

MATHEMATICS CURRICULUM – NUMBER SENSE

GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (+, -, x, ÷) patterns, ratios, and proportions.
 Standard A: Demonstrate knowledge and use of numbers and their representation in a broad range of theoretical and practical settings.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Identify, say and read numerals, 0-100. 2. Create sets to match number symbols 0-20. 3. Use number line for counting, addition, and subtraction, skip counting. 4. Compare numbers (equal, greater, less). 	<ol style="list-style-type: none"> 1. Count with understanding, including skip counting by 2's, 5's and 10's from zero to 100. 2. Recognize 'how many' in sets of objects. 3. Demonstrate the concept of odd and even using manipulatives. 4. Develop initial understanding of place value and the base-ten number system using manipulatives. 5. Describe numeric relationships using appropriate vocabulary. 6. Differentiate between cardinal and ordinal numbers in quantifying and ordering numbers. 7. Connect number words and numerals to the quantities they represent. 8. Describe parts of a whole using $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$. 9. Order concrete representations of unit fractions. 	<ol style="list-style-type: none"> 1. Count with understanding, including skip counting from any number by 2's and 10's. 2. Extend initial understanding of place value and the base-ten number system using multiple models (to 5 places, i.e. 10,000). 3. Describe numeric relationships using comparison notation. 4. Use cardinal and ordinal numbers appropriately. 5. Recognize and explain the concept of odd and even numbers. 6. Describe parts of a set using $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$. 7. Represent, order, label and compare unit fractions using concrete materials. 	<ol style="list-style-type: none"> 1. Read, write and say numbers with five digits. 2. Identify the place value of six digit numbers. 3. Compare and order numbers up to four digits. 4. Skip count and group multiples (2 through 10). 5. Recognize equivalent representations of whole numbers and generate them by composing and decomposing numbers (e.g., $123 = 100 + 20 + 3$). 6. Recognize and write fractions; and compare parts to the whole with pictorial models. 7. Explore and talk about uses of decimals. 	<ol style="list-style-type: none"> 1. Represent, order and compare decimals to demonstrate understanding of the place-value structure in the base-ten number system (to .01). 2. Identify, represent, order and compare whole numbers up to seven digits. 3. Identify prime numbers through 100. 4. Recognize and generate equivalent representations for decimals (e.g., $0.15 = 0.1 + 0.05$). 5. Explore fractions as parts of unit wholes, as parts of a set, as locations on a number line and as divisions of whole numbers. 6. Explore numbers less than zero by extending a number line and through familiar applications.

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As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/ Algebra
<ol style="list-style-type: none"> 1. Place mixed numbers and decimals on a number line. 2. Show equivalent representations of a number by changing from one form to another form (e.g., standard form to expanded form, fraction to decimal, decimal to percent). 3. Differentiate how fractions are used (part of a whole, part of a set, location on a number line, and division of a whole number). 4. Analyze how the size of the whole affects the size of the fraction (e.g., 1/2 of a large pizza is not the same as 1/2 of a small pizza). 5. Describe integers using familiar applications (e.g., a thermometer, above/below sea level). 6. Read, write, say, and compare whole numbers (to billions) and decimals (to thousandths). 7. Solve problems involving descriptions of numbers including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers). 	<ol style="list-style-type: none"> 1. Represent place values from units through billions using powers of ten. 2. Represent, order, compare, and graph integers. 3. Identify fractional pieces that have the same value but different shapes. 4. Compare and order fractions and decimals efficiently and find their approximate position on a number line. 5. Represent repeated factors using exponents. 	<ol style="list-style-type: none"> 1. Represent any large number using scientific notation. 2. Show relationships between sets of numbers, including rational numbers, whole numbers, natural numbers, and integers. 	<ol style="list-style-type: none"> 1. Read, write, and recognize equivalent representations of integer powers of 10. 2. Read, write, recognize, model, and interpret integers, including translating numerical expressions. 3. Recognize, translate between, and apply multiple representations of rational numbers (decimals, fractions, mixed numbers, percents, and roots). 4. Use scientific notation to represent numbers and solve problems. 5. Represent repeated factors using exponents. 6. Identify, locate, order, and compare rational and irrational numbers (e.g., π, $\sqrt{2}$, $\sqrt{5}$) using a number line. 7. Solve problems involving descriptions of numbers, including characteristics and relationships (e.g. exponents, roots, prime/composite, prime factorization, greatest common factor, least common multiple).

MATHEMATICS CURRICULUM – NUMBER SENSE

GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (+, -, x, ÷) patterns, ratios, and proportions.
 Standard B: Investigate, represent and solve problems using number facts, operations (+, -, x, ÷) and their properties, algorithms, and relationships.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
5. Order numerals to 100. 6. Explore addition and subtraction using manipulatives, pictures and other visual aids. 7. Solve one-step whole number problems.	1. Solve one-step addition and subtraction number sentences and word problems using concrete materials. 2. Construct number sentences to match word problems. 3. Demonstrate and describe the effects of adding and subtracting whole numbers using appropriate mathematical notation and vocabulary. 4. Explore and apply properties of addition and subtraction. 5. Compute using fact families. 6. Solve one-step addition and subtraction facts with answers up to 18.	1. Solve two-step addition and subtraction number sentences and word problems. 2. Demonstrate the relationship between addition and subtraction. 3. Explore multiplication and division through equal grouping and equal sharing of objects. 4. Connect repeated addition to multiplication. 5. Demonstrate fluency with basic addition and subtraction facts (up to 20). 6. Solve up to three-digit addition and subtraction with and without regrouping/renaming.	1. Add and subtract 4-digit numbers with and without regrouping. 2. Demonstrate fluency with basic multiplication and division facts through twelve. 3. Multiply and divide two digit numbers by one digit. 4. Solve simple addition or subtraction number sentences using fractions with like denominators. 5. Solve multi-step problems by choosing the correct operation addition, subtraction, or multiplication. 6. Explore, identify and use relationships between and among properties of operations (e.g., commutative property applies to addition but not to subtraction).	1. Describe classes of numbers according to characteristics such as factors and multiples. 2. Solve addition or subtraction number sentences and word problems using fractions with like denominators. 3. Solve multi-step number sentences and word problems using whole numbers and the four basic operations. 4. Select and use one of various algorithms to multiply (up to three digits by two digits). 5. Select and use one of various algorithms to divide (up to three digits by one digit). 6. Solve money problems up to \$100.00 and make change.

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As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/ Algebra
<ol style="list-style-type: none"> 1. Determine whether a number is prime or composite. 2. Identify all the whole number factors of a composite number. 3. Compute with powers of 10. 4. Explore and use divisibility rules. 5. Solve number sentences and word problems using addition and subtraction of decimals and fractions with unlike denominators. 	<ol style="list-style-type: none"> 1. Write prime factorizations of numbers. 2. Determine the least common multiple and the greatest common factor of a set of numbers. 3. Demonstrate the meaning of multiplication of fractions (e.g., $\frac{1}{2} \times 3$ is $\frac{1}{2}$ of a group of three objects). 4. Simplify basic arithmetic expressions with rational numbers using the field properties and the order of operations. 5. Recognize and use the inverse relationships of addition and subtraction, multiplication and division to simplify computations and solve problems. 6. Solve multiplication and division number sentences and word problems with whole numbers and familiar fractions. 	<ol style="list-style-type: none"> 1. Write prime factorizations of numbers. 2. Describe relationships between prime factorizations and properties of squares, primes, and composites. 3. Classify numbers according to the number of whole number factors (e.g., square numbers have an odd number of factors). 4. Demonstrate and describe the effects of multiplying or dividing by a fraction less than or greater than one. 5. Simplify arithmetic expressions containing exponents using the field properties and the order of operations. 6. Justify rules of divisibility for 2, 3, 4, 5, 6 and 10. 7. Solve multi-step number sentences and word problems with rational numbers using the four basic operations. 	<ol style="list-style-type: none"> 1. Solve problems and number sentences involving addition, subtraction, multiplication and division using rational numbers, exponents and roots. 2. Identify and apply order of operations to simplify numeric expressions involving integers (including exponents and roots), fractions and decimals. 3. Identify and apply the following properties of operations with rational numbers: <ul style="list-style-type: none"> ~ The commutative and associative properties for addition and multiplication; ~ The distributive property; ~ The additive and multiplicative identity properties; ~ The additive and multiplicative inverse properties; ~ The multiplicative property of zero. 4. Describe the effect of multiplying and dividing by numbers, including the effects of multiplying or dividing a rational number by: <ol style="list-style-type: none"> 1. A number less than zero; 2. Zero 3. A number between zero and one; 4. A number greater than one. 5. Select, use and justify appropriate operations, methods and tools to compute or estimate with rational numbers. Verify solutions and determine the reasonableness of results. 6. Estimate the square root of a number less than 1000 between two whole numbers (e.g., $2\sqrt{200}$ is between 14 & 15).

MATHEMATICS CURRICULUM – NUMBER SENSE

GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (+, -, x, ÷) patterns, ratios, and proportions.
 Standard C: Compute and estimate using mental mathematics, paper-and-pencil methods, calculators and computers.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Use manipulatives to solve problems with numbers 0-10. 2. Estimate and check guesses using manipulatives. 3. Identify and explore use of a calculator. 4. Solve simple math problems as applied to daily activities. 	<ol style="list-style-type: none"> 1. Develop and use strategies for whole number computations with a focus on addition and subtraction. 2. Use mental math counting strategies. 3. Describe reasonable and unreasonable sums and differences. 4. Explore and utilize a calculator for counting patterns. 5. Solve horizontal and vertical sums and differences. 	<ol style="list-style-type: none"> 1. Explain and use mental math strategies to solve simple addition and subtraction problems. 2. Estimate sums and differences of one- or two-digit numbers. 3. Analyze situations to determine whether exact numbers or estimates are appropriate. 4. Explore and utilize a calculator to solve addition and subtraction problems. 	<ol style="list-style-type: none"> 1. Use mental math to solve two-digit addition and subtraction without regrouping. 2. Round to the nearest ten, hundred and thousand. 3. Estimate to determine reasonable answers. 4. Use calculators, computers and other technology for drill and practice and to solve problems. 	<ol style="list-style-type: none"> 1. Develop and use strategies (e.g., compatible numbers, front-end estimation) to estimate the results of whole-number computations and to judge the reasonableness of such results. 2. Estimate the sum or difference of a number sentence containing decimals using a variety of strategies. 3. Use calculators, computers, and other technology to solve problems.

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 Standard C: Compute and estimate using mental mathematics, paper-and-pencil methods, calculators and computers.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/ Algebra
<ol style="list-style-type: none"> 1. Select and use appropriate operation(s) and tool(s) (e.g., mental math, pencil-and-paper, estimation, calculator, computer) to perform calculations on whole numbers, fractions and decimals. 2. Use strategies to estimate answers. 3. Determine and justify whether exact answers or estimates are appropriate. 	<ol style="list-style-type: none"> 1. Select and use appropriate operations, methods and tools to compute or estimate using whole numbers with natural number exponents. 2. Analyze algorithms for computing with whole numbers, familiar fractions and decimals and develop fluency in their use. 	<ol style="list-style-type: none"> 1. Select, use and justify appropriate operations, methods and tools to compute or estimate with integers and familiar rational numbers. 2. Develop, use and explain strategies to compute exact answers mentally with integers and simple rational numbers using a variety of techniques (e.g., estimate and compensate, halve and double, compatible numbers, decomposition and recomposition using the distributive property). 3. Analyze algorithms for computing with percents, proportions and rational numbers; develop fluency in their use. 	See Goal 6, Standard B (combined Standards B and C)

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GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (+, -, x, ÷) patterns, ratios, and proportions.
 Standard D: Solve problems using comparison of quantities, ratios, proportions and percents.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Compare the number of objects in groups.	1. Compare two or more sets, using manipulatives, to solve problems.	1. Compare unit fractions, using manipulatives, to solve problems.	1. Compare quantities using “greater than,” “less than,” “equal to” and “not equal to” as well as their symbols “>,” “<” and “=,” “≠”.	1. Compare quantities using “greater than,” “less than,” “equal to” and “not equal to” as well as their symbols “>,” “<” and “=,” “≠”. 2. Determine 50% and 100% of a given group in context.

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 Standard D: Solve problems using comparison of quantities, ratios, proportions and percents.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/ Algebra
<ol style="list-style-type: none"> 1. Identify and express ratios using appropriate notation (i.e., a/b, a to b, $a:b$). 2. Model the concept of percent using manipulatives or drawings. 3. Solve problems involving proportional relationships, including unit pricing (e.g., one apple costs 20 cents, so four apples cost 80 cents). 	<ol style="list-style-type: none"> 1. Solve number sentences and word problems using percents. 2. Demonstrate and explain the meaning of percents, including greater than 100 and less than 1. 3. Create and explain a pattern that shows a constant ratio. 4. Analyze situations to determine whether ratios are appropriate to solve problems. 5. Determine equivalent ratios. 	<ol style="list-style-type: none"> 1. Work flexibly with fractions, decimals and percents to solve number sentences and word problems (e.g., 50% of 10 is the same as 0.5×10). 2. Create and explain ratios and proportions that represent quantitative relationships and equivalent ratios that represent given situations; develop, use, analyze and explain methods for solving numeric or word problems involving proportions. 	<ol style="list-style-type: none"> 1. Use ratios to describe problem situations. 2. Develop, use, analyze and explain methods for solving number sentences, geometric similarities or word problems involving proportions with rational numbers. 3. Read, write, recognize, model and interpret percents, including those less than 1% and greater than 100%. 4. Solve number sentences and problems involving fractions, decimals and percents (e.g., percent increase and decrease, interest rates, tax, discounts, tips).

MATHEMATICS CURRICULUM – ESTIMATE & MEASURE

GOAL 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

Standard A: Measure and compare quantities using appropriate units, instruments and methods.

Standard B: Estimate measurements and determine acceptable levels of accuracy.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Explore the use of rulers. 2. Explore units of time using calendars and clocks. 3. Recognize penny, nickel and dime. 4. Estimate and measure length of objects using non-standard, standard and metric tools. 	<ol style="list-style-type: none"> 1. Determine the attributes of an object that are measurable (e.g., length and weight are measurable; color and texture are not). 2. Compare and order objects according to measurable attributes. 3. Estimate nonstandard measurements of length, weight and capacity. 4. Measure objects using non-standard and standard units. 5. Explore and describe chronological events (e.g., calendars, timelines, seasons). 6. Explore telling time using an analog clock. 7. Identify units of money and the value of each (penny, nickel, dime, quarter). 8. Count like and unlike sets of coins. 	<ol style="list-style-type: none"> 1. Identify the type of measure (e.g., weight, height, volume, temperature) for each measurable attribute. 2. Estimate and measure objects using standard units. 3. Order events chronologically. 4. Tell time using an analog clock. 5. Estimate elapsed time and explore measuring elapsed time to the half hour. 6. Describe relationships within units of time, money, and length (e.g., 12 inches in a foot). 7. Count, compare and order sets of unlike coins. 8. Show equivalent amounts of money. 9. Estimate the amount of money needed to make purchases. 10. Explore and explain making change using manipulatives. 	<ol style="list-style-type: none"> 1. Measure and compare standard units and metric units. 2. Estimate and measure perimeter of simple polygons. 3. Estimate, measure and compare volume using cups, pints, quarts, gallons, liter and milliliter manipulatives. 4. Estimate, measure and compare mass/weight using pound, ounce, gram and kilogram scales. 5. Read, write and tell time to the minute using analog and digital clocks. 6. Determine elapsed time. 7. Compute time in days, months and years. 8. Identify all US coins and bills and identify their value; add, subtract and compare monetary values; make change. 9. Determine if there is too much or too little information given to solve a problem. 	<ol style="list-style-type: none"> 1. Measure to $\frac{1}{4}$ inch. 2. Convert U.S. customary measurements into larger or smaller units with the help of conversion charts. 3. Convert linear metric measurements into larger or smaller units with the help of a conversion chart. 4. Solve problems using elapsed time. 5. Develop and use mathematical language for volume, weight/mass, capacity, area and angle measures to make comparisons and estimates. 6. Develop and discuss strategies for estimating the perimeters, areas and volumes of regular and non-regular shapes.

MATHEMATICS CURRICULUM – ESTIMATE & MEASURE

GOAL 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.
 Standard A: Measure and compare quantities using appropriate units, instruments and methods.
 Standard B: Estimate measurements and determine acceptable levels of accuracy.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/ Algebra
<ol style="list-style-type: none"> 1. Convert U.S. customary and metric measurements into larger or smaller units. 2. Draw an angle of any given measure using a protractor or angle ruler. 3. Explain the meaning of a measurement answer in context and that all measurements are approximations. 4. Describe how precision is affected by choice of units. 5. Estimate the perimeter, area, and/or volume of regular and irregular shapes and objects. 6. Select appropriate tools to measure, draw, or construct figures. 7. Develop and use formulas to determine the area of squares, rectangles and right triangles. 8. Read and interpret a scale on a map or a scale drawing using the idea of a constant ratio (e.g., 1" represents 1 mile) and use it to answer questions about actual measurement. 	<ol style="list-style-type: none"> 1. Measure, with a greater degree of accuracy, any angle using a protractor or angle ruler. 2. Estimate distance, weight, temperature and elapsed time using reasonable units and with acceptable levels of accuracy. 3. Solve problems that involve converting within the customary and metric measurement systems. 	<ol style="list-style-type: none"> 1. Select and justify measurements of length, capacity, weight and mass, in the customary and metric systems and use a ruler, protractor, compass and balance scale as measurement tools. 2. Estimate accurately and determine acceptable limits when measuring angles, area and volume. 	<ol style="list-style-type: none"> 1. Solve problems involving perimeter/circumference and area of polygons, circles and composite figures using diagrams, models and grids or by measuring or using given formulas (may include sketching a figure from its description). 2. Compare and estimate (including perimeter/circumference), area, volume, weight/mass and angles (0° to 360°). 3. Solve problems involving the volume or surface area of a right rectangular prism, right circular cylinder, pyramid, cone, or composite shape using an appropriate formula or strategy. 4. Solve problems involving unit conversions within the same measurement system for length, weight/mass, capacity, square units and measures expressed as rates (e.g., converting feet/second to yards/minute as well as converting customary to metric). 5. Solve problems involving scale drawings, maps and indirect measurement (e.g., determining the height of a building by comparing its known shadow length to the known height and shadow of another object).

MATHEMATICS CURRICULUM – ESTIMATE & MEASURE

GOAL 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

Standard C: Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<p>1. Introduce math tools to solve problems and interpret results.</p>	<p>1. Select appropriate nonstandard measurement units to measure length, weight and capacity (e.g., number of handfuls of cubes to fill a container).</p>	<p>1. Select an appropriate unit and tool for measurement. 2. Explore and describe perimeter and area of real objects. 3. Solve problems using money and time.</p>	<p>1. Draw a line segment to a given inch or centimeter. 2. Construct squares, triangles and rectangles using rulers and graph paper. 3. Use calculators to compute perimeter when side measurements are given. 4. Using rulers, find perimeters and area by measuring sides.</p>	<p>1. Select and apply appropriate standard units and tools to measure the size of angles. 2. Determine the volume of a cube or rectangular prism using concrete materials. 3. Create an accurate representation of a polygon with a given perimeter or area.</p>

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Standard C: Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.

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Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/ Algebra
See Goal 7, Standard A (combined Standards A, B and C)	<ol style="list-style-type: none"> 1. Select and justify an appropriate formula to find the area of triangles, parallelograms and trapezoids. 2. Select an appropriate formula or strategy to find the surface area and volume of rectangular and triangular prisms. 3. Develop and use formulas for determining the area of triangles, parallelograms and trapezoids. 4. Develop and use the formula for determining the volume of a rectangular and triangular prism. 5. Calculate the surface area of a cube, rectangular prism and triangular prism. 6. Develop and use formulas for determining the circumference and area of circles. 7. Solve problems involving scale drawings and maps. 	<ol style="list-style-type: none"> 1. Select and use appropriate units and tools to measure volume, surface area and mass/weight accurately for a given situation. 2. Select an appropriate formula to determine the circumference and the area of circles. 3. Select and explain an appropriate formula or strategy to find the surface area and volume of rectangular and triangular pyramids, cylinders and cones. 4. Solve simple problems involving rate, time and distance. 5. Solve problems involving mixed units of the same attribute, including time, money, length and area. 6. Explore and explain derived measurements (e.g., velocity and density). 7. Develop and discuss strategies to find the area of combined shapes. 	See Goal 7, Standard A (combined Standards A, B and C)

MATHEMATICS CURRICULUM – ALGEBRA & ANALYTICAL MEASURES

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard A: Describe numerical relationships using variables and patterns.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Identify and describe simple patterns. 2. Continue a given pattern. 3. Sort objects and describe sorting process. 	<ol style="list-style-type: none"> 1. Describe common and uncommon attributes (all, some, none) in a set. 2. Recognize, describe and extend patterns such as sequences of sounds, motions, shapes, or simple numeric patterns and translate from one representation to another (e.g., red-blue-red-blue translates to snap-clap-snap-clap). 3. Describe given patterns using letters. 4. Analyze repeating patterns. 	<ol style="list-style-type: none"> 1. Sort, classify and order objects by multiple properties. 2. Create rules for multiple sortings in a single set. 3. Recognize, describe and extend geometric and numeric patterns. 4. Create patterns concretely and numerically to match a given letter description (e.g., AAB) and make predictions. 5. Extend numeric patterns involving addition and/or subtraction (e.g., 1, 3, 5, ... what are the next two terms?). 6. Change patterns by manipulation of concrete materials. 7. Describe missing units in a pattern. 8. Analyze growing patterns. 	<ol style="list-style-type: none"> 1. Write, tell and show family patterns with manipulatives. 2. Discover the pattern in a sequence of numbers and extend the pattern. 3. Identify missing variables in addition, subtraction, multiplication and division number sentences. 4. Represent the idea of a variable as an unknown quantity using a letter or a symbol in a numerical sentence. 5. Identify fact families in multiplication and division 	<ol style="list-style-type: none"> 1. Identify a number pattern, both increasing and decreasing, and extend the number sequence. 2. Determine the missing number(s) in a complex repeating pattern. 3. Construct and solve simple number sentences using a symbol for a variable. 4. Make generalizations given a specific pattern. 5. Create, describe and extend patterns. 6. Describe a pattern with one operation, verbally and symbolically, given a table of input/output numbers.

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Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Describe, extend and make generalizations about given geometric and numeric patterns. 2. Describe a pattern, with at least two operations, verbally and symbolically, given a table of input/output numbers. 3. Demonstrate equality of two expressions with variables (e.g., $28 + 35 = 35 + n$). 4. Describe situations involving inverse relationships (e.g., the more people, the fewer cookies per person). 	<ol style="list-style-type: none"> 1. Investigate, extend and describe arithmetic and geometric sequences of numbers whether presented in numeric or pictorial form. 2. Evaluate algebraic expressions for given values. 3. Express properties of numbers and operations using variables (e.g., the commutative property is $m + n = n + m$). 4. Recognize and generate equivalent forms of simple algebraic expressions. 	<ol style="list-style-type: none"> 1. Investigate, describe and generalize a variety of patterns using variable or recursive techniques. 2. Represent situations using variables. 3. Recognize and generate equivalent forms of simple algebraic expressions. 	<ol style="list-style-type: none"> 1. Analyze, extend and create sequences or linear functions and determine algebraic expressions to describe the nth term of a sequence. 2. Write an expression using variables to represent unknown quantities. 3. Investigate and describe linear and quadratic patterns. 4. Write, evaluate and simplify algebraic expressions, equations and inequalities. 5. Recognize, generate and write equivalent forms for linear equations, inequalities and systems of equations. 6. Model and describe slope as a constant rate of change. 7. Determine an equation of a line of best fit from a set of ordered pairs or set of data points. 8. Simplify algebraic expressions using a variety of methods including factoring. 9. Justify results (explain reasoning) including those carried out by technology. 10. Solve and graph equations and inequalities containing absolute value.

MATHEMATICS CURRICULUM – ALGEBRA & ANALYTICAL MEASURES

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard B: Interpret and describe numerical relationships using tables, graphs and symbols.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Make and read graphs.	1. Describe and compare qualitative change, (e.g., student grows taller). 2. Read and complete a concrete pictorial and bar graph. 3. Use information to make a concrete pictorial and bar graph. 4. Complete hundred chart and find pattern.	1. Describe and compare quantitative change (e.g., student grows two inches in one year).	1. Solve a problem using a table when data is given. 2. Create a table by extracting the data from a word problem. 3. Accurately read and interpret information on graphs, charts and tables. 4. Complete a multiplication table.	1. Create a table that describes a function rule for a single operation. 2. Demonstrate, in simple situations, how a change in one quantity results in a change in another quantity (e.g., increase the measure of the side of a square and the perimeter increases). 3. Identify situations with well-defined patterns and varying rates of change using words, tables and graphs (e.g., represent temperature and time in a line graph).

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As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Model problem situations with objects and equations to draw conclusions. Represent and analyze patterns and functions using words, tables and graphs. 2. Demonstrate, in simple situations, how a change in one quantity results in a change in another quantity (e.g., input-output tables). 3. Interpret and express different representations (tables and graphs) of whole number relationships. 	<ol style="list-style-type: none"> 1. Graph simple inequalities on a number line. 2. Create a table of values that satisfy a simple linear equation and plot the points on the Cartesian plane. 3. Describe verbally, symbolically and graphically, a simple relationship presented by a set of ordered pairs of numbers. 	<ol style="list-style-type: none"> 1. Create a table of values that satisfy a power or exponential relationship and plot the points on the Cartesian plane. 2. Graph two inequalities with a single variable, including the intersection or union of these inequalities, on a number line. 	<ol style="list-style-type: none"> 1. Recognize, describe and extend patterns using rate of change. 2. Interpret the meaning of slope and intercepts in linear situations. 3. Graph linear equations, inequalities and absolute values on the Cartesian plane. 4. Graph absolute values on a number line. 5. Determine the slope of a line from a graph, in an equation and from a table of values. 6. Interpret the role of the coefficients and constants on the graph of linear and quadratic functions given a set of equations. 7. Identify the graphs of linear, absolute value and quadratic functions.

MATHEMATICS CURRICULUM – ALGEBRA & ANALYTICAL MEASURES

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard C: Solve problems using systems of numbers and their properties.

Standard D: Use algebraic concepts and procedures to represent and solve problems.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Solve story problems using manipulative, pictures and numbers. 2. Use manipulatives to represent and solve addition and subtraction problems. 3. Explain the concept of “adding on” and “taking away.” 	<ol style="list-style-type: none"> 1. Use manipulatives or draw pictures to find sums, differences, missing addends, missing subtrahends. 2. Solve simple number sentences with variables (e.g., missing addend problems). 3. Solve real life word problems using patterns. 	<ol style="list-style-type: none"> 1. Solve word problems involving unknown quantities. 2. Apply the relationship of addition and subtraction families to solve for an unknown quantity. 3. Solve problems and justify solutions using patterns. 	<ol style="list-style-type: none"> 1. Identify and use the associative, commutative and zero properties in multiplication and addition. 2. Identify the identity property in addition and multiplication. 3. Write multiplication and division facts and use manipulatives to show groupings. 4. Use addition to check answers in subtraction problems with two, three, and four digit numbers. 5. Find the missing factors in multiplication problems. 6. Find the missing dividend or divisor in division problems. 7. Demonstrate how to select and use an appropriate operation to solve problems involving patterns (e.g., save one penny on day 1, double that amount each day for 10 days). 8. Solve word problems involving unknown quantities. 	<ol style="list-style-type: none"> 1. Solve problems with whole numbers using appropriate properties of operations. 2. Solve one-step linear equations with one missing value in isolation and in problem solving situations.

MATHEMATICS CURRICULUM – ALGEBRA & ANALYTICAL MEASURES

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard C: Solve problems using systems of numbers and their properties.

Standard D: Use algebraic concepts and procedures to represent and solve problems.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade 8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Solve problems with whole numbers using order of operations, equality properties and appropriate properties (commutative, associative, zero, identity). 2. Create and solve linear equations involving whole numbers using a variety of methods (e.g., guess and check, bean stick counters). 	<ol style="list-style-type: none"> 1. Identify and explain incorrect uses of the commutative, associative and distributive properties. 2. Identify and provide examples of the identity property of addition and multiplication. 3. Identify and provide examples of inverse operations. 4. Explain why division by zero is undefined. 5. Create, model and solve algebraic equations using concrete materials. 6. Solve linear equations, including direct variation, with whole number coefficients and solutions using algebraic or graphical representations. 	<ol style="list-style-type: none"> 1. Solve arithmetic and linear equations using the properties of equality and inequality. 2. Solve simple linear equations, including direct variation, with integral coefficients, using algebraic or graphical representations. 3. Solve simple problems involving quadratic relationships using technology for graphing. 	<ol style="list-style-type: none"> 1. Use linear systems to solve real life problems. 2. Describe the relationship of a mathematical model of a problem to the real problem. 3. Represent and solve algebraic equations or word problems that involve linear equations or inequalities using algebraic or graphical representations. 4. Solve absolute value equations or inequalities in one variable. 5. Solve equivalent forms of equations, inequalities and systems of equations. 6. Identify and provide examples or counter examples as appropriate for the reflexive, symmetric and transitive properties of inequality. 7. Solve simple quadratic equations using algebraic or graphical representations.

MATHEMATICS CURRICULUM - GEOMETRY

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard A: Demonstrate and apply geometric concepts involving points, lines, planes and space.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Identify circle, square, triangle and rectangle. 2. Begin to recognize other shapes of objects. 3. Explore three-dimensional shapes. 	<ol style="list-style-type: none"> 1. Identify two- and three-dimensional shapes. 2. Model two-dimensional geometric shapes by drawing or building. 3. Describe and interpret relative positions in space and apply concepts of relative position (e.g., above/below). 4. Recognize and describe shapes that have line symmetry. 5. Identify geometric shapes and structures in the environment. 6. Explore the effects of translations (slides), reflections (flips) and rotations (turns) with concrete objects. 	<ol style="list-style-type: none"> 1. Investigate and predict the results of putting together and taking apart two- and three-dimensional shapes (e.g., put two triangles together to make a quadrilateral). 2. Describe and interpret direction and distance in navigating space and apply concepts of direction and distance (e.g., nearer/farther). 3. Perform translations (slides), reflections (flips) and rotations (turns) with concrete objects. 4. Create and complete shapes that have line symmetry. 	<ol style="list-style-type: none"> 1. Find and name two- and three-dimensional geometric figures in every day objects. 2. Identify the properties, number of sides and corners of geometric shapes. 3. Draw two-dimensional shapes using rulers, graphing paper and tracing paper. 4. Visualize the transition from two-dimensional to its three-dimensional figure. 5. Construct three-dimensional geometric figures. 6. Locate and identify points using numbers and symbols on a grid and describe how points relate to each other on a grid. 	<ol style="list-style-type: none"> 1. Identify, draw and label lines, line segments, rays, parallel lines, intersecting lines, perpendicular lines, acute angles, obtuse angles, right angles and acute, obtuse, right, scalene, isosceles and equilateral triangles. 2. Identify, draw and build regular and irregular polygons. 3. Read and plot ordered pairs of numbers in the positive quadrant of the Cartesian plane. 4. Describe paths and movement using coordinate systems. 5. Differentiate between polygons and non-polygons. 6. Identify and label radius and diameter of a circle. 7. Explore and describe rotational symmetry of two- and three-dimensional shapes. 8. Construct a circle with a specified radius or diameter using a compass.

MATHEMATICS CURRICULUM - GEOMETRY

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard A: Demonstrate and apply geometric concepts involving points, lines, planes and space.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Identify, compare and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes. 2. Classify two- or three-dimensional shapes according to their properties (e.g., regular and irregular types of quadrilaterals, pyramids and prisms). 3. Investigate and describe the results of subdividing and combining shapes. 4. Describe paths using coordinate systems. 5. Determine the distance between points along horizontal and vertical lines of a coordinate system. 6. Identify and justify rotational symmetry in two- and three-dimensional shapes. 7. Identify and describe how geometric figures are used in practical settings (e.g., construction, art, advertising, architecture). 8. Identify and label radius, diameter, chord and circumference of a circle. 9. Copy a line segment or an angle using a straightedge and a compass. 10. Construct angles and perpendicular bisectors of line segments. 11. Solve problems using properties of triangles (e.g., sum of interior angles of a triangle is 180°). 	<ol style="list-style-type: none"> 1. Plot and read ordered pairs of numbers in all four quadrants. 2. Describe sizes, positions and orientations of shapes under transformations, including dilations. 3. Perform simple constructions (e.g., equal segments, angle and segment bisectors, or perpendicular lines, inscribing a hexagon in a circle) with a compass and straightedge or a mira. 4. Determine and describe the relationship between pi, the diameter, the radius and the circumference of a circle. 5. Determine unknown angle measures using angle relationships and properties of a triangle or a quadrilateral. 	<ol style="list-style-type: none"> 1. Examine and describe a geometric shape, such as a regular polygon or a quadrilateral with pairs of parallel or perpendicular sides, using coordinate geometry. 2. Draw geometric shapes with specified properties, such as side lengths or angle measures. 3. Examine and describe line or rotational symmetry of objects in terms of transformations. 4. Draw transformations of figures in a plane to match specified criteria. 5. Perform constructions of congruent angles or parallel lines using a compass and straightedge, paper folding, or a mira. 6. Determine the relationship among the number of edges, faces and vertices in a three-dimensional object. 	<ol style="list-style-type: none"> 1. Solve problems involving two- and three-dimensional shapes. 2. Apply and use the Pythagorean Theorem. 3. Identify, describe and determine the radius, diameter and circumference of a circle and their relationship to each other and to pi. 4. Graph points and identify coordinates of points on the Cartesian coordinate plane. 5. Represent and identify geometric figures using coordinate geometry. 6. Use transformations in a Cartesian coordinate plane. 7. Identify relationships of angles formed by intersecting lines. 8. Solve problems involving vertical, complementary and supplementary angles.

MATHEMATICS CURRICULUM - GEOMETRY

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard B: Identify, describe, classify and compare relationships using points, lines, planes, and solids.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Identify and sort objects according to their shape. 	<ol style="list-style-type: none"> 1. Identify objects that are the same shape. 2. Compare and sort two- and three-dimensional objects. 3. Compare and contrast sides and corners of basic geometric shapes. 	<ol style="list-style-type: none"> 1. Identify objects that are congruent 2. Compare and contrast attributes of two- and three-dimensional objects using appropriate vocabulary. 	<ol style="list-style-type: none"> 1. Identify parallel and intersecting lines. 2. Identify polygons v. non-polygons by defining components. 3. Recognize and identify symmetrical figures with one and two lines of symmetry. 4. Identify congruent figures in different positions. 5. Identify similar figures that are not congruent and tell how they are similar. 	<ol style="list-style-type: none"> 1. Determine congruence and similarity of given shapes. 2. Explore polyhedra (three-dimensional figures) using concrete models.

MATHEMATICS CURRICULUM - GEOMETRY

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard B: Identify, describe, classify and compare relationships using points, lines, planes, and solids.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Demonstrate congruence of plane figures using transformations (translation, rotation, reflection). 2. Determine if two polygons are congruent using measures of angles and sides. 3. Match a front, right side and top view drawing with a three-dimensional model built with cubes. 	<ol style="list-style-type: none"> 1. Determine the relationships between the number of vertices or sides in a polygon, the number of diagonals and the sum of its angles. 2. Analyze quadrilaterals for defining characteristics. 3. Create a three-dimensional object from any two-dimensional representation of the object, including multiple views, nets, or technological representations. 4. Identify and describe the five regular polyhedra. 5. Create regular and semi-regular tessellations using pattern blocks, other manipulatives or technology to tile a plane. 	<ol style="list-style-type: none"> 1. Describe, classify and justify relationships among types of two- and three-dimensional objects using their defining properties. 2. Solve problems using properties of polygons and circles. 3. Classify and order quadrilaterals according to their properties. 	<ol style="list-style-type: none"> 1. Identify front, side and top views of a three-dimensional solid built with cubes. 2. Solve problems involving congruent and similar figures. 3. Relate absolute value to distance on the number line.

MATHEMATICS CURRICULUM - GEOMETRY

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard C: Construct convincing arguments and proofs to solve problems.

Standard D: Use trigonometric ratios and circular functions to solve problems (only applies to grades 7 & 8).

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Verbally explain the different qualities of the shape of an object.	1. Recognize and explain a geometric pattern. 2. Verbalize the rule for the geometric pattern sequence (e.g., amount doubles).	1. Justify an extension of a pattern.	1. Verbally describe the properties of basic geometric figures. 2. Create and explain patterns using pattern blocks and manipulatives.	3. Make and test predictions about mathematical properties and relationships and justify the conclusions.

MATHEMATICS CURRICULUM - GEOMETRY

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard C: Construct convincing arguments and proofs to solve problems.

Standard D: Use trigonometric ratios and circular functions to solve problems (only applies to grades 7 & 8).

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Make and test conjectures about mathematical properties and relationships and develop logical arguments to justify conclusions. 2. Make and test conjectures about the results of subdividing and combining shapes. 	<ol style="list-style-type: none"> 1. Make, test and justify conjectures about various quadrilateral and triangle relationships, including the triangle inequality. 2. Justify the relationship between vertical angles. 3. Justify that the sum of the angles of a triangle is 180 degrees. 	<ol style="list-style-type: none"> 1. Create and critique arguments about geometric relationships in figures based upon inductive and deductive reasoning. 2. Justify the area formulas for triangles, parallelograms and trapezoids based on the formula for the area of a rectangle. 3. Make and test conjectures about the relationships between side length and angle measure in various triangles and quadrilaterals. 4. Justify the properties of angles formed by parallel lines cut by a transversal using appropriate terminology. <p>Standard D</p> <ol style="list-style-type: none"> 1. Analyze the relationship between sides of right triangles using the Pythagorean theorem. 2. Solve problems that involve the use of proportions and the Pythagorean theorem in similar right triangles with whole number side lengths. 	<ol style="list-style-type: none"> 1. Create and critique arguments concerning geometric ideas and relationships, such as congruence, similarity, the Pythagorean relationship, or formulas for surface areas or volume of simple three-dimensional objects. 2. Represent, solve and explain numerical and algebraic relationships using geometric concepts. 3. Provide examples or counter-examples to either illustrate or disprove conjectures about geometric characteristics. <p>Standard D</p> <ol style="list-style-type: none"> 1. Recognize Pythagorean Triples. 2. Identify the basic trigonometric ratio in terms of lengths of the sides of a right triangle and an acute angle.

MATHEMATICS CURRICULUM PROJECT

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; interpret uncertainty using concepts of probability.

Standard A: Organize, describe and make predictions from existing data.

Standard B: Formulate questions, design data collection methods, gather and analyze data and communicate findings.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Organize data and put into pictographs, tallies, tables, and bar graphs. 2. Gather data and answer simple questions about the data collection. 	<ol style="list-style-type: none"> 1. Organize, describe, and label simple data displays such as pictographs, tallies, tables, and bar graphs. 2. Compare numerical information derived from tables and graphs. 3. Gather data to answer a simple question. 	<ol style="list-style-type: none"> 1. Organize and interpret simple data displays such as pictographs, tallies, tables, and bar graphs. 2. Make predictions from simple data. 3. Gather data by creating and using interview questions. 	<ol style="list-style-type: none"> 1. Read, organize, display and verbally explain data using pictures, objects, charts, tables and graphs. 2. Make simple predictions based on given data. 3. Ask and answer questions based on given data. 4. Develop a survey of questions, gather data and create display to communicate information. 5. Make simple interpretations of displays of tallies, charts, tables or graphs. 6. Complete missing parts of a graph, chart, or table for given data. 7. Introduce the term “mode” in relation to a given set of data. 8. Construct tally charts, pictographs and bar graphs. Construct circle graphs to show $\frac{1}{2}$ and $\frac{1}{4}$. 	<ol style="list-style-type: none"> 1. Interpret and represent data using tables and graphs such as bar graphs, pictographs, line plots and line graphs. 2. Recognize and predict trends of varying data sets. 3. Arrange given data in order, least to greatest or greatest to least, and determine minimum value, maximum value, range, mode, and median for an odd number of data points. 4. Compare different representations of the same data and evaluate how well each representation shows important aspects of the data. 5. Propose and justify conclusions and predictions that are based on data. 6. Collect data using observations and experiments. 7. Propose a further investigation to verify or refute a prediction.

MATHEMATICS CURRICULUM PROJECT

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; interpret uncertainty using concepts of probability.

Standard A: Organize, describe and make predictions from existing data.

Standard B: Formulate questions, design data collection methods, gather and analyze data and communicate findings.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Represent given data using pictograph, line plot, Venn diagram, double bar graphs, double line graphs, and stem and leaf plots with and without technology. 2. Select an appropriate graph format to display given data. 3. Read, interpret, infer, predict, draw conclusions, and evaluate data from any graph. 4. Determine mean, median, mode, minimum value, maximum value, and range, and discuss what each does to help interpret a given set of data. 5. Design investigations to address a question and consider how data-collection methods affect the nature of a data set. 6. Propose and justify conclusions and predictions that are based on data, and design studies to further investigate the conclusions or predictions. 	<ol style="list-style-type: none"> 1. Construct, read, interpret, infer, predict, draw conclusions, and evaluate data from various displays, including circle graphs. 2. Recognize and explain misleading displays of data due to inappropriate intervals on a scale. 3. Gather data by conducting simple simulations. 4. Collect data over time with or without technology. 	<ol style="list-style-type: none"> 1. Construct, read, interpret, infer, predict, draw conclusions, and evaluate data from various displays. 2. Find, use, and interpret measures of central tendency. 3. Construct an equivalent data representation given data in a different form. 4. Recognize potential bias in data collection methods or data presentation. 5. Select and use appropriate data gathering techniques. 6. Formulate new questions using conjectures, and plan new studies to answer them. 	<ol style="list-style-type: none"> 1. Read, interpret (including possible misleading characteristics) and make predictions from data represented in a variety of graphs. 2. Compare and contrast the effectiveness of different representations of the same data. 3. Create a bar graph, chart/table, line graph, or circle graph and solve a problem using the data in the graph for a given set of data. 4. Identify or draw a reasonable approximation of the line of best fit from a set of data or a scatter plot and use the line to make predictions. 5. Analyze and apply measures of central tendency (mode, range, median and mean) in problem-solving situations.

MATHEMATICS CURRICULUM – DATA ANALYSIS & PROBABILITY

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; interpret uncertainty using concepts of probability.

Standard C: Determine, describe and apply the probabilities of events.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<p>1. Make predictions based on given data.</p>	<p>1. Identify possible and impossible results of probability events using concrete materials. 2. Determine all possible outcomes of a given situation.</p>	<p>1. Identify and discuss likely, unlikely, and impossible probability events. 2. Communicate and display results of probability events in order to make predictions of future events.</p>	<p>1. Make predictions, estimate and guess the outcomes of an event in a controlled setting. 2. List all possible outcomes using terms “certain,” “most likely,” “least likely,” “equally likely,” “possible” and “impossible.” 3. Decide if predictions were reasonable.</p>	<p>1. List all possible outcomes of a single event and tell whether an outcome is certain, impossible, likely, or unlikely. 2. Describe the probability of an event using terminology such as “5 chances out of 8.”</p>

MATHEMATICS CURRICULUM – DATA ANALYSIS & PROBABILITY

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; interpret uncertainty using concepts of probability.

Standard C: Determine, describe and apply the probabilities of events.

As a result of their schooling students will be able to...

Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. List all possible outcomes of compound, independent events (e.g., toss a coin and spin a spinner). 2. Assign a value of zero to probabilities that are impossible and a value of one to probabilities that are certain. 3. Express simple probabilities as a fraction between zero and one. 4. Predict the probability of outcomes of simple experiments and test the predictions. 	<ol style="list-style-type: none"> 1. Record probabilities as fractions, decimals, or percents. 2. Demonstrate that the sum of all probabilities equals one. 3. Determine empirical probabilities from a set of data provided. 4. Set up a simulation to model the probability of a single event. 5. Discuss the effect of sample size on the empirical probability compared to the theoretical probability. 6. List outcomes by a variety of methods (e.g., tree diagram). 7. Determine theoretical probabilities of simple events. 	<ol style="list-style-type: none"> 1. Discuss odds versus probability. 2. Predict and determine the probability and odds of events using proportionality and basic understanding of probability. 3. Compute probabilities for simple compound events using methods such as organized lists and tree diagrams. 	<ol style="list-style-type: none"> 1. Solve problems involving the probability of an event composed of repeated trials and compound events (including independent events). 2. Represent all possible outcomes for simple or compound events. 3. Solve simple problems involving the number of ways objects can be arranged.