

E. Schubert  
Course Outline  
Grade 7 Mathematics  
2019-20



**Timeline:**

<b>Estimated Dates</b>	<b>Units Of Work</b>
September <i>(Term 1)</i>	<u>Numerical Patterns</u>
September/October	<u>Divisibility Rules</u>
October	<u>Operations with Decimal Fractions</u>
October/November	<u>Circles (Radius, Diameter, Pi)</u>
November/December	<u>Graphing Data</u>
December <i>(Term 2)</i>	<u>Linear Expressions and Equations</u>
January/February	<u>Fractions, Decimals, Percent</u>
February/March	<u>2-D Area Formulas</u>
March	<u>Statistics: Mean, Median, Mode &amp; Range</u>
April	<u>Integers</u>
April/May	<u>Patterns Review</u>
May/June	<u>Transformations</u>
June	<u>Probability</u>

\*This timeline is tentative and may change throughout the year.

**Resources:**

*Primary: Math Makes Sense 7; Supporting: Math Focus 7, Math Dynamics 7, LearnAlberta, 2Learn, Math 44*

## **Description of Units of Work**

### **Numerical Patterns**

*Strand: Patterns and Relations (Variables and Equations)*

*Processes: Communication, Connections, Problem Solving, Reasoning, Visualization*

- Describe a pattern rule using a linear relation
- Differentiate between expression and equation
- Represent a linear relation using an algebraic expression
- Evaluate an expression given the value of a variable
- Describe the relationship between a pattern, its table of values, and its graph

### **Divisibility Rules**

*Strand: Number*

*Processes: Communication, Reasoning*

- Determine if a given number is divisible by 2,3,4,5,6,8,9, or 10 and explain why
- Sort numbers based on their divisibility
- Determine factors of whole numbers using divisibility rules
- Explain why numbers cannot be divided by 0

### **Operations with Decimal Fractions**

*Strand: Number*

*Processes: Communication, Connections, Mental Mathematics and Estimation, Problem Solving, Reasoning, Technology*

- Compare and order decimal numbers
- Add and subtract decimal numbers
- Multiply and divide decimal numbers
- Estimate sums, differences, products, and quotients involving decimal numbers
- Solve problems that involve decimal numbers

### **Circles (Radius, Diameter, Pi)**

*Strand: Shape and Space (Measurement)*

*Processes: Communication, Connections, Mental Mathematics and Estimation, Problem Solving, Reasoning, Visualization, Technology*

- Develop and apply a formula for the circumference
- Describe the relationship between radius, diameter, circumference, and pi
- Determine the sum of central angles
- Construct a circle with a given radius or diameter

### **Graphing Data**

*Strand: Statistics and Probability (Data Analysis)*

*Processes: Communication, Connections, Problem Solving, Reasoning, Technology, Visualization*

- Construct and label circle graphs with and without technology
- Analyze and interpret a circle graph to solve problems
- Find and display appropriate data in a circle graph

### **Expressions, Variables, Words to Math Symbols (Linear Relations and Linear Equations)**

*Strand: Patterns and Relations (Variables and Equations)*

*Processes: Communication, Connections, Problem Solving, Reasoning, Visualization*

- Describe a pattern rule using a linear relation
- Differentiate between expression and equation
- Represent a linear relation using an algebraic expression
- Evaluate an expression given the value of a variable
- Describe the relationship between a pattern, its table of values, and its graph
- Model and solve equations by preserving equality
- Model and solve a problem represented by a linear equation and verify the solution

### **Fractions, Decimals, & Percent**

*Strand: Number*

*Processes: Communication, Connections, Mental Mathematics and Estimation, Problem Solving, Reasoning, Visualization*

- Express fractions as decimal numbers and decimal numbers as fractions (both terminating and repeating decimals)
- Compare and order fractions and decimal numbers
- Add and subtract fractions
- Solve problems that involve adding and subtracting fractions
- Estimate and determine sums and differences of fractions and mixed numbers
- Simplify fractions and mixed numbers using a common factor of the numerator and denominator
- Express percents as fractions and decimals
- Solve problems that involve decimal numbers
- Solve problems that involve finding a percent (calculating and estimating)
- Solve percent problems where the answer requires rounding and explain why (example: total cost including taxes).

### **Area Formulas**

*Strand: Shape and Space (Measurement)*

*Processes: Communication, Connections, Mental Mathematics and Estimation, Problem Solving, Reasoning, Visualization, Technology*

- Develop and apply a formula for the area of a parallelogram
- Develop and apply a formula for the area of a triangle
- Develop and apply a formula for the area of a circle

### **Statistics (Mean, Median, Mode, and Range)**

*Strand: Statistics and Probability (Data Analysis)*

*Processes: Communication, Connections, Problem Solving, Reasoning, Technology, Visualization*

- Determine the range of a set of data
- Determine and use the average (mean, median, and mode) of a set of data
- Explore how outliers affect the measures of average
- Choose the best measure to represent a set of data

### **Addition and Subtraction of Integers**

*Strand: Number*

*Processes: Communication, Connections, Mental Mathematics and Estimation, Problem Solving, Reasoning, Visualization, Technology*

- Represent addition and subtraction of integers using concrete materials, and diagrams
- Record the addition or subtraction of integers symbolically
- Solve problems that involve the addition and subtraction of integers

### **2-D Geometry (Transformations & Geometric Constructions)**

*Strand: Shape and Space (3-D Objects and 2-D Shapes, Transformations)*

*Processes: Communication, Connections, Problem Solving, Reasoning, Technology, Visualization*

- Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.
- Perform and describe translations, reflections, and rotations on a Cartesian plane
- Construction perpendicular bisectors, parallel line segments, and angle bisectors

### **Probability**

*Strand: Statistics and Probability (Chance and Uncertainty)*

*Processes: Communication, Connections, Mental Math and Estimation, Problem Solving, Reasoning, Technology, Visualization*

- Conduct probability experiments
- Express probabilities in ratios, fractions, and percents
- Identify the sample space (all possible outcomes) for a probability experiment using graphic organizers (example: tree diagram)
- Compare theoretical and experimental probabilities
- Explore how outliers affect the measures of average
- Choose the best measure to represent a set of data

### **Assessment and Evaluation:**

Assessment is ongoing and students will be assessed through a variety of methods including assignments, quizzes, projects, and tests. Assessments consist of summative unit assessments (projects or tests) that evaluate the connections between multiple learning objectives. Objective assessments (quizzes, assignments, daily work, observations) evaluate one or two specific outcomes on a more basic scale. Formative assessment and feedback will be used throughout the year and given in advance of unit assessments.

The mathematical processes as outlined in the Alberta Program of Studies are: Communication (C), Connections (CN), Mental mathematics and estimation (ME), Problem-solving (PS), Reasoning (R), Technology (T), Visualization (V). Assessment of the seven mathematical processes will be integrated and reported in 4 separate outcomes on PowerSchool and on the report card. Each term, the four general mathematics (numeracy) outcomes that students are graded on are:

- Demonstrates and connects knowledge between math concepts
- Applies knowledge and skills to solve problems
- Communicates/reasons the understanding of math (speaking, drawing, writing)
- Uses mental math and estimation in daily work

On specific assessments, students may receive a traditional numerical score, percentage, or a qualitative achievement indicator (which will indicate their achievement of each outcome at the end of a reporting period). Achievement indicators are as follows:

- Mastering (MAS): Can apply the learning to complex tasks independently
- Advancing (ADV): Can apply the learning to increasingly difficult tasks with prompts
- Progressing (PRG): Can apply the learning to moderate tasks with support
- Emerging (EMG): Can apply the learning to basic tasks with guidance
- Beginning (BEG): Can apply the learning to basic tasks with direction
- Limited (LIM): Cannot yet apply the learning to simple tasks. Extensive support required.
- Insufficient Evidence (IE): Insufficient evidence to accurately assess progress

### **Re-write Policy:**

Learning is ongoing and assessments are a snapshot in the process. Students are allowed to re-write exams or re-submit projects on a case-by-case basis provided the student takes initiative in asking to re-write/re-submit. Students may be required to complete the re-write/re-submission outside of school hours and must demonstrate that they have taken time to re-learn the material or asked for extra help.

### **Extra Help:**

Extra help outside of class time is available before school, during lunch hour, and after school by request. Available times are subject to change based on supervision, coaching, and other school commitments. Please notify Mr. Schubert in advance of showing up for extra help.