

## **APA Alberta-based Math Curricula: Grade 8 Math**

### **Number theory**

- Factors
- Divisibility rules
- Prime or composite
- Prime factorization
- Greatest common factor
- Least common multiple
- GCF and LCM: word problems
- Classify numbers

### **Integers**

- Integers on number lines
- Graph integers on number lines
- Absolute value and opposite integers
- Compare and order integers
- Integer inequalities with absolute values

### **Operations with integers**

- Integer addition and subtraction rules
- Add and subtract integers using counters
- Add and subtract integers
- Add and subtract three or more integers
- Add and subtract integers: word problems
- Integer multiplication and division rules
- Multiply and divide integers
- Simplify expressions involving integers and absolute values
- Evaluate variable expressions with integers and absolute values

### **Rational numbers**

- Identify rational and irrational numbers
- Simplify fractions
- Least common denominator
- Round decimals and mixed numbers
- Absolute value of rational numbers
- Convert between decimals and fractions or mixed numbers
- Compare rational numbers
- Put rational numbers in order

### **Operations with rational numbers**

- Reciprocals and multiplicative inverses

- Add and subtract rational numbers
- Add and subtract rational numbers: word problems
- Apply addition and subtraction rules
- Multiply and divide rational numbers
- Multiply and divide rational numbers: word problems
- Apply multiplication and division rules
- Apply addition, subtraction, multiplication and division rules
- Simplify expressions involving rational numbers
- Evaluate variable expressions involving rational numbers

### **Exponents and roots**

- Understanding exponents
- Evaluate exponents
- Exponents: solve for the variable
- Exponents with negative bases
- Exponents with decimal and fractional bases
- Square roots of perfect squares
- Estimate square roots
- Relationship between squares and square roots
- Evaluate variable expressions involving squares and square roots

### **Scientific notation**

- Convert between standard and scientific notation
- Compare numbers written in scientific notation

### **Ratios and proportions**

- Understanding ratios
- Equivalent ratios
- Equivalent ratios: word problems
- Compare ratios: word problems
- Unit rates
- Do the ratios form a proportion?
- Do the ratios form a proportion: word problems
- Solve proportions
- Solve proportions: word problems
- Estimate population size using proportions
- Rate of change
- Constant rate of change
- Scale drawings and scale factors

### **Proportional relationships**

- Identify proportional relationships
- Find the constant of variation: graphs

- Find the constant of variation: word problems
- Graph a proportional relationship
- Write an equation for a proportional relationship
- Proportional relationships: word problems

### **Percents**

- Convert between percents, fractions and decimals
- Compare percents to fractions and decimals
- Find what percent one number is of another
- Find what percent one number is of another: word problems
- Estimate percents of numbers
- Percents of numbers and money amounts
- Percents of numbers: word problems
- Compare percents of numbers
- Solve percent equations
- Percent of change
- Percent of change: word problems

### **Consumer math**

- Price lists
- Unit prices
- Unit prices: find the total price
- Percent of a number: tax, discount and more
- Find the percent: tax, discount and more
- Sale prices: find the original price
- Multi-step problems with percents
- Estimate tips
- Simple interest
- Compound interest

### **Problem solving**

- Multi-step word problems
- Guess-and-check word problems
- Use Venn diagrams to solve problems
- Elapsed time word problems

### **Data and graphs**

- Interpret tables
- Interpret bar graphs
- Create bar graphs
- Interpret line graphs
- Create line graphs
- Interpret line plots

- Create line plots
- Create and interpret line plots with fractions
- Interpret stem-and-leaf plots
- Interpret histograms
- Create histograms
- Create frequency charts
- Interpret box-and-whisker plots
- Scatter plots
- Interpret circle graphs
- Circle graphs and central angles
- Choose the best type of graph

### **Pythagorean theorem**

- Pythagorean theorem: find the length of the hypotenuse
- Pythagorean theorem: find the missing leg length
- Pythagorean theorem: find the perimeter
- Pythagorean theorem: word problems
- Converse of the Pythagorean theorem: is it a right triangle?

### **Coordinate graphs**

- Points on coordinate graphs
- Quadrants and axes
- Coordinate graphs as maps
- Distance between two points

### **Geometry**

- Identify complementary, supplementary, vertical, adjacent and congruent angles
- Find measures of complementary, supplementary, vertical and adjacent angles
- Transversal of parallel lines
- Classify triangles
- Classify quadrilaterals
- Find missing angles in triangles and quadrilaterals
- Identify and classify polygons
- Interior angles of polygons
- Similar and congruent figures
- Similar figures: side lengths and angle measures
- Congruent figures: side lengths and angle measures
- Congruence statements and corresponding parts
- Perimeter
- Area
- Area between two shapes
- Area and perimeter: word problems

- Parts of a circle
- Circles, semicircles and quarter circles
- Circles: word problems
- Find lengths and measures of bisected lines and angles
- Front, side and top view
- Base plans
- Names and parts of 3-dimensional figures
- Nets of 3-dimensional figures
- Surface area of prisms and cylinders
- Surface area of pyramids
- Volume
- Similar solids
- Volume and surface area of similar solids
- Perimeter, area and volume: changes in scale

### **Transformations**

- Identify reflections, rotations and translations
- Translations: graph the image
- Translations: find the coordinates
- Reflections: graph the image
- Reflections: find the coordinates
- Rotations: graph the image
- Rotations: find the coordinates
- Dilations: graph the image
- Dilations: find the coordinates
- Dilations: scale factor and classification
- Symmetry

### **Measurement**

- Convert rates and measurements: metric units
- Metric mixed units
- Convert square and cubic units of length
- Convert between cubic metres and litres
- Precision

### **Number sequences**

- Identify arithmetic and geometric sequences
- Arithmetic sequences
- Geometric sequences
- Number sequences: mixed review
- Number sequences: word problems
- Evaluate variable expressions for number sequences

- Write variable expressions for arithmetic sequences

### **Variable expressions**

- Write variable expressions
- Write variable expressions to represent diagrams
- Identify terms and coefficients
- Evaluate single-variable expressions
- Evaluate multi-variable expressions
- Add and subtract like terms
- Simplify variable expressions

### **Single-variable equations**

- Does  $x$  satisfy the equation?
- Model and solve equations using algebra tiles
- Write and solve equations that represent diagrams
- Solve one-step linear equations
- Solve two-step linear equations
- Solve equations involving squares and square roots
- Solve equations involving like terms

### **Linear functions**

- Does  $(x, y)$  satisfy the linear equation?
- Complete a function table
- Write a rule for a function table
- Find points on a function graph
- Graph a line from a function table
- Graph a line from an equation
- Linear function word problems

### **Properties**

- Properties of addition and multiplication
- Distributive property
- Simplify variable expressions using properties
- Properties of equality

### **Probability**

- Probability of simple events
- Probability of opposite, mutually exclusive and overlapping events
- Experimental probability
- Make predictions
- Compound events: find the number of outcomes
- Counting principle

### **Statistics**

- Calculate mean, median, mode and range

- Interpret charts to find mean, median, mode and range
- Mean, median, mode and range: find the missing number
- Changes in mean, median, mode and range
- Quartiles
- Identify representative, random and biased samples