factoring, concretely, pictorially, and symbolically. [C, CN, R, V]</p>	<p>11A.M.1. Solve problems that involve the application of rates. [CN, PS, R, T]</p>	

# Applied Mathematics

## Patterns and Relations (Variables and Equations) *(continued)*

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
	<p>General Outcome</p> <p>Represent algebraic expressions in multiple ways.</p>			
	<p>Specific Outcomes</p>			
	<p>9.PR.6. Model, record, and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to 2). [C, CN, ME, PS, R, V]</p> <p>9.PR.7. Model, record, and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially, and symbolically. [C, CN, R, V]</p>			

# Applied Mathematics

## Patterns and Relations (Relations and Functions)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
		Specific Outcomes	Specific Outcomes	Specific Outcomes
		10I.R.1. Interpret and explain the relationships among data, graphs, and contexts. [C, CN, R, T, V] 10I.R.2. Demonstrate an understanding of relations and functions. [C, R, V] 10I.R.3. Demonstrate an understanding of slope with respect to <ul style="list-style-type: none"> <li>■ rise and run</li> <li>■ line segments and lines</li> <li>■ rate of change</li> <li>■ parallel lines</li> <li>■ perpendicular lines</li> </ul> [PS, R, V]	11A.R.1. Model and solve problems that involve systems of linear inequalities in two variables. [CN, PS, T, V] 11A.R.2. Demonstrate an understanding of the characteristics of quadratic functions, including <ul style="list-style-type: none"> <li>■ vertex</li> <li>■ intercepts</li> <li>■ domain and range</li> <li>■ axis of symmetry</li> </ul> [CN, PS, T, V]	12A.R.1. Represent data, using polynomial functions (of degree $\leq 3$ ), to solve problems. [C, CN, PS, T, V] 12A.R.2. Represent data, using exponential and logarithmic functions, to solve problems. [C, CN, PS, T, V] 12A.R.3. Represent data, using sinusoidal functions, to solve problems. [C, CN, PS, T, V]

# Applied Mathematics

## Patterns and Relations (Relations and Functions) *(continued)*

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
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### Specific Outcomes

10I.R.4. Describe and represent linear relations, using

- words
- ordered pairs
- tables of values
- graphs
- equations

[C, CN, R, V]

10I.R.5. Determine the characteristics of the graphs of linear relations, including the

- intercepts
- slope
- domain
- range

[CN, PS, R, T, V]

## Applied Mathematics

### Patterns and Relations (Relations and Functions) *(continued)*

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
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#### Specific Outcomes

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10I.R.6. Relate linear relations expressed in

- slope-intercept form  
( $y = mx + b$ )
- general form  
( $Ax + By + c = 0$ )
- slope-point form  
( $y - y_1 = m(x - x_1)$ )

to their graphs.

[C, CN, R, T, V]

10I.R.7. Determine the equation of a linear relation, given:

- a graph
- a point and the slope
- two points
- a point and the equation of a parallel or perpendicular line
- a scatterplot

[C, CN, PS, R, T, V]

# Applied Mathematics

## Patterns and Relations (Relations and Functions) *(continued)*

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
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Specific Outcomes

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- 10I.R.8. Represent a linear function, using function notation.  
[CN, ME, V]
- 10I.R.9. Solve problems that involve systems of linear equations in two variables, graphically and algebraically.  
[CN, PS, R, T, V]
- 10I.R.10. Solve problems that involve the distance between two points and the midpoint of a line segment.  
[C, CN, PS, V]

# Applied Mathematics

## Shape and Space (Measurement)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<p><b>General Outcome</b> Use direct or indirect measurement to solve problems.</p>	<p><b>General Outcome</b> Use direct or indirect measurement to solve problems.</p>			
<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>		<b>Specific Outcomes</b>
<p>8.SS.1. Develop and apply the Pythagorean theorem to solve problems. [CN, PS, R, T, V]</p> <p>8.SS.2. Draw and construct nets for 3-D objects. [C, CN, PS, V]</p> <p>8.SS.3. Determine the surface area of</p> <ul style="list-style-type: none"> <li>■ right rectangular prisms</li> <li>■ right triangular prisms</li> <li>■ right cylinders</li> </ul> <p>to solve problems. [C, CN, PS, R, V]</p> <p>8.SS.4. Develop and apply formulas for determining the volume of right prisms and right cylinders. [C, CN, PS, R, V]</p>	<p>9.SS.1. Solve problems and justify the solution strategy using circle properties, including</p> <ul style="list-style-type: none"> <li>■ the perpendicular from the centre of a circle to a chord bisects the chord</li> <li>■ the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc</li> <li>■ the inscribed angles subtended by the same arc are congruent</li> <li>■ a tangent to a circle is perpendicular to the radius at the point of tangency</li> </ul> <p>[C, CN, PS, R, T, V]</p>	<p>10I.M.1. Solve problems that involve linear measurement, using</p> <ul style="list-style-type: none"> <li>■ SI and imperial units of measure</li> <li>■ estimation strategies</li> <li>■ measurement strategies</li> </ul> <p>[ME, PS, V]</p> <p>10I.M.2. Apply proportional reasoning to problems that involve conversions between SI and imperial units of measure. [C, ME, PS, T]</p>		<p>12A.D.1. Analyze objects, shapes, and processes to solve cost and design problems. [C, CN, ME, PS, R, T, V]</p>

# Applied Mathematics

## Shape and Space (3-D Objects and 2-D Shapes)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<p><b>General Outcome</b> Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</p>	<p><b>General Outcome</b> Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</p>			
<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	<b>Specific Outcomes</b>	
<p>8.SS.5. Draw and interpret top, front, and side views of 3-D objects composed of right rectangular prisms. [C, CN, R, T, V]</p>	<p>9.SS.2. Determine the surface area of composite 3-D objects to solve problems. [C, CN, ME, PS, R, V]</p> <p>9.SS.3. Demonstrate an understanding of similarity of polygons. [C, CN, PS, R, T, V]</p>	<p>10I.M.3. Solve problems, using SI and imperial units, that involve the surface area and volume of 3-D objects, including</p> <ul style="list-style-type: none"> <li>■ right cones</li> <li>■ right cylinders</li> <li>■ right prisms</li> <li>■ right pyramids</li> <li>■ spheres</li> </ul> <p>[CN, PS, R, T, V]</p> <p>10I.M.4. Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles. [C, CN, PS, R, T, V]</p>	<p>11A.M.2. Solve problems that involve scale diagrams, using proportional reasoning. [CN, PS, R, T, V]</p> <p>11A.M.3. Demonstrate an understanding of the relationships among scale factors, areas, surface areas and volumes of similar 2-D shapes and 3-D objects. [C, CN, PS, R, T, V]</p> <p>11A.G.1. Derive proofs that involve the properties of angles and triangles. [CN, R, T, V]</p> <p>11A.G.2. Solve problems that involve the properties of angles and triangles. [CN, PS, T, V]</p> <p>11A.G.3. Solve problems that involve the cosine law and the sine law, including the ambiguous case. [CN, PS, R, T]</p>	<p>12A.D.1. Analyze objects, shapes, and processes to solve cost and design problems. [C, CN, ME, PS, R, T, V]</p>

# Applied Mathematics

## Shape and Space (Transformations)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<p><b>General Outcome</b> Describe and analyze position and motion of objects and shapes.</p>	<p><b>General Outcome</b> Describe and analyze position and motion of objects and shapes.</p>			
<p><b>Specific Outcomes</b></p> <p>8.SS.6. Demonstrate an understanding of tessellation by</p> <ul style="list-style-type: none"> <li>■ explaining the properties of shapes that make tessellating possible</li> <li>■ creating tessellations</li> <li>■ identifying tessellations in the environment.</li> </ul> <p>[C, CN, PS, T, V]</p>	<p><b>Specific Outcomes</b></p> <p>9.SS.4. Draw and interpret scale diagrams of 2-D shapes. [CN, R, T, V]</p> <p>9.SS.5. Demonstrate an understanding of line and rotation symmetry. [C, CN, PS, V]</p>		<p><b>Specific Outcomes</b></p> <p>11A.L.2. Analyze puzzles and games that involve spatial reasoning, using problem-solving strategies. [CN, PS, R, T, V]</p>	

# Applied Mathematics

## Statistics and Probability (Data Analysis)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<p><b>General Outcome</b> Collect, display, and analyze data to solve problems.</p>	<p><b>General Outcome</b> Collect, display, and analyze data to solve problems.</p>			
<p><b>Specific Outcomes</b></p>	<p><b>Specific Outcomes</b></p>		<p><b>Specific Outcomes</b></p>	<p><b>Specific Outcomes</b></p>
<p>8.SP.1. Critique ways in which data are presented. [C, R, T, V]</p>	<p>9.SP.1. Describe the effect of</p> <ul style="list-style-type: none"> <li>■ bias</li> <li>■ use of language</li> <li>■ ethics</li> <li>■ cost</li> <li>■ time and timing</li> <li>■ privacy</li> <li>■ cultural sensitivity</li> </ul> <p>on the collection of data. [C, CN, R, T]</p> <p>9.SP.2. Select and defend the choice of using either a population or a sample of a population to answer a question. [C, CN, PS, R]</p>		<p>11A.S.1. Demonstrate an understanding of normal distribution, including</p> <ul style="list-style-type: none"> <li>■ standard deviation</li> <li>■ z-scores</li> </ul> <p>[CN, PS, T, V]</p> <p>11A.S.2. Interpret statistical data, using</p> <ul style="list-style-type: none"> <li>■ confidence intervals</li> <li>■ confidence levels</li> <li>■ margin of error</li> </ul> <p>[C, CN, R, T]</p> <p>11A.RP.1. Research and give a presentation on a historical event or an area of interest that involves mathematics. [C, CN, ME, PS, R, T, V]</p>	<p>12A.RP.1. Research and give a presentation on a current event or an area of interest that involves mathematics. [C, CN, ME, PS, R, T, V]</p>

# Applied Mathematics

## Statistics and Probability (Data Analysis) *(continued)*

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
	<p>General Outcome</p> <p>Collect, display, and analyze data to solve problems.</p>			
	<p>Specific Outcomes</p> <p>9.SP. 3. Develop and implement a project plan for the collection, display, and analysis of data by</p> <ul style="list-style-type: none"> <li>■ formulating a question for investigation</li> <li>■ choosing a data collection method that includes social considerations</li> <li>■ selecting a population or a sample</li> <li>■ collecting the data</li> <li>■ displaying the collected data in an appropriate manner</li> <li>■ drawing conclusions to answer the question</li> </ul> <p>[C, PS, R, T, V]</p>			

# Applied Mathematics

## Statistics and Probability (Chance and Uncertainty)

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<p><b>General Outcome</b> Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.</p>	<p><b>General Outcome</b> Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.</p>			
<b>Specific Outcomes</b>	<b>Specific Outcomes</b>			<b>Specific Outcomes</b>
<p>8.SP.2. Solve problems involving the probability of independent events. [C, CN, PS, T]</p>	<p>9.SP.4. Demonstrate an understanding of the role of probability in society. [C, CN, R, T]</p>			<p>12A.P.1. Interpret and assess the validity of odds and probability statements. [C, CN, ME, T]</p> <p>12A.P.2. Solve problems that involve the probability of mutually exclusive and non-mutually exclusive events. [CN, PS, R, T, V]</p> <p>12A.P.3. Solve problems that involve the probability of independent and dependent events. [CN, PS, R, T]</p> <p>12A.P.4. Solve problems that involve the fundamental counting principle. [PS, R, T, V]</p> <p>12A.P.5. Solve problems that involve permutations. [ME, PS, R, T, V]</p> <p>12A.P.6. Solve problems that involve combinations. [ME, PS, R, T, V]</p>