

Grade 6 - General Resources

Assessment		Getting There	
			Resources
<p>Number sense diagnostic assessments These will be done twice a year: at the start of the year and at the end of the year.</p> <p>Computation Assessments These will be done three times a year: start of year, mid-year, and end of year. These are done to inform teaching and to demonstrate students' understanding of operations.</p> <p>Readiness Tasks Most units in Mathology have an opening task that can be used for class-wide pre-assessment throughout the year. The Readiness Task pages also provide links to activities from earlier grades that can be used for intervention prior to moving on to any new learning in the unit.</p>	<p>Formative</p> <p>Mathology: “Exit Ticket” questions are available at the end of the Practice Questions for each lesson. These short check-ins can be used regularly throughout a unit to inform teaching.</p> <p>Assessment tables are also available at the end of each lesson. These are designed for teachers to record observations as to student progress in relation to I can Statements.</p>	<p>Effective Practices</p> <ul style="list-style-type: none"> -Whole class number talks -Integrate hands on activities -Use centers around the room with different activities -Accept variations on how students communicate -Set goals for students -Use of creative exit tickets 	<p>Mathology</p> <p>-Sample Long-Range Plan: a standard plan is available for each grade. These are easily modified to arrange units to fit with the suggested order of units in the Overview Plan document.</p> <p>-Curriculum correlations: This overview table links curricular expectations to specific Mathology lessons and grades 4-6 Learning Progressions. It also helpfully outlines specific Workbook Practice questions and pages for each Mathology unit.</p> <p>-All classroom activity Line Masters are available for download as individual pdfs or Word docs here: Grade 6 Line Masters</p> <p style="text-align: center;">Resources for Basic Facts Practice</p> <p>-“<i>Learning Basic Facts by Strategy</i>” document outlines strategies by grade for +/- and \times/\div subtraction facts and provides summary charts by grade for what students should know.</p> <p style="text-align: center;">Math Tools</p> <p>-Pearson interactive math tools: this online resource provides lots of opportunities for students to practice and play around with concepts; some specific tools are linked in the relevant unit section.</p> <p style="text-align: center;">Alternative Resources</p> <ul style="list-style-type: none"> -Manitoba Activities -Saskatchewan curriculum & assessments -Indigenous Education Numeracy (SD71) -Indigenous Math Network (UBC)

Grade 6 - Number Relationships and Place Value (Unit 1)

Start of year to end of September (About 5 weeks)

In Grade 6, students are representing and interpreting numbers from thousandths to billions, applying divisibility rules, and learning how to work with prime and composite numbers.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
<p>Mathology: -Readiness Task: Number Relationships (Number Task 1)</p> <p>Number Sense diagnostic assessment: this is done at the start of the year</p> <p>Computation Assessment: this should be done at the start of year to identify common problems. The focus of this assessment is:</p> <p>-Whole number addition & subtraction (2-digit, 3-digit, 4-digit and some decimal numbers)</p> <p>-Multiplication (up to 2-digit by 2-digit)</p> <p>-Division (2- and 3-digit numbers by 1-digit divisors)</p>	<p style="text-align: center;">Formative</p> <p>-Exit ticket questions in each section of Practice Questions</p> <p>Assessment tables: -Extending Whole Number Understanding -Determining Multiples and Factors</p>	<p style="text-align: center;">Daily Practice</p> <p>-Basic Facts practice with all four operations</p> <p>-Place Value/Number Lines</p> <p>-Representing Numbers in many ways</p> <p>-Relevant Word Problems</p>	<p style="text-align: center;">Mathology</p> <p>Number Unit 1: Number Relationships and Place Value</p> <p style="text-align: center;">Math Tools</p> <p>Place value blocks</p> <p>Number Lines</p>	<p>Number Sense should be spiralled throughout the year. Counting, mental math strategies for basic facts, place value up to 6-digits, and using various ways to represent numbers up to 1 000 000, should be reviewed at the start of the year through regular classroom routines.</p> <p>In Grade 6, students are expanding their understanding of small and large numbers by working with numbers from thousandths to billions. They are also introduced to the new concepts of factors and multiples, including the ideas of Greatest Common Factor and Lowest Common Multiple. They are also learning to apply divisibility rules, interpret prime and composite numbers, and use factor trees.</p> <p style="text-align: center;">Spiraling and Making Connections</p> <p><i>Financial Literacy</i> – review financial transactions involving decimal operations.</p>
	<p style="text-align: center;">Summative</p> <p>Mathology: -Show What You Know (Number Unit 1 Lesson 5)</p>			

Number Sense – I Can Statements	
Representing and Writing Whole Numbers	I can read numbers to billions and say them without using the word “and”.
	I can write numbers from thousandths to billions using proper spacing without commas.
	I can represent numbers from thousandths to billions in many ways and use them in science, medicine, technology and media.
Place Value	I can use a place value chart to represent the value of each digit in a number from thousandths to billions.
	I can explain the meaning or value of each digit in a number from thousandths to billions.
Divisibility	I can use divisibility rules to determine if a number is divisible by 2, 3, 4, 5, 6, 8, 9, and/or 10.
	I can use a Venn Diagram and a Carroll Diagram to sort numbers according to divisibility rules.
Factors, Multiples, and Prime Numbers	I can factor a number using strategies such as divisibility rules and multiples.
	I can identify and list multiples of 2, 3, 4, 5, 6, 8, 10, 25.
	I can identify and explain the differences between prime and composite numbers.
	I can sort a set of numbers into prime and composite numbers.
	I can explain why 0 and 1 are neither prime nor composite.
	I solve problems using factors, multiples and/or prime and composite numbers.

Grade 6 - Fluency with Whole Numbers (Unit 2)

October (About 4 weeks)

Computational fluency helps us to make reasonable estimations and solve multi-step equations.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Tasks: Fluency with Multiplication & Division (Number Task 2)	<p style="text-align: center;">Formative</p> <p>-Exit ticket questions in each section of Practice Questions</p> <p>Assessment Tables: -Developing Fluency with Whole Numbers -Representing Equivalent Ratios and Rates</p>	<p style="text-align: center;">Daily Practice</p> <p>-Facts practice involving all operations on whole numbers -Factoring of composite numbers -Applying divisibility rules -Word Problems involving very small and very large numbers</p>	<p style="text-align: center;">Mathology</p> <p>Number Unit 2: Fluency with Whole Numbers</p> <p>Math Tools</p> <p style="text-align: center;">Arrays Input Output Machine Place Value Blocks</p>	<p>The focus of this unit is on whole number operations and applying strategies to solve problems while taking into consideration the order of operations. Students are also introduced to ratios and their connection to fractions. Multiplication and division for Grade 6 focusses on decimal numbers, which is addressed after the winter break in conjunction with fractions, percents, and integers.</p> <p style="text-align: center;">Spiraling and Making Connections</p> <p>-Multi-step Equations -Converting between ratios, fractions, and percents</p> <p><i>Financial Literacy – Readiness Task (Number Task 5)</i></p>
	<p style="text-align: center;">Summative</p> <p>Mathology: -Show What You Know (NU2 lesson 12)</p>			

Number Operations – I Can Statements

Comparing and Ordering	I can compare and order numbers up to billions and explain my strategy.
Addition and Subtraction	I can add and subtract numbers up to a 1 000 000 000.
	I can use estimation strategies to predict and verify sums and differences to a billion.
Multiplication and Division	I can apply strategies for multiplying number facts up to 100 and related division facts.
	I can recall multiplication facts and division facts, as well as Monkey in the Middle, and times 3 and times 9.
	I can multiply and divide decimal numbers.

Order of Operations	I can perform the order of operations on whole numbers without exponents.
Ratios	I can provide a pictorial representation of a ratio.
	I can write part-to-part and part-to-whole ratios.
	I can identify and describe ratios from real- life contexts, depict them symbolically, and solve problems involving them.
	I can express a ratio in multiple forms, such as 3:5, $\frac{3}{5}$ and 3 to 5

Grade 6 – Measurement (Unit 3)
November (About 4 weeks)

Polygons are 2D shapes that can be described by their perimeter and area. 3D objects can further be described by their volume and capacity.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Task: Perimeter, Area and Volume (Measurement Task 1)	Formative -Exit ticket questions in each section of Practice Questions Assessment Tables: -Using Formulas to Determine Perimeter of Polygons -Measuring Area of Parallelograms, Triangles, and Trapezoids	Daily Practice -Math Talks -Division with remainders -Times 3 and times 9 -Ratios in real life	Mathology Measurement Unit 1B: Perimeter, Area, Volume and Capacity Math Tools Geoboards 2D Geometry Volume Tangrams	In this unit, students are expanding on their understanding of perimeter to include complex shapes. They are also introduced to new concepts including how to use formulas for determining the area of polygons and the volume of right rectangular prisms, and how to use referents for estimating capacity. <p align="center">Spiraling and Making Connections</p> -Applying all operations to solve problems -Estimating with referents <i>Financial Literacy:</i> solving problems involving price per square meter etc.
	Summative Mathology: -Show What You Know: (Measurement U1A lesson 6)			

Measurement – I Can Statements

Measurement	I can measure angles using a protractor and construct angles.
	I can use referents to identify relationships between units.
	I can use the correct metric unit to measure volume and capacity.
Perimeter and Area	I can calculate the perimeter of complex shapes.
	I can use cubes to build 3D objects and determine their volume.
	I can calculate the area of triangles, parallelograms and trapezoids with formulas.
	I can apply formulas for determining the perimeter of polygons to solve problems.

Grade 6 - Geometry of Quadrilaterals and Prisms (Unit 4)

December (About 3 weeks)

3D objects and angles can be classified and sorted based on their attributes.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Task: 2D Shapes and Angles (Geometry Task 1)	<p align="center">Formative</p> -Exit ticket questions in each section of Practice Questions Assessment Tables: -Measuring and Constructing Angles -Properties of Triangles	<p align="center">Daily Practice</p> -Multiplication and Division facts -Relevant word problems for polygons (Perimeter, Area and Volume) -Facts practice with all operations	<p align="center">Mathology</p> <p align="center">Geometry Unit 1A: 2D Shapes and Angles</p> <p align="center">Math Tools Explore Objects Nets Geometry</p>	Building on their understanding of the attributes of 2D shapes and 3D objects, students are now classifying angles and triangles. They are also learning how to measure angles and construct triangles if given measurements. <p align="center">Spiraling and Making Connections</p> -2D Nets of objects -Seasonal decorations <i>Financial Literacy: Advantages and Disadvantages of Payment Methods (Number Unit 5, lesson 31)</i>
	<p align="center">Summative</p> Mathology: -Show What You Know (Geometry Unit 1A lesson 6)			

I Can Statements

Geometry	I can classify triangles as scalene, isosceles, equilateral, right, acute, or obtuse.
	I can classify angles as straight, obtuse, or reflex.
	I can measure angles in polygons.
	I can estimate angles using referents of 45, 90 and 180 degrees.
	I can construct and identify angles in the environment.

Grade 6– Fractions, Decimals, Percents and Integers (Unit 5)

January (About 4 weeks)

Place value allows us to distinguish very large numbers from very small numbers. We can also relate decimal numbers to fractions and percents using benchmarks and tools.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Task: Fractions and Decimals (Number Task 3)	Formative -Exit ticket questions in each section of Practice Questions Assessment Tables: -Exploring Fractions, Decimals, Percents, and Integers	Daily Practice -Relevant Word Problems -Math Talks -Number Lines & Place Value -Base-ten fractions & decimals <i>Extension Activities:</i> -Comparing and ordering Fractions and Decimals (Number Unit 3, Lesson 17)	Mathology Number Unit 3: Fractions, Decimals, Percents, and Integers Math Tools Relational Rods Fraction Strips Place Value Blocks Fraction Circles Fraction Relationships	In this unit, students are applying a variety of strategies to establish relationships between decimals, fractions, and percents. They are also learning how to compare and order improper fractions and mixed numbers, how to compare, order, and represent decimal numbers to the thousandths position and integers to the billions, and are using benchmarks to relate percents to decimals and fractions. Spiraling and Making Connections -Connecting fractions to ratios <i>Financial Literacy:</i> Solving problems that involve percentage decreases.
	Summative Mathology: -Show What You Know (Number Unit 3 Lesson 21)			

I Can Statements

Fractions	I can identify an improper fraction and explain that it represents more than one whole.
	I can relate a benchmark fraction with a percent.
	I can demonstrate using models that a given improper fraction represents a number greater than one.
	I can express improper fractions as mixed numbers and mixed numbers as improper fractions.
	I can use strategies to place a set of fractions, including mixed numbers, and improper fractions with both like and unlike denominators, on a number line.
Decimals	I can match a set of fractions to their decimal representations.
	I can model multiplication and division with base 10 blocks.
Percents	I can explain that percent means "out of 100" and that percent is a fraction out of 100.
	I can use concrete materials and pictorial representations to illustrate percent.
	I can write the percent displayed in concrete or pictorial representations.
	I can express a percent as a fraction and a decimal.
	I can identify and describe percents using real life examples and record them symbolically.
	I can solve problems involving percent discounts.

Grade 6 – Operations with Decimals (Unit 6)

February (About 3 weeks)

We can use models and strategies to solve multiplication and division problems involving decimal numbers.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
<p>Mathology: -Readiness Task: Operations with Decimals and Fractions (Number Task 4)</p> <p>Computation Assessment (Mid-year): The focus of this mid-year assessment is on decimal numbers and looks at: -Addition & subtraction (multi-digit) -Multiplication -Division (2-digit and 3-digit with 1-digit divisors) This should be done at the end of the unit.</p>	<p>Formative</p> <p>-Exit ticket questions in each section of Practice Questions</p> <p>Assessment Tables: -Multiplying and Dividing Decimal Numbers by 1-digit Numbers -Multiplying and Dividing Whole Numbers by Decimal Tenths</p>	<p>Daily Practice</p> <p>-Number Lines with decimal numbers -Multiplication and Division facts -Practice converting between fractions & decimals -Money: problems involving calculations with decimals</p> <p><i>Extension Activities:</i></p> <p>-Multiplying 3-digit whole numbers by decimal tenths (NU 4, lesson 23) -Dividing 3-digit whole numbers by decimal tenths (NU4, lesson 25) -Adding and subtracting fractions (NU4, lesson 27) -Multiplying and dividing whole numbers by proper fractions (NU4, lesson 28) -Using mental math to calculate percents (N4, lesson 29)</p>	<p>Mathology</p> <p>Number Unit 4: Operations with Decimals</p> <p>Math Tools</p> <p>Number Lines with Decimals</p> <p>Place-value Blocks</p>	<p>Teachers may want to spend more time on the previous unit if needed as this unit on operations with decimals could be relatively short. Mathology provides additional lessons on decimal operations (see extension activities listed) however the B.C. curriculum only requires students to learn decimal multiplication and division by 1-digit numbers.</p> <p>Spiraling and Making Connections</p> <p>-Expressing decimals as fractions and percents</p> <p><i>Financial Literacy:</i> Interest Rates and Fees (Number Unit 5 Lesson 32)</p>

I Can Statements

Decimals	I can model multiplication and division with base 10 blocks.
	I can multiply and divide decimal numbers.

Grade 6 - Patterns and Relations (Unit 7)

March up to break (About 2 weeks)

Regular, repeating patterns can be generalized and mathematically predicted.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Task: Patterning and Algebra Task 1	<p align="center">Formative</p> <p>-Exit ticket questions in each section of Practice Questions</p> <p>Assessment Tables: -Generalizing and Representing Patterns -Extending Patterns to Solve Problems</p>	<p align="center">Daily Practice</p> <p>-Relevant Word Problems -Operations on decimal numbers -Interpreting Increasing and decreasing patterns through graphs, charts and tables</p> <p><i>Extension Activities:</i></p> <p>-Representing patterns different ways (non-linear patterns; Patterning Unit 1, lesson 3)</p>	<p align="center">Mathology</p> <p>Patterning Unit 1: Patterning</p> <p>Math Tools</p> <p>Data and Graphs</p> <p>Pattern Blocks</p> <p>Input Output Machine</p>	<p>In this unit, students are continuing to explore patterning relationships by considering how they can represent increasing and decreasing patterns in different ways, such as by rules or equations, or in tables and graphs.</p> <p align="center">Spiraling and Making Connections</p> <p>-Applying all four operations</p> <p><i>Financial Literacy:</i> Solving Problems involving representation of financial data</p>
	<p align="center">Summative</p> <p>Mathology: -Show What You Know (Patterning and Algebra Unit 1, lesson 4)</p>			

I Can Statements

Patterns	I can identify and describe patterns as being linear or non-linear.
	I can identify increasing and decreasing patterns using tables, graphs, and equations.
	I can describe linear relations with discrete points in the first quadrant.

Grade 6 – Variables and Equations (Unit 8)

April (About 4 weeks)

The preservation of equality can be illustrated by solving one-step equations with whole-number coefficients.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Task: Variables and Equations (Patterning and Algebra Task 2)	Formative -Exit ticket questions in each section of Practice Questions Assessment Tables: -Solving for an Unknown in Multi-step Equations	Daily Practice -Represent a Number -Word Problems involving patterning -Math Talks <i>Extension Activities:</i>	Mathology Patterning Unit 2: Variables and Equations Math Tools Pan Balance Input Output Machine Number Lines	In this unit, students are investigating the preservation of equality by examining one-step equations and their solutions. Students are also modelling algebraic expressions with whole number coefficients and using inverse operations to solve. Spiraling and Making Connections -Problem solving with order of operations <i>Financial Literacy:</i> Planning for Financial Goals (Number Unit 5, Lesson 33)
	Summative Mathology: -Show What You Know (Patterning and Algebra Unit 2, lesson 10)	-Investigating Algebraic Expressions: See Patterning & Algebra Unit 2, lesson 5. -Solving and Graphing inequalities: See Patterning and Algebra Unit 2, lesson 9		

I Can Statements

Algebra	I can model the preservation of equality in one-step equations, e.g., with algebra tiles, balance models.
	I can write an equation with an unknown to solve a word problem.
	I can solve one-step equations with whole number coefficients.
	I can use multiple strategies to solve one-step equations, e.g., a flow chart and inverse operations.

Grade 6 – Transformations (Unit 9)

Start of May to Mid-May (About 2 weeks)

Coordinates are used to describe the transformation and location of a shape and its image on a Cartesian plane.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Task: Transformations (Geometry Task 2)	<p align="center">Formative</p> <ul style="list-style-type: none"> -Exit ticket questions in each section of Practice Questions <p>Assessment Tables:</p> <ul style="list-style-type: none"> -Applying and Visualizing Transformations on a Grid -Locating and Mapping Shapes in 1st Quadrant of the Cartesian Plane 	<p align="center">Daily Practice</p> <ul style="list-style-type: none"> -Word Problems involving all operations -Solving one-step equations 	<p>Mathology</p> <p>Geometry Unit 2B: Transformations</p> <p>Math Tools</p> <p>Shapes</p> <p>Geometry</p>	<p>Students are building on their understanding of transformations by now describing how successive transformations will change the position of a 2D shape with reference to a Cartesian plane and the first quadrant.</p> <p align="center">Spiraling and Making Connections</p> <ul style="list-style-type: none"> -Geometry of 2D shapes and 3D objects -Measurement on a grid -Relating grids to graphs
	<p align="center">Summative</p> <p>Mathology:</p> <ul style="list-style-type: none"> -Show What You Know (Geometry U2A Lesson 12) 			

I Can Statements

Transformations	I can use coordinates to make transformations in the first quadrant.
	I can transform an image.

Grade 6 - Data Management (Unit 10a)

Mid-May to end of May (About 2 weeks)

Line graphs can be created and interpreted from a given set of data.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
<p>Mathology: -Readiness Task: Data Management (Task 1)</p> <p>Computation Assessment: The focus of this end-of-year assessment is on decimal numbers and looks at: -Addition & subtraction (multi-digit) -Multiplication -Division (2- and 3- digits by 1-digit divisor)</p>	<p align="center">Formative</p> <p>-Exit ticket questions in each section of Practice Questions</p> <p>Assessment Tables: -Creating and Interpreting -Collecting and Organizing Data</p> <p align="center">Summative</p> <p>Mathology: -Show What You Know (Data Management Unit 1, Lesson 6)</p>	<p align="center">Daily Practice</p> <p>-Review Questions involving double bar graphs -Word Problems involving all operations -Coordinate grids</p> <p><i>Extension Activities:</i> -Exploring Histograms: See Data Management Lesson 2 -Range and Central Tendency: See Data Management Lesson 5</p>	<p>Mathology Data Unit 1: Data Management</p> <p>Math Tools Graphing & Data</p>	<p>In this unit, students are expanding on their understanding of data set and linear relationships by constructing and interpreting line graphs. They are also continuing to learn how to interpret data, and to justify inferences they make about data sets.</p> <p align="center">Spiraling and Making Connections</p> <p>-Multiplication and division -Patterns and Relations</p>

I Can Statements

Data Management	I can create a table of values.
	I can create a line graph from a table of values.
	I can interpret a line graph.
	I can solve problems with graphs.

Grade 6 – Probability (Unit 10b)

June to end of year (About 2 weeks)

Theoretical and experimental single outcome probability events can be expressed using fractions, decimals, and percents.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Readiness Task: Data Management and Probability (Task 2)	<p align="center">Formative</p> -Exit ticket questions in each section of Practice Questions Assessment Tables: -Listing All Possible Outcomes of an Experiment -Comparing Theoretical and Experimental and Experimental Probabilities	<p align="center">Daily Practice</p> -Word problems involving data interpretation -Representing fractions -Converting fractions to decimals and percents	<p>Mathology</p> <p>Data Unit 2: Probability</p> <p>Math Tools</p> <p>Probability</p>	In this unit, students are learning how to express probabilities in different ways, e.g., as a likelihood, fraction, decimal or percent. They are also determining theoretical and experimental probability of events, learning how to make predictions and comparing results. <p align="center">Spiraling and Making Connections</p> - Problem Solving with fractions and decimals <i>Financial Literacy:</i> Consolidation activity (Number Unit 5, Lesson 34)
	<p align="center">Summative</p> Mathology: -Show What You Know (Data Management Unit 2, Lesson 10)	<p><i>Extension Activities:</i></p> -Independent Events: See Data Man. Unit 2, Lesson 8.		

I Can Statements

Probability	I can list all possible outcomes for an event.
	I can calculate experimental probability for single events.
	I can compare experimental results and theoretical probabilities.

Grade 6- Financial Literacy (Unit 11)

Done throughout the year

Informed decision making on saving and purchasing form a basis for simple budgets.

Pre-assessment	Assessment	Getting There		Comments
		Classroom Routines	Resources	
Mathology: -Number Readiness Task: Financial Literacy (Number Task 5)	Formative -Exit ticket questions in each section of Practice Questions Assessment Tables: -Comparing Interest Rates and Fees -Planning for Financial Goals	Daily Practice -Relevant Problems involving financial decisions -Computations involving finances, e.g., making change -Math Talks with decimals	Mathology Number Unit 8: Financial Literacy Math Tools Money	In this unit, students are applying their numeracy skills to consumer math. They are learning about financial goal setting and developing an understanding of real-life expenses, skills they will need to take responsibility for their personal financial well-being. Spiraling and Making Connections -Applying all operations to decimal numbers -Modeling relationship between fractions, decimals, and percents -Problem solving in real life contexts
	Summative -Show What You Know (NU5, Lesson 34)			

I Can Statements

Financial Literacy	I can make informed decisions on saving and purchasing.
	I can make calculations on how long it will take to achieve a goal.