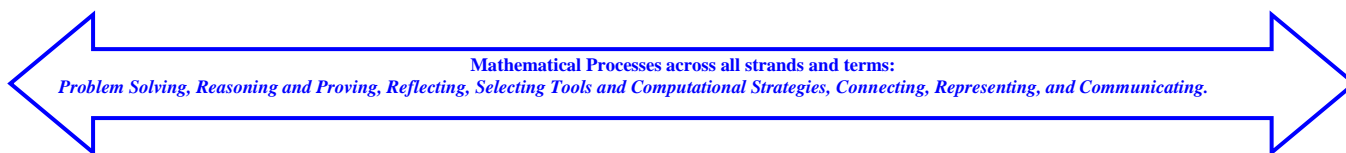


**TIPS4RM** Targeted Implementation  
and Planning Supports for  
Revised Mathematics

**Grade 9 Applied**

# Grade 9 Applied: Content and Reporting Targets



Introductory Unit	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	*Unit 8
This 2-day unit activates students' prior knowledge before Unit 1: Measurement	<b>Measurement</b> <ul style="list-style-type: none"> <li>Perimeter and area of composite shapes</li> <li>Pythagorean theorem</li> <li>Volume of 3-D figures (developing formulas)</li> </ul> <b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Simplifying numerical expressions</li> <li>Exponents</li> </ul>	<b>Measurement</b> <ul style="list-style-type: none"> <li>Optimization of measurements of rectangles</li> </ul> <b>Linear Relations</b> <ul style="list-style-type: none"> <li>Scatter plots</li> <li>Lines of best fit</li> </ul> <b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Substituting into and solving equations</li> </ul>	<b>Linear Relations</b> <ul style="list-style-type: none"> <li>Investigating data (linear and non-linear)</li> <li>Lines and curves of best fit</li> <li>First differences</li> </ul> <b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Simplifying numerical expressions</li> </ul>	<b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Ratio, rate, proportion</li> <li>Percents, decimals</li> </ul>	<b>Linear Relations</b> <ul style="list-style-type: none"> <li>Constant rate of change</li> <li>Initial value</li> <li>Direct and partial variation</li> </ul> <b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Using fractions and decimals</li> </ul>	<b>Linear Relations</b> <ul style="list-style-type: none"> <li>Determining values</li> <li>Story graphs</li> <li>Comparing models</li> <li>Changing the graph</li> <li>Points of intersection</li> </ul> <b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Solving equations</li> </ul>	<b>Linear Relations</b> <ul style="list-style-type: none"> <li>Connection and application of algebraic models</li> </ul> <b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Simplifying algebraic expressions</li> </ul>	<b>Measurement</b> <ul style="list-style-type: none"> <li>Plane geometry concepts</li> </ul> <b>Number Sense and Algebra</b> <ul style="list-style-type: none"> <li>Solving equations in context</li> </ul> <p>*This unit could stand alone and can be placed anywhere within the course.</p>

## Rationale

### Dividing the expectations into 8 units:

- Working on smaller content targets will promote student success by focussing on fewer key concepts than might be included in larger units of study.
- Facilitates staff communication about individual students learning goals in credit recovery situations.

### Number Sense and Algebra included in all units:

- Expectations for the Number Sense and Algebra strand are addressed within the contexts of measurement and linear relations throughout the course as recommended in the curriculum policy document.
- Students develop an increased understanding of how to apply Number Sense and Algebra skills in a wide variety of contexts.

### Positioning Measurement for Units 1–2:

- Measurement activities are authentic tasks that appeal to kinesthetic learners, appropriate at the beginning of the Grade 9 Applied program, when students are making the transition to secondary school and before algebraic skills are well developed.
- Teachers can observe students' reasoning, representing, and problem-solving skills in contexts that can be illustrated with concrete materials and visual representations.
- Students should feel comfortable with this material as an extension of Grade 8 math, and this may ease the transition into Grade 9 math.
- Perimeter, area and volume provides the context for work with powers to degree 3.
- Optimization problems provide meaningful contexts for using numerical and graphical models and for combining fractions with integers and equations.
- Students develop, build on and extend inquiry skills.

### Positioning Number Sense and Algebra for Unit 4:

- Students develop an understanding of the connections between proportional reasoning, rates, ratios, percents, and linear relationships in a wide variety of contexts.
- Students prepare to apply the concepts of constant rates of change and initial value to direct and partial variation in Unit 5.

### Positioning Measurement for Unit 8:

- Teachers have addressed appropriate behaviour and care in use of technology.
- Visual and hands-on activities provide variety that appeal to students with different learning styles.

### Inclusion of instructional technology:

- Depending on availability of technological resources, teachers may choose to use:
  - a full lab;
  - a limited number of computers;
  - teacher demonstration.

## Grade 9 Applied Year Outline – Planning Tool

- P Number of pre-planned lessons (including instruction, diagnostic and formative assessments, summative assessments other than summative performance tasks)
- J Number of jazz days of time (instructional or assessment)
- T Total number of days
- SP Summative performance task (see Assessment – Grade 9 Applied)

Unit	Cluster of Curriculum Expectations	Overall Expectations	P	J	T	SP
0	Volume of Cylinders		2	0	2	
1	Solving Perimeter, Area, and Volume Problems  Understanding and Using Exponents	MGV.02 solve problems involving the measurements of two-dimensional shapes and the volumes of three-dimensional figures;  NAV.02 simplify numerical and polynomial expressions in one variable, and solve simple first-degree equations.	7	2	9	
2	Optimization of Various Measurements of Rectangles, Using Scatter Plots	MGV.01 determine, through investigation, the optimal values of various measurements of rectangles;  LRV.01 apply data-management techniques to investigate relationships between two variables;  LRV.02 determine the characteristics of linear relations;  NAV.02 simplify numerical and polynomial expressions in one variable, and solve simple first-degree equations.	7	2	9	
3	Looking for Relationships, Lines and Curves of Best Fit	LRV.01 apply data-management techniques to investigate relationships between two variables;  LRV.02 determine the characteristics of linear relations;  LRV.04 connect various representations of a linear relation, and solve problems using the representations.	8	2	10	
4	Ratio, Rate, and Proportion	NAV.01 solve problems involving proportional reasoning;  LRV.01 apply data-management techniques to investigate relationships between two variables;  LRV.02 determine the characteristics of linear relations.	8	2	10	
5	Constant Rate of Change, Initial Condition, Direct and Partial Variation	LRV.02 determine the characteristics of linear relations;  LRV.03 demonstrate an understanding of constant rate of change and its connection to linear relations;  LRV.04 connect various representations of a linear relation, and solve problems using the representations;  NAV.01 solve problems involving proportional reasoning;	10	1	11	

Unit	Cluster of Curriculum Expectations	Overall Expectations	P	J	T	SP
6	The Uses of Linear Relations and Their Multiple Representations, e.g., Words, Equations, Graphs, Tables	LRV.01 apply data-management techniques to investigate relationships between two variables; LRV.02 determine the characteristics of linear relations; LRV.03 demonstrate an understanding of constant rate of change and its connection to linear relations; LRV.04 connect various representations of a linear relation, and solve problems using the representations; NAV.02 simplify numerical and polynomial expressions in one variable, and solve simple first-degree equations.	8	2	10	
7	Connecting Algebraic Models of Linear Relations  Simplifying Algebraic Expressions	LRV.04 connect various representations of a linear relation, and solve problems using the representations; NAV.02 simplify numerical and polynomial expressions in one variable, and solve simple first-degree equations.	8	2	10	
8	Plane Geometry *Note: this unit could stand alone and be placed anywhere in the course	MGV.03 determine, through investigation facilitated by dynamic geometry software, geometric properties and relationships involving two-dimensional shapes, and apply the results to solving problems; LRV.01 apply data-management techniques to investigate relationships between two variables; LRV.02 determine the characteristics of linear relations; LRV.04 connect various representations of a linear relation, and solve problems using the representations; NAV.02 simplify numerical and polynomial expressions in one variable, and solve simple first-degree equations.	9	2	11	
	EQAO Assessment and Preparation		3	0	3	
	Summative Performance Tasks					
	<b>Total Days</b>		<b>70</b>	<b>15</b>	<b>85</b>	<b>5</b>

The number of prepared lessons represents the lessons that could be planned ahead based on the range of student readiness, interests, and learning profiles that can be expected in a class. The extra time available for “instructional jazz” can be taken a few minutes at a time within a pre-planned lesson or taken a whole class at a time, as informed by teachers’ observations of student needs.

The reference numbers are intended to indicate which lessons are planned to precede and follow each other. Actual day numbers for particular lessons and separations between terms will need to be adjusted by teachers.