GRADE 8 - MATH CURRICULUM CHECKLIST

STRAND A - SEL & MATHEMATICAL PROCESSES

A1 Overall: apply, to the best of their ability, a variety of social-emotional learning skills to support their use of the mathematical processes and their learning in connection with the expectations in the other five strands of the mathematics curriculum

MATHEMATICAL PROCESSES	P	T1	T2	Notes and Assessments
problem solving: develop, select, and apply problem-solving strategies				
reasoning and proving: develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples) to justify thinking, make and investigate conjectures, and construct and defend arguments				
reflecting: demonstrate that as they solve problems, they are pausing, looking back, and monitoring their thinking to help clarify their understanding (e.g., by comparing and adjusting strategies used, by explaining why they think their results are reasonable, by recording their thinking in a math journal)				
connecting: make connections among mathematical concepts, procedures, and representations, and relate mathematical ideas to other contexts (e.g., other curriculum areas, daily life, sports)				
communicating: express and understand mathematical thinking, and engage in mathematical arguments using everyday language, language resources as necessary, appropriate mathematical terminology, a variety of representations, and mathematical conventions				
representing: select from and create a variety of representations of mathematical ideas (e.g., representations involving physical models, pictures, numbers, variables, graphs), and apply them to solve problems				
selecting tools and strategies: select and use a variety of concrete, visual, and electronic learning tools and appropriate strategies to investigate mathematical ideas and to solve problems				

GRADE 8 - STRAND A - SEL & MATHEMATICAL PROCESSES

CRITERIA	P	T1	T2	Notes and Assessments
1. express and manage their feelings, and show understanding of the feelings of others, as they engage positively in mathematics activities				
2. work through challenging math problems, understanding that their resourcefulness in using various strategies to respond to stress is helping them build personal resilience				
3. recognize that testing out different approaches to problems and learning from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope				
4. work collaboratively on math problems – expressing their thinking, listening to the thinking of others, and practising inclusivity – and in that way fostering healthy relationships				
5. see themselves as capable math learners, and strengthen their sense of ownership of their learning, as part of their emerging sense of identity and belonging				
6. make connections between math and everyday contexts to help them make informed judgements and decisions				

GRADE 8 - STRAND B - NUMBER

B1. Number Sense - demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Rational and Irrational Numbers **B1.1** represent and compare very large and very small numbers, including through the use of scientific notation, and describe various ways they are used in everyday life				
B1.2 describe, compare, and order numbers in the real number system (rational and irrational numbers), separately and in combination, in various contexts				
B1.3 estimate and calculate square roots, in various contexts				
Fractions, Decimals, and Percents **B1.4** use fractions, decimal numbers, and percents, including percents of more than 100% or less than 1%, interchangeably and flexibly to solve a variety of problems				

GRADE 8 - STRAND B - NUMBER

B2. Operations - use knowledge of numbers and operations to solve mathematical problems encountered in everyday life

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Properties and Relationships **B2.1** use the properties and order of operations, and the relationships between operations, to solve problems involving rational numbers, ratios, rates, and percents, including those requiring multiple steps or multiple operations				
Math Facts **B2.2** understand and recall commonly used square numbers and their square roots				
Mental Math **B2.3** use mental math strategies to multiply and divide whole numbers and decimal numbers up to thousandths by powers of ten, and explain the strategies used				
Addition and Subtraction **B2.4** add and subtract integers, using appropriate strategies, in various contexts				
B2.5 add and subtract fractions, using appropriate strategies, in various contexts				
Multiplication and Division **B2.6** multiply and divide fractions by fractions, as well as by whole numbers and mixed numbers, in various contexts				
B2.7 multiply and divide integers, using appropriate strategies, in various contexts				
B2.8 compare proportional situations and determine unknown values in proportional situations, and apply proportional reasoning to solve problems in various contexts				

GRADE 8 - STRAND C - ALGEBRA

C1. Patterns and Relationships - identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Patterns **C1.1** identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing and shrinking patterns on the basis of their constant rates and initial values				
C1.2 create and translate repeating, growing, and shrinking patterns involving rational numbers using various representations, including algebraic expressions and equations for linear growing and shrinking patterns				
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in growing and shrinking patterns involving rational numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing and shrinking patterns				
C1.4 create and describe patterns to illustrate relationships among rational numbers				

C2. Equations and Inequalities - demonstrate an understanding of variables, expressions, equations, and inequalities, and apply this understanding in various contexts

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Variables and Expressions **C2.1** add and subtract monomials with a degree of 1, and add binomials with a degree of 1 that involve integers, using tools				
C2.2 evaluate algebraic expressions that involve rational numbers				
Equalities and Inequalities **C2.3** solve equations that involve multiple terms, integers, and decimal numbers in various contexts, and verify solutions				
C2.4 solve inequalities that involve integers, and verify and graph the solutions				

GRADE 8 - STRAND C - ALGEBRA

C3. Coding - solve problems and create computational representations of mathematical situations using coding concepts and skills

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Coding Skills **C3.1** solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves the analysis of data in order to inform and communicate decisions				
C3.2 read and alter existing code involving the analysis of data in order to inform and communicate decisions, and describe how changes to the code affect the outcomes and the efficiency of the code				

C4. Mathematical Modelling - apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations

This overall expectation has no specific expectation. Mathematical modelling is an iterative and interconnected process that is applied to various contexts, allowing students to bring in learning from other strands. Students' demonstration of the process of mathematical modelling, as they apply concepts and skills learned in other strands, is assessed and evaluated.

OVERALL EXPECTATION	P	T1	T2	Notes and Assessments
apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations				

GRADE 8 - STRAND D - DATA

D1. Data Literacy - manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Data Collection and Organization **D1.1** identify situations involving one-variable data and situations involving two-variable data, and explain when each type of data is needed				
D1.2 collect continuous data to answer questions of interest involving two variables, and organize the data sets as appropriate in a table of values				
Data Visualization **D1.3** select from among a variety of graphs, including scatter plots, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs				
D1.4 create an infographic about a data set, representing the data in appropriate ways, including in tables and scatter plots, and incorporating any other relevant information that helps to tell a story about the data				
Data Analysis **D1.5** use mathematical language, including the terms “strong”, “weak”, “none”, “positive”, and “negative”, to describe the relationship between two variables for various data sets with and without outliers				
D1.6 analyse different sets of data presented in various ways, including in scatter plots and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions				

GRADE 8 - STRAND D - DATA

D2. Probability - describe the likelihood that events will happen, and use that information to make predictions

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Probability **D2.1** solve various problems that involve probability, using appropriate tools and strategies, including Venn and tree diagrams				
D2.2 determine and compare the theoretical and experimental probabilities of multiple independent events happening and of multiple dependent events happening				

GRADE 8 - STRAND E - SPATIAL SENSE

E1. Geometric and Spatial Reasoning - describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Geometric Reasoning **E1.1** identify geometric properties of tessellating shapes and identify the transformations that occur in the tessellations				
E1.2 make objects and models using appropriate scales, given their top, front, and side views or their perspective views				
E1.3 use scale drawings to calculate actual lengths and areas, and reproduce scale drawings at different ratios				
Location and Movement **E1.4** describe and perform translations, reflections, rotations, and dilations on a Cartesian plane, and predict the results of these transformations				

STRAND E - SPATIAL SENSE

E2. Measurement - compare, estimate, and determine measurements in various contexts

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
The Metric System **E2.1** represent very large (mega, giga, tera) and very small (micro, nano, pico) metric units using models, base ten relationships, and exponential notation				
Lines and Angles **E2.2** solve problems involving angle properties, including the properties of intersecting and parallel lines and of polygons				
Length, Area, and Volume **E2.3** solve problems involving the perimeter, circumference, area, volume, and surface area of composite two-dimensional shapes and three-dimensional objects, using appropriate formulas				
E2.4 describe the Pythagorean relationship using various geometric models, and apply the theorem to solve problems involving an unknown side length for a given right triangle				

GRADE 8 - STRAND F - FINANCIAL LITERACY

F1. Money and Finances - demonstrate the knowledge and skills needed to make informed financial decisions

SPECIFIC EXPECTATION GRADE 8	P	T1	T2	Notes and Assessments
Money Concepts **F1.1** describe some advantages and disadvantages of various methods of payment that can be used when dealing with multiple currencies and exchange rates				
Financial Management **F1.2** create a financial plan to reach a long-term financial goal, accounting for income, expenses, and tax implications				
F1.3 identify different ways to maintain a balanced budget, and use appropriate tools to track all income and spending, for several different scenarios				
F1.4 determine the growth of simple and compound interest at various rates using digital tools, and explain the impact interest has on long-term financial planning				
Consumer and Civic Awareness **F1.5** compare various ways for consumers to get more value for their money when spending, including taking advantage of sales and customer loyalty and incentive programs, and determine the best choice for different scenarios				
F1.6 compare interest rates, annual fees, and rewards and other incentives offered by various credit card companies and consumer contracts to determine the best value and the best choice for different scenarios				