

The *Glance Across the Grades: Kindergarten to Grade 9 Mathematics* resource is a compilation of the outcomes into suggested categories or *learning targets*. These *learning targets* sort the outcomes and allow teachers to preview the outcomes across grade levels. It should be noted that this is only one way to sort the outcomes across the grades; however, this breakdown will enable teachers to differentiate teaching within each strand of the curriculum. This resource can assist teachers in

- deepening understandings of the mathematics strands and outcomes
- facilitating purposeful teaching
- identifying the continuum of student learning across the *learning targets*
- monitoring individual student learning and being able to specifically discuss his or her progress and identify learning gaps
- differentiating instruction
- building essential connections to learning within and between the *learning targets*

The *big ideas*, located under each learning target, are statements of an idea that is central to the learning of mathematics and makes instruction purposeful. The *big ideas* are compilations from the work of Marian Small, John Van de Walle, and Randall I. Charles.

### STRANDS

#### NUMBER

- ◆ Counting
- ◆ Representation of Whole Numbers
- ◆ Representation of Rational Numbers
- ◆ Operations with Whole Numbers
  - Addition/Subtraction
  - Multiplication/Division
- ◆ Operations with Rational Numbers

#### PATTERNS AND RELATIONS

- ▶ **Patterns**
  - ◆ Patterning and Algebraic Thinking
- ▶ **Variables and Equations**
  - ◆ Algebraic Representations with Expressions
  - ◆ Algebraic Representations with Equations

#### SHAPE AND SPACE

- ▶ **Measurement**
  - ◆ Length
  - ◆ Area
  - ◆ Volume (Capacity)
  - ◆ Mass (Weight)
  - ◆ Time
  - ◆ Angles
- ▶ **3-D Objects and 2-D Shapes**
  - ◆ Identifying, Sorting, Comparing, and Constructing
- ▶ **Transformations**
  - ◆ Position and Motion

#### STATISTICS AND PROBABILITY

- ▶ **Data Analysis**
  - ◆ Collection, Organization, and Analysis of Data
- ▶ **Chance and Uncertainty**
  - ◆ Probability

- ▶ **Substrands**
  - ◆ Learning Targets

## Big Ideas

### Number Strand

#### Counting

- Counting tells how many or how much.
- Numbers are related to each other through a variety of number relationships.
- Quantities can be estimated by using referents.

#### Representation of Whole Numbers

#### Representation of Rational Numbers

- Quantities can be represented concretely, pictorially, and symbolically.
- There are different but equivalent representations of numbers.
- Benchmark numbers are useful for comparing, relating, and estimating numbers.
- Our number system is based on patterns (place value).
- The position of a digit in a number determines the quantity it represents.
- Classifying numbers provides information about their characteristics.

#### Operations with Whole Numbers (Addition/Subtraction)

#### Operations with Whole Numbers (Multiplication/Division)

#### Operations with Rational Numbers

- The four operations are intrinsically related.
- Flexible methods of calculation in all operations involve decomposing and composing numbers in a wide variety of ways.
- Flexible methods of calculation require a strong understanding of the operations and properties of the operations.
- There are a variety of appropriate ways to estimate sums, differences, products, and quotients, depending on the context and the numbers involved.
- Personal strategies and algorithms provide flexible and efficient methods of calculating that vary depending on the context and the numbers involved.

### Patterns and Relations Strand

#### Patterns

#### Patterning and Algebraic Thinking

- Patterns can be represented in a variety of ways.
- Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.
- Data can be arranged to highlight patterns and relationships.

#### Variables and Equations

#### Algebraic Representations with Expressions

#### Algebraic Representations with Equations

- Algebra, with the use of symbols or variables, expressions, and equations, is a tool for generalizing arithmetic and representing mathematical situations and patterns in our world.
- The equal sign describes the balance that exists between the quantities on either side of the equal sign.
- Equality and inequality are used to express relationships between two quantities.
- Relationships between quantities can be described using rules involving variables.

### Shape and Space Strand

#### Measurement

#### Length / Area / Volume (Capacity) / Mass (Weight) / Time / Angles

- It is necessary to understand the attributes of the object before anything can be measured.
- Measurement involves a selected attribute of an object (length, area, mass, volume, capacity) and a comparison of the object being measured against non-standard and standard units of the same attribute.
- The longer the unit of measure, the fewer units it takes to measure the object.
- The use of standard measurement units simplifies communication about the size of objects.

#### 3-D Objects and 2-D Shapes

#### Identifying, Sorting, Comparing, and Constructing

- Two- and three-dimensional objects can be described, classified, and analyzed by their attributes.

#### Transformations

#### Position and Motion

- Shapes can be relocated and reoriented using mathematical procedures.
- Shapes can be described in terms of their location in a plane or in a space.

### Statistics and Probability Strand

#### Data Analysis

#### Collection, Organization, and Analysis of Data

- Data is gathered and organized in order to answer questions.
- The question that needs to be answered determines the data that will be collected.
- The type of data determines the best way to organize and represent it.
- Visual displays quickly reveal information about data.
- Information from data representations is used to make references, to interpret, to draw conclusions, and to make predictions.

#### Chance and Uncertainty

#### Probability

- Probability involves the use of mathematics to describe the level of certainty that an event will occur.
- Probabilities, both theoretical and experimental, can be determined in different ways.

# Glance Across the Grades: NUMBER

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: **Develop number sense.**

Specific Learning Outcomes

## Counting

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Counting tells how many or how much.</li> <li>Numbers are related to each other through a variety of number relationships.</li> <li>Quantities can be estimated by using referents.</li> </ul>	<p>K.N.1. Say the number sequence by 1s, starting anywhere from 1 to 30 and from 10 to 1.                      [C, CN, V]</p> <p>K.N.5. Demonstrate an understanding of counting to 10 by</p> <ul style="list-style-type: none"> <li>indicating that the last number said identifies “how many”</li> <li>showing that any set has only one count</li> </ul> <p>[C, CN, ME, R, V]</p>	<p>1.N.1. Say the number sequence by</p> <ul style="list-style-type: none"> <li>1s forward and backward between any two given numbers (0 to 100)</li> <li>2s to 30, forward starting at 0</li> <li>5s and 10s to 100, forward starting at 0</li> </ul> <p>[C, CN, ME, V]</p> <p>1.N.3. Demonstrate an understanding of counting by</p> <ul style="list-style-type: none"> <li>using the counting-on strategy</li> <li>using parts or equal groups to count sets</li> </ul> <p>[C, CN, ME, R, V]</p> <p>1.N.6. Estimate quantities to 20 by using referents.                      [C, ME, PS, R, V]</p> <p>1.N.8. Identify the number, up to 20, that is one more, two more, one less, and two less than a given number.                      [C, CN, ME, R, V]</p>	<p>2.N.1. Say the number sequence from 0 to 100 by</p> <ul style="list-style-type: none"> <li>2s, 5s, and 10s, forward and backward, using starting points that are multiples of 2, 5, and 10 respectively</li> <li>10s using starting points from 1 to 9</li> <li>2s starting from 1</li> </ul> <p>[C, CN, ME, R]</p> <p>2.N.6. Estimate quantities to 100 using referents.                      [C, ME, PS, R]</p>	<p>3.N.1. Say the number sequence between any two given numbers forward and backward</p> <ul style="list-style-type: none"> <li>from 0 to 1000 by                             <ul style="list-style-type: none"> <li>10s or 100s, using any starting point</li> <li>5s, using starting points that are multiples of 5</li> <li>25s, using starting points that are multiples of 25</li> </ul> </li> <li>from 0 to 100 by                             <ul style="list-style-type: none"> <li>3s, using starting points that are multiples of 3</li> <li>4s, using starting points that are multiples of 4</li> </ul> </li> </ul> <p>[C, CN, ME]</p> <p>3.N.4. Estimate quantities less than 1000 using referents.                      [ME, PS, R, V]</p>						

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General Learning Outcome: **Develop number sense.**

Specific Learning Outcomes

## Representation of Whole Numbers

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Quantities can be represented concretely, pictorially, and symbolically.</li> <li>There are different but equivalent representations of numbers.</li> <li>Benchmark numbers are useful for comparing, relating, and estimating numbers.</li> <li>Our number system is based on patterns (place value).</li> <li>The position of a digit in a number determines the quantity it represents.</li> <li>Classifying numbers provides information about their characteristics.</li> </ul>	<p>K.N.2. Subitize and name familiar arrangements of 1 to 6 dots (or objects). [C, CN, ME, V]</p> <p>K.N.3. Relate a numeral, 1 to 10, to its respective quantity. [CN, R, V]</p> <p>K.N.4. Represent and describe numbers 2 to 10 in two parts, concretely and pictorially. [C, CN, ME, R, V]</p> <p>K.N.6. Compare quantities, 1 to 10</p> <ul style="list-style-type: none"> <li>using one-to-one correspondence</li> <li>by ordering numbers representing different quantities.</li> </ul> <p>[C, CN, V]</p>	<p>1.N.2. Subitize and name familiar arrangements of 1 to 10 dots (or objects). [C, CN, ME, V]</p> <p>1.N.4. Represent and describe numbers to 20, concretely, pictorially, and symbolically. [C, CN, V]</p> <p>1.N.5. Compare and order sets containing up to 20 elements to solve problems by using</p> <ul style="list-style-type: none"> <li>referents</li> <li>one-to-one correspondence</li> </ul> <p>[C, CN, ME, PS, R, V]</p> <p>1.N.7. Demonstrate, concretely and pictorially, how a number, up to 30, can be represented by a variety of equal groups with and without singles. [C, R, V]</p>	<p>2.N.2. Demonstrate if a number (up to 100) is even or odd. [C, CN, PS, R]</p> <p>2.N.3. Describe order or relative position using ordinal numbers. [C, CN, R]</p> <p>2.N.4. Represent and describe numbers to 100, concretely, pictorially, and symbolically. [C, CN, V]</p> <p>2.N.5. Compare and order numbers up to 100. [C, CN, R, V]</p> <p>2.N.7. Illustrate, concretely and pictorially, the meaning of place value for numbers to 100. [C, CN, R, V]</p>	<p>3.N.2. Represent and describe numbers to 1000, concretely, pictorially, and symbolically. [C, CN, V]</p> <p>3.N.3. Compare and order numbers to 1000. [CN, R, V]</p> <p>3.N.5. Illustrate, concretely and pictorially, the meaning of place value for numerals to 1000. [C, CN, R, V]</p>	<p>4.N.1. Represent and describe whole numbers to 10 000, pictorially and symbolically. [C, CN, V]</p> <p>4.N.2. Compare and order numbers to 10 000. [C, CN]</p>	<p>5.N.1. Represent and describe whole numbers to 1 000 000. [C, CN, T, V]</p>	<p>6.N.1. Demonstrate an understanding of place value for numbers</p> <ul style="list-style-type: none"> <li>greater than one million</li> <li>less than one-thousandth</li> </ul> <p>[C, CN, R, T]</p> <p>6.N.7. Demonstrate an understanding of integers, concretely, pictorially, and symbolically. [C, CN, R, V]</p>		<p>8.N.1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially, and symbolically (limited to whole numbers). [C, CN, R, V]</p>	<p>9.N.1. Demonstrate an understanding of powers with integral bases (excluding base 0) and whole-number exponents by</p> <ul style="list-style-type: none"> <li>representing repeated multiplication using powers</li> <li>using patterns to show that a power with an exponent of zero is equal to 1</li> <li>solving problems involving powers</li> </ul> <p>[C, CN, PS, R]</p>

# Glance Across the Grades: NUMBER

**[C]** Communication  
**[CN]** Connections  
**[ME]** Mental Mathematics  
 and Estimation

**[PS]** Problem Solving  
**[R]** Reasoning  
**[T]** Technology  
**[V]** Visualization

General Learning Outcome: **Develop number sense.**

Specific Learning Outcomes

## Representation of Rational Numbers

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Quantities can be represented concretely, pictorially, and symbolically.</li> <li>There are different but equivalent representations of numbers.</li> <li>Benchmark numbers are useful for comparing, relating, and estimating numbers.</li> <li>Our number system is based on patterns (place value).</li> <li>The position of a digit in a number determines the quantity it represents.</li> <li>Classifying numbers provides information about their characteristics.</li> </ul>				<p>3.N.13. Demonstrate an understanding of fractions by</p> <ul style="list-style-type: none"> <li>explaining that a fraction represents a portion of a whole divided into equal parts</li> <li>describing situations in which fractions are used</li> <li>comparing fractions of the same whole with like denominators</li> </ul> <p>[C, CN, ME, R, V]</p>	<p>4.N.8. Demonstrate an understanding of fractions less than or equal to one by using concrete and pictorial representations to</p> <ul style="list-style-type: none"> <li>name and record fractions for the parts of a whole or a set</li> <li>compare and order fractions</li> <li>model and explain that for different wholes, two identical fractions may not represent the same quantity</li> <li>provide examples of where fractions are used</li> </ul> <p>[C, CN, PS, R, V]</p> <p>4.N.9. Describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically. [C, CN, R, V]</p> <p>4.N.10. Relate decimals to fractions (to hundredths). [CN, R, V]</p>	<p>5.N.7. Demonstrate an understanding of fractions by using concrete and pictorial representations to</p> <ul style="list-style-type: none"> <li>create sets of equivalent fractions</li> <li>compare fractions with like and unlike denominators</li> </ul> <p>[C, CN, PS, R, V]</p> <p>5.N.8. Describe and represent decimals (tenths, hundredths, thousandths), concretely, pictorially, and symbolically. [C, CN, R, V]</p> <p>5.N.9. Relate decimals to fractions (tenths, hundredths, thousandths). [CN, R, V]</p> <p>5.N.10. Compare and order decimals (tenths, hundredths, thousandths) by using</p> <ul style="list-style-type: none"> <li>benchmarks</li> <li>place value</li> <li>equivalent decimals</li> </ul> <p>[CN, R, V]</p>	<p>6.N.1. Demonstrate an understanding of place value for numbers</p> <ul style="list-style-type: none"> <li>greater than one million</li> <li>less than one-thousandth</li> </ul> <p>[C, CN, R, T]</p> <p>6.N.4. Relate improper fractions to mixed numbers. [CN, ME, R, V]</p> <p>6.N.5. Demonstrate an understanding of ratio, concretely, pictorially, and symbolically. [C, CN, PS, R, V]</p> <p>6.N.6. Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially, and symbolically. [C, CN, PS, R, V]</p>	<p>7.N.4. Demonstrate an understanding of the relationship between repeating decimals and fractions, and terminating decimals and fractions. [C, CN, R, T]</p> <p>7.N.7. Compare and order fractions, decimals (to thousandths), and integers by using</p> <ul style="list-style-type: none"> <li>benchmarks</li> <li>place value</li> <li>equivalent fractions and/or decimals</li> </ul> <p>[CN, R, V]</p>	<p>8.N.4. Demonstrate an understanding of ratio and rate. [C, CN, V]</p>	<p>9.N.3. Demonstrate an understanding of rational numbers by</p> <ul style="list-style-type: none"> <li>comparing and ordering rational numbers</li> <li>solving problems that involve arithmetic operations on rational numbers</li> </ul> <p>[C, CN, PS, R, T, V]</p>

# Glance Across the Grades: NUMBER

- [C]** Communication
- [CN]** Connections
- [ME]** Mental Mathematics and Estimation
- [PS]** Problem Solving
- [R]** Reasoning
- [T]** Technology
- [V]** Visualization

General Learning Outcome: **Develop number sense.**

Specific Learning Outcomes

## Operations with Whole Numbers Addition / Subtraction

Big Ideas	KINDER-GARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>• The four operations are intrinsically related.</li> <li>• Flexible methods of calculation in all operations involve decomposing and composing numbers in a wide variety of ways.</li> <li>• Flexible methods of calculation require a strong understanding of the operations and properties of the operations.</li> <li>• There are a variety of appropriate ways to estimate sums, differences, products, and quotients, depending on the context and the numbers involved.</li> <li>• Personal strategies and algorithms provide flexible and efficient methods of calculating that vary depending on the context and the numbers involved.</li> </ul>		<p>1.N.9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially, and symbolically, by</p> <ul style="list-style-type: none"> <li>■ using familiar and mathematical language to describe additive and subtractive actions from their experience</li> <li>■ creating and solving problems in context that involve addition and subtraction</li> <li>■ modelling addition and subtraction using a variety of concrete and visual representations, and recording the process symbolically</li> </ul> <p>[C, CN, ME, PS, R, V]</p> <p>1.N.10. Describe and use mental mathematics strategies, including</p> <ul style="list-style-type: none"> <li>■ counting on, counting back</li> <li>■ using one more, one less</li> <li>■ making 10</li> <li>■ starting from known doubles</li> <li>■ using addition to subtract to determine the basic addition and related subtraction facts to 18.</li> </ul> <p>[C, CN, ME, PS, R, V]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Recall of one more and one less, complementary (compatible) numbers that add up to 5 and 10, doubles (up to <math>5 + 5</math>), and related subtraction facts is expected by the end of Grade 1.</p> </div>	<p>2.N.8. Demonstrate and explain the effect of adding zero to or subtracting zero from any number.</p> <p>[C, R]</p> <p>2.N.9. Demonstrate an understanding of addition (limited to 1- and 2-digit numerals) with answers to 100 and the corresponding subtraction by</p> <ul style="list-style-type: none"> <li>■ using personal strategies for adding and subtracting with and without the support of manipulatives</li> <li>■ creating and solving problems that involve addition and subtraction</li> <li>■ explaining that the order in which numbers are added does not affect the sum</li> <li>■ explaining that the order in which numbers are subtracted may affect the difference</li> </ul> <p>[C, CN, ME, PS, R, V]</p> <p>2.N.10. Apply mental mathematics strategies, including</p> <ul style="list-style-type: none"> <li>■ using doubles</li> <li>■ making 10</li> <li>■ using one more, one less</li> <li>■ using two more, two less</li> <li>■ building on a known double</li> <li>■ using addition for subtraction to develop recall of basic addition facts to 18 and related subtraction facts.</li> </ul> <p>[C, CN, ME, R, V]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Recall of facts to 10, doubles to <math>9 + 9</math>, and related subtraction facts is expected by the end of Grade 2.</p> </div>	<p>3.N.6. Describe and apply mental mathematics strategies for adding two 2-digit numerals, such as</p> <ul style="list-style-type: none"> <li>■ adding from left to right</li> <li>■ taking one addend to the nearest multiple of ten and then compensating</li> <li>■ using doubles</li> </ul> <p>[C, ME, PS, R, V]</p> <p>3.N.7. Describe and apply mental mathematics strategies for subtracting two 2-digit numerals, such as</p> <ul style="list-style-type: none"> <li>■ taking the subtrahend to the nearest multiple of ten and then compensating</li> <li>■ thinking of addition</li> <li>■ using doubles</li> </ul> <p>[C, ME, PS, R, V]</p> <p>3.N.8. Apply estimation strategies to predict sums and differences of two 2-digit numerals in a problem-solving context.</p> <p>[C, ME, PS, R]</p> <p>3.N.9. Demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1-, 2-, and 3-digit numerals) by</p> <ul style="list-style-type: none"> <li>■ using personal strategies for adding and subtracting with and without the support of manipulatives</li> <li>■ creating and solving problems in contexts that involve addition and subtraction of numbers, concretely, pictorially, and symbolically</li> </ul> <p>[C, CN, ME, PS, R]</p> <p>3.N.10. Apply mental math strategies to determine addition facts and related subtraction facts to 18 (<math>9 + 9</math>).</p> <p>[C, CN, ME, R, V]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Recall of addition and related subtraction facts to 18 is expected by the end of Grade 3.</p> </div>	<p>4.N.3. Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals), concretely, pictorially, and symbolically, by</p> <ul style="list-style-type: none"> <li>■ using personal strategies</li> <li>■ using the standard algorithms</li> <li>■ estimating sums and differences</li> <li>■ solving problems</li> </ul> <p>[C, CN, ME, PS, R]</p>	<p>5.N.2. Apply estimation strategies, including</p> <ul style="list-style-type: none"> <li>■ front-end rounding</li> <li>■ compensation</li> <li>■ compatible numbers</li> </ul> <p>in problem-solving contexts.</p> <p>[C, CN, ME, PS, R, V]</p>	<p>6.N.2. Solve problems involving large numbers, using technology.</p> <p>[ME, PS, T]</p> <p>6.N.9. Explain and apply the order of operations, excluding exponents (limited to whole numbers).</p> <p>[CN, ME, PS, T]</p>	<p>7.N.6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically.</p> <p>[C, CN, PS, R, V]</p>		<p>9.N.4. Explain and apply the order of operations, including exponents, with and without technology.</p> <p>[PS, T]</p>

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General Learning Outcome: **Develop number sense.**

Specific Learning Outcomes

## Operations with Whole Numbers Multiplication / Division

Big Ideas	KINDER-GARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>The four operations are intrinsically related.</li> <li>Flexible methods of calculation in all operations involve decomposing and composing numbers in a wide variety of ways.</li> <li>Flexible methods of calculation require a strong understanding of the operations and properties of the operations.</li> <li>There are a variety of appropriate ways to estimate sums, differences, products, and quotients, depending on the context and the numbers involved.</li> <li>Personal strategies and algorithms provide flexible and efficient methods of calculating that vary depending on the context and the numbers involved.</li> </ul>				<p>3.N.11. Demonstrate an understanding of multiplication to <math>5 \times 5</math> by</p> <ul style="list-style-type: none"> <li>representing and explaining multiplication using equal grouping and arrays</li> <li>creating and solving problems in context that involve multiplication</li> <li>modelling multiplication using concrete and visual representations, and recording the process symbolically</li> <li>relating multiplication to repeated addition</li> <li>relating multiplication to division [C, CN, PS, R]</li> </ul> <p>3.N.12. Demonstrate an understanding of division by</p> <ul style="list-style-type: none"> <li>representing and explaining division using equal sharing and equal grouping</li> <li>creating and solving problems in context that involve equal sharing and equal grouping</li> <li>modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically</li> <li>relating division to repeated subtraction</li> <li>relating division to multiplication (limited to division related to multiplication facts to <math>5 \times 5</math>). [C, CN, PS, R]</li> </ul>	<p>4.N.4. Explain the properties of 0 and 1 for multiplication, and the property of 1 for division. [C, CN, R]</p> <p>4.N.5. Describe and apply mental mathematics strategies, such as</p> <ul style="list-style-type: none"> <li>skip-counting from a known fact</li> <li>using doubling, halving</li> <li>using doubling and adding one more group</li> <li>using patterns in the 9s facts</li> <li>using repeated doubling to develop an understanding of basic multiplication facts to <math>9 \times 9</math> and related division facts. [C, CN, ME, PS, R]</li> </ul> <div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Recall of the multiplication and related division facts up to <math>5 \times 5</math> is expected by the end of Grade 4.                 </div> <p>4.N.6. Demonstrate an understanding of multiplication (2- or 3-digit numerals by 1-digit numerals) to solve problems by</p> <ul style="list-style-type: none"> <li>using personal strategies for multiplication with and without concrete materials</li> <li>using arrays to represent multiplication</li> <li>connecting concrete representations to symbolic representations</li> <li>estimating products [C, CN, ME, PS, R, V]</li> </ul> <p>4.N.7. Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by</p> <ul style="list-style-type: none"> <li>using personal strategies for dividing with and without concrete materials</li> <li>estimating quotients</li> <li>relating division to multiplication [C, CN, ME, PS, R, V]</li> </ul>	<p>5.N.2. Apply estimation strategies, including</p> <ul style="list-style-type: none"> <li>front-end rounding</li> <li>compensation</li> <li>compatible numbers in problem-solving contexts. [C, CN, ME, PS, R, V]</li> </ul> <p>5.N.3. Apply mental math strategies to determine multiplication and related division facts to 81 (<math>9 \times 9</math>). [C, CN, ME, R, V]</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Recall of multiplication facts to 81 and related division facts is expected by the end of Grade 5.                 </div> <p>5.N.4. Apply mental mathematics strategies for multiplication, such as</p> <ul style="list-style-type: none"> <li>annexing then adding zeros</li> <li>halving and doubling</li> <li>using the distributive property [C, ME, R]</li> </ul> <p>5.N.5. Demonstrate an understanding of multiplication (1- and 2-digit multipliers and up to 4-digit multiplicands), concretely, pictorially, and symbolically, by</p> <ul style="list-style-type: none"> <li>using personal strategies</li> <li>using the standard algorithm</li> <li>estimating products to solve problems. [C, CN, ME, PS, V]</li> </ul> <p>5.N.6. Demonstrate an understanding of division (1- and 2-digit divisors and up to 4-digit dividends), concretely, pictorially, and symbolically, and interpret remainders by</p> <ul style="list-style-type: none"> <li>using personal strategies</li> <li>using the standard algorithm</li> <li>estimating quotients to solve problems. [C, CN, ME, PS]</li> </ul>	<p>6.N.2. Solve problems involving large numbers, using technology. [ME, PS, T]</p> <p>6.N.3. Demonstrate an understanding of factors and multiples by</p> <ul style="list-style-type: none"> <li>determining multiples and factors of numbers less than 100</li> <li>identifying prime and composite numbers</li> <li>solving problems involving factors or multiples [PS, R, V]</li> </ul> <p>6.N.9 Explain and apply the order of operations, excluding exponents (limited to whole numbers). [CN, ME, PS, T]</p>	<p>7.N.1. Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10, and why a number cannot be divided by 0. [C, R]</p>	<p>8.N.1. Demonstrate an understanding of perfect squares and square roots, concretely pictorially, and symbolically (limited to whole numbers). [C, CN, R, V]</p> <p>8.N.7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically. [C, CN, PS, R, V]</p>	<p>9.N.1. Demonstrate an understanding of powers with integral bases (excluding base 0) and whole-number exponents by</p> <ul style="list-style-type: none"> <li>representing repeated multiplication using powers</li> <li>using patterns to show that a power with an exponent of zero is equal to 1</li> <li>solving problems involving powers [C, CN, PS, R]</li> </ul> <p>9.N.2. Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole-number exponents. [C, CN, PS, R, T]</p> <p>9.N.4. Explain and apply the order of operations, including exponents, with and without technology. [PS, T]</p>

# Glance Across the Grades: NUMBER

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: **Develop number sense.**

Specific Learning Outcomes

## Operations with Rational Numbers

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>The four operations are intrinsically related.</li> <li>Flexible methods of calculation in all operations involve decomposing and composing numbers in a wide variety of ways.</li> <li>Flexible methods of calculation require a strong understanding of the operations and properties of the operations.</li> <li>There are a variety of appropriate ways to estimate sums, differences, products, and quotients, depending on the context and the numbers involved.</li> <li>Personal strategies and algorithms provide flexible and efficient methods of calculating that vary depending on the context and the numbers involved.</li> </ul>					<p>4.N.11. Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by</p> <ul style="list-style-type: none"> <li>using compatible numbers</li> <li>estimating sums and differences</li> <li>using mental math strategies to solve problems.</li> </ul> <p>[C, ME, PS, R, V]</p>	<p>5.N.11. Demonstrate an understanding of addition and subtraction of decimals (to thousandths), concretely, pictorially, and symbolically, by</p> <ul style="list-style-type: none"> <li>using personal strategies</li> <li>using the standard algorithms</li> <li>using estimation</li> <li>solving problems</li> </ul> <p>[C, CN, ME, PS, R, V]</p>	<p>6.N.8. Demonstrate an understanding of multiplication and division of decimals (involving 1-digit whole-number multipliers, 1-digit natural number divisors, and multipliers and divisors that are multiples of 10), concretely, pictorially, and symbolically, by</p> <ul style="list-style-type: none"> <li>using personal strategies</li> <li>using the standard algorithms</li> <li>using estimation</li> <li>solving problems</li> </ul> <p>[C, CN, ME, PS, R, V]</p>	<p>7.N.2. Demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals to solve problems (for more than 1-digit divisors or 2-digit multipliers, technology could be used). [ME, PS, T]</p> <p>7.N.3. Solve problems involving percents from 1% to 100%. [C, CN, PS, ME, R, T]</p> <p>7.N.5. Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially, and symbolically (limited to positive sums and differences). [C, CN, ME, PS, R, V]</p>	<p>8.N.2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers). [C, CN, ME, R, T]</p> <p>8.N.3. Demonstrate an understanding of percents greater than or equal to 0%. [CN, PS, R, V]</p> <p>8.N.5. Solve problems that involve rates, ratios, and proportional reasoning. [C, CN, PS, R]</p> <p>8.N.6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically. [C, CN, ME, PS]</p> <p>8.N.8. Solve problems involving positive rational numbers. [C, CN, ME, PS, R, T, V]</p>	<p>9.N.3. Demonstrate an understanding of rational numbers by</p> <ul style="list-style-type: none"> <li>comparing and ordering rational numbers</li> <li>solving problems that involve arithmetic operations on rational numbers</li> </ul> <p>[C, CN, PS, R, T, V]</p> <p>9.N.5. Determine the square root of positive rational numbers that are perfect squares. [C, CN, PS, R, T]</p> <p>9.N.6. Determine an approximate square root of positive rational numbers that are non-perfect squares. [C, CN, PS, R, T]</p>

# Glance Across the Grades: PATTERNS AND RELATIONS (Patterns)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use patterns to describe the world and solve problems.

Specific Learning Outcomes

## Patterning and Algebraic Thinking

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Patterns can be represented in a variety of ways.</li> <li>Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.</li> <li>Data can be arranged to highlight patterns and relationships.</li> </ul>	<p>K.PR.1. Demonstrate an understanding of repeating patterns (two or three elements) by</p> <ul style="list-style-type: none"> <li>identifying</li> <li>reproducing</li> <li>extending</li> <li>creating</li> </ul> <p>patterns using manipulatives, sounds, and actions.                      [C, CN, PS, V]</p>	<p>1.PR.1. Demonstrate an understanding of repeating patterns (two to four elements) by</p> <ul style="list-style-type: none"> <li>describing</li> <li>reproducing</li> <li>extending</li> <li>creating</li> </ul> <p>patterns using manipulatives, diagrams, sounds, and actions.                      [C, PS, R, V]</p> <p>1.PR.2. Translate repeating patterns from one representation to another.                      [C, R, V]</p>	<p>2.PR.1. Predict an element in a repeating pattern using a variety of strategies.                      [C, CN, PS, R, V]</p> <p>2.PR.2. Demonstrate an understanding of increasing patterns by</p> <ul style="list-style-type: none"> <li>describing</li> <li>reproducing</li> <li>extending</li> <li>creating</li> </ul> <p>patterns using manipulatives, diagrams, sounds, and actions (numbers to 100).                      [C, CN, PS, R, V]</p>	<p>3.PR.1. Demonstrate an understanding of increasing patterns by</p> <ul style="list-style-type: none"> <li>describing</li> <li>extending</li> <li>comparing</li> <li>creating</li> </ul> <p>patterns using manipulatives, diagrams, and numbers (to 1000).                      [C, CN, PS, R, V]</p> <p>3.PR.2. Demonstrate an understanding of decreasing patterns by</p> <ul style="list-style-type: none"> <li>describing</li> <li>extending</li> <li>comparing</li> <li>creating</li> </ul> <p>patterns using manipulatives, diagrams, and numbers (starting from 1000 or less).                      [C, CN, PS, R, V]</p>	<p>4.PR.1. Identify and describe patterns found in tables and charts, including a multiplication chart.                      [C, CN, PS, V]</p> <p>4.PR.2. Reproduce a pattern shown in a table or chart using concrete materials.                      [C, CN, V]</p> <p>4.PR.3. Represent and describe patterns and relationships using charts and tables to solve problems.                      [C, CN, PS, R, V]</p> <p>4.PR.4. Identify and explain mathematical relationships using charts and diagrams to solve problems.                      [CN, PS, R, V]</p>	<p>5.PR.1. Determine the pattern rule to make predictions about subsequent elements.                      [C, CN, PS, R, V]</p>	<p>6.PR.1. Demonstrate an understanding of the relationships within tables of values to solve problems.                      [C, CN, PS, R]</p> <p>6.PR.2. Represent and describe patterns and relationships using graphs and tables.                      [C, CN, ME, PS, R, V]</p>	<p>7.PR.1. Demonstrate an understanding of oral and written patterns and their corresponding relations.                      [C, CN, R]</p> <p>7.PR.2. Construct a table of values from a relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.                      [C, CN, R, V]</p>	<p>8.PR.1. Graph and analyze two-variable linear relations                      [C, ME, PS, R, T, V]</p>	<p>9.PR.1. Generalize a pattern arising from a problem-solving context using linear equations, and verify by substitution.                      [C, CN, PS, R, V]</p> <p>9.PR.2. Graph linear relations, analyze the graph, and interpolate or extrapolate to solve problems.                      [C, CN, PS, R, T, V]</p>

# Glance Across the Grades: PATTERNS AND RELATIONS (Variables and Equations)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use patterns to describe the world and solve problems.

Specific Learning Outcomes

## Algebraic Representations with Expressions

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Algebra, with the use of symbols or variables, expressions, and equations, is a tool for generalizing arithmetic and representing mathematical situations and patterns in our world.</li> <li>The equal sign describes the balance that exists between the quantities on either side of the equal sign.</li> <li>Equality and inequality are used to express relationships between two quantities.</li> <li>Relationships between quantities can be described using rules involving variables.</li> </ul>								<p>7.PR.4. Explain the difference between an expression and an equation. [C, CN]</p> <p>7.PR.5. Evaluate an expression given the value of the variable(s). [CN, R]</p>		<p>9.PR.5. Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2). [C, CN, R, V]</p> <p>9.PR.6. Model, record, and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to 2). [C, CN, PS, R, V]</p> <p>9.PR.7. Model, record, and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially, and symbolically. [C, CN, R, V]</p>

# Glance Across the Grades: PATTERNS AND RELATIONS (Variables and Equations)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use patterns to describe the world and solve problems.

Specific Learning Outcomes

## Algebraic Representations with Equations

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Algebra, with the use of symbols or variables, expressions, and equations, is a tool for generalizing arithmetic and representing mathematical situations and patterns in our world.</li> <li>The equal sign describes the balance that exists between the quantities on either side of the equal sign.</li> <li>Equality and inequality are used to express relationships between two quantities.</li> <li>Relationships between quantities can be described using rules involving variables.</li> </ul>		<p>1.PR.3. Describe equality as a balance and inequality as an imbalance, concretely and pictorially (0 to 20). [C, CN, R, V]</p> <p>1.PR.4. Record equalities using the equal symbol (0 to 20). [C, CN, PS, V]</p>	<p>2.PR.3. Demonstrate and explain the meaning of equality and inequality by using manipulatives and diagrams (0 to 100). [C, CN, R, V]</p> <p>2.PR.4. Record equalities and inequalities symbolically using the equal symbol or the not-equal symbol. [C, CN, R, V]</p>	<p>3.PR.3. Solve one-step addition and subtraction equations involving symbols representing an unknown number. [C, CN, PS, R, V]</p>	<p>4.PR.5. Express a problem as an equation in which a symbol is used to represent an unknown number. [CN, PS, R]</p> <p>4.PR.6. Solve one-step equations involving a symbol to represent an unknown number. [C, CN, PS, R, V]</p>	<p>5.PR.2. Solve problems involving single-variable (expressed as symbols or letters), one-step equations with whole-number coefficients, and whole-number solutions. [C, CN, PS, R]</p>	<p>6.PR.3. Represent generalizations arising from number relationships using equations with letter variables. [C, CN, PS, R, V]</p> <p>6.PR.4. Demonstrate and explain the meaning of preservation of equality, concretely, pictorially, and symbolically. [C, CN, PS, R, V]</p>	<p>7.PR.3. Demonstrate an understanding of preservation of equality by</p> <ul style="list-style-type: none"> <li>modelling preservation of equality, concretely, pictorially, and symbolically</li> <li>applying preservation of equality to solve equations</li> </ul> <p>[C, CN, PS, R, V]</p> <p>7.PR.4. Explain the difference between an expression and an equation. [C, CN]</p> <p>7.PR.6. Model and solve problems that can be represented by one-step linear equations of the form <math>x + a = b</math>, concretely, pictorially, and symbolically, where <math>a</math> and <math>b</math> are integers. [CN, PS, R, V]</p> <p>7.PR.7. Model and solve problems that can be represented by linear equations of the form:</p> <ul style="list-style-type: none"> <li><math>ax + b = c</math></li> <li><math>ax = b</math></li> <li><math>\frac{x}{a} = b, a \neq 0</math></li> </ul> <p>concretely, pictorially, and symbolically, where <math>a, b,</math> and <math>c</math> are whole numbers. [CN, PS, R, V]</p>	<p>8.PR.2. Model and solve problems using linear equations of the form:</p> <ul style="list-style-type: none"> <li><math>ax = b</math></li> <li><math>\frac{x}{a} = b, a \neq 0</math></li> <li><math>ax + b = c</math></li> <li><math>\frac{x}{a} + b = c, a \neq 0</math></li> <li><math>a(x + b) = c</math></li> </ul> <p>concretely, pictorially, and symbolically, where <math>a, b,</math> and <math>c</math> are integers. [C, CN, PS, V]</p>	<p>9.PR.3. Model and solve problems using linear equations of the form:</p> <ul style="list-style-type: none"> <li><math>ax = b</math></li> <li><math>\frac{x}{a} = b, a \neq 0</math></li> <li><math>ax + b = c</math></li> <li><math>\frac{x}{a} + b = c, a \neq 0</math></li> <li><math>ax = b + cx</math></li> <li><math>a(x + b) = c</math></li> <li><math>ax + b = cx + d</math></li> <li><math>a(bx + c) = d(ex + f)</math></li> <li><math>\frac{a}{x} = b, x \neq 0</math></li> </ul> <p>where <math>a, b, c, d, e,</math> and <math>f</math> are rational numbers. [C, CN, PS, V]</p> <p>9.PR.4. Explain and illustrate strategies to solve single variable linear inequalities with rational number coefficients within a problem-solving context. [C, CN, PS, R, V]</p>

# Glance Across the Grades: SHAPE AND SPACE (Measurement)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use direct or indirect measurement to solve problems.

Specific Learning Outcomes

## Length

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>It is necessary to understand the attributes of the object before anything can be measured.</li> <li>Measurement involves a selected attribute of an object (length, area, mass, volume, capacity) and a comparison of the object being measured against non-standard and standard units of the same attribute.</li> <li>The longer the unit of measure, the fewer units it takes to measure the object.</li> <li>The use of standard measurement units simplifies communication about the size of objects.</li> </ul>	<p>K.SS.1. Use direct comparison to compare two objects based on a single attribute, such as length (height), mass (weight), and volume (capacity).                      [C, CN, PS, R, V]</p>	<p>1.SS.1. Demonstrate an understanding of measurement as a process of comparing by</p> <ul style="list-style-type: none"> <li>identifying attributes that can be compared</li> <li>ordering objects</li> <li>making statements of comparison</li> <li>filling, covering, or matching</li> </ul> <p>[C, CN, PS, R, V]</p>	<p>2.SS.2. Relate the size of a unit of measure to the number of units (limited to non-standard units) used to measure length and mass (weight).                      [C, CN, ME, R, V]</p> <p>2.SS.3. Compare and order objects by length, height, distance around, and mass (weight) using non-standard units, and make statements of comparison.                      [C, CN, ME, R, V]</p> <p>2.SS.4. Measure length to the nearest non-standard unit by</p> <ul style="list-style-type: none"> <li>using multiple copies of a unit</li> <li>using a single copy of a unit (iteration process)</li> </ul> <p>[C, ME, R, V]</p> <p>2.SS.5. Demonstrate that changing the orientation of an object does not alter the measurements of its attributes.                      [C, R, V]</p>	<p>3.SS.3. Demonstrate an understanding of measuring length (cm, m) by</p> <ul style="list-style-type: none"> <li>selecting and justifying referents for the units cm and m</li> <li>modelling and describing the relationship between the units cm and m</li> <li>estimating length using referents</li> <li>measuring and recording length, width, and height</li> </ul> <p>[C, CN, ME, PS, R, V]</p> <p>3.SS.5. Demonstrate an understanding of perimeter of regular and irregular shapes by</p> <ul style="list-style-type: none"> <li>estimating perimeter using referents for centimetre or metre</li> <li>measuring and recording perimeter (cm, m)</li> <li>constructing different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter</li> </ul> <p>[C, ME, PS, R, V]</p>		<p>5.SS.1. Design and construct different rectangles given either perimeter or area, or both (whole numbers), and draw conclusions.                      [C, CN, PS, R, V]</p> <p>5.SS.2. Demonstrate an understanding of measuring length (mm) by</p> <ul style="list-style-type: none"> <li>selecting and justifying referents for the unit mm</li> <li>modelling and describing the relationship between mm and cm units, and between mm and m units</li> </ul> <p>[C, CN, ME, PS, R, V]</p>	<p>6.SS.3. Develop and apply a formula for determining the</p> <ul style="list-style-type: none"> <li>perimeter of polygons</li> <li>area of rectangles</li> <li>volume of right rectangular prisms</li> </ul> <p>[C, CN, PS, R, V]</p>	<p>7.SS.1. Demonstrate an understanding of circles by</p> <ul style="list-style-type: none"> <li>describing the relationships among radius, diameter, and circumference of circles</li> <li>relating circumference to pi (<math>\pi</math>)</li> <li>determining the sum of the central angles</li> <li>constructing circles with a given radius or diameter</li> <li>solving problems involving the radii, diameters, and circumferences of circles</li> </ul> <p>[C, CN, R, V]</p>	<p>8.SS.1. Develop and apply the Pythagorean theorem to solve problems.                      [CN, PS, R, V, T]</p>	<p>9.SS.1. Solve problems and justify the solution strategy using circle properties, including</p> <ul style="list-style-type: none"> <li>the perpendicular from the centre of a circle to a chord bisects the chord</li> <li>the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc</li> <li>the inscribed angles subtended by the same arc are congruent</li> <li>a tangent to a circle is perpendicular to the radius at the point of tangency</li> </ul> <p>[C, CN, PS, R, T, V]</p> <p>9.SS.3. Demonstrate an understanding of similarity of polygons.                      [C, CN, PS, R, V]</p>

# Glance Across the Grades: SHAPE AND SPACE (Measurement)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use direct or indirect measurement to solve problems.

Specific Learning Outcomes

Big Ideas	Area									
	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>It is necessary to understand the attributes of the object before anything can be measured.</li> <li>Measurement involves a selected attribute of an object (length, area, mass, volume, capacity) and a comparison of the object being measured against non-standard and standard units of the same attribute.</li> <li>The longer the unit of measure, the fewer units it takes to measure the object.</li> <li>The use of standard measurement units simplifies communication about the size of objects.</li> </ul>		<p>1.SS.1. Demonstrate an understanding of measurement as a process of comparing by</p> <ul style="list-style-type: none"> <li>identifying attributes that can be compared</li> <li>ordering objects</li> <li>making statements of comparison</li> <li>filling, covering, or matching</li> </ul> <p>[C, CN, PS, R, V]</p>	<p>2.SS.5. Demonstrate that changing the orientation of an object does not alter the measurements of its attributes.</p> <p>[C, R, V]</p>		<p>4.SS.3. Demonstrate an understanding of area of regular and irregular 2-D shapes by</p> <ul style="list-style-type: none"> <li>recognizing that area is measured in square units</li> <li>selecting and justifying referents for the units <math>\text{cm}^2</math> or <math>\text{m}^2</math></li> <li>estimating area by using referents for <math>\text{cm}^2</math> or <math>\text{m}^2</math></li> <li>determining and recording area (<math>\text{cm}^2</math> or <math>\text{m}^2</math>)</li> <li>constructing different rectangles for a given area (<math>\text{cm}^2</math> or <math>\text{m}^2</math>) in order to demonstrate that many different rectangles may have the same area</li> </ul> <p>[C, CN, ME, PS, R, V]</p>	<p>5.SS.1. Design and construct different rectangles given either perimeter or area, or both (whole numbers), and draw conclusions.</p> <p>[C, CN, PS, R, V]</p>	<p>6.SS.3. Develop and apply a formula for determining the</p> <ul style="list-style-type: none"> <li>perimeter of polygons</li> <li>area of rectangles</li> <li>volume of right rectangular prisms</li> </ul> <p>[C, CN, PS, R, V]</p>	<p>7.SS.2. Develop and apply a formula for determining the area of</p> <ul style="list-style-type: none"> <li>triangles</li> <li>parallelograms</li> <li>circles</li> </ul> <p>[CN, PS, R, V]</p>	<p>8.SS.3. Determine the surface area of</p> <ul style="list-style-type: none"> <li>right rectangular prisms</li> <li>right triangular prisms</li> <li>right cylinders to solve problems.</li> </ul> <p>[C, CN, PS, R, V]</p>	<p>9.SS.2. Determine the surface area of composite 3-D objects to solve problems.</p> <p>[C, CN, PS, R, V]</p>

# Glance Across the Grades: SHAPE AND SPACE (Measurement)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use direct or indirect measurement to solve problems.

Specific Learning Outcomes

## Volume (Capacity)

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>It is necessary to understand the attributes of the object before anything can be measured.</li> <li>Measurement involves a selected attribute of an object (length, area, mass, volume, capacity) and a comparison of the object being measured against non-standard and standard units of the same attribute.</li> <li>The longer the unit of measure, the fewer units it takes to measure the object.</li> <li>The use of standard measurement units simplifies communication about the size of objects.</li> </ul>	<p>K.SS.1. Use direct comparison to compare two objects based on a single attribute, such as length (height), mass (weight), and volume (capacity).                      [C, CN, PS, R, V]</p>	<p>1.SS.1. Demonstrate an understanding of measurement as a process of comparing by</p> <ul style="list-style-type: none"> <li>identifying attributes that can be compared</li> <li>ordering objects</li> <li>making statements of comparison</li> <li>filling, covering, or matching</li> </ul> <p>[C, CN, PS, R, V]</p>	<p>2.SS.5. Demonstrate that changing the orientation of an object does not alter the measurements of its attributes.                      [C, R, V]</p>			<p>5.SS.3. Demonstrate an understanding of volume by</p> <ul style="list-style-type: none"> <li>selecting and justifying referents for the units <math>\text{cm}^3</math> or <math>\text{m}^3</math></li> <li>estimating volume by using referents for <math>\text{cm}^3</math> or <math>\text{m}^3</math></li> <li>measuring and recording volume (<math>\text{cm}^3</math> or <math>\text{m}^3</math>)</li> <li>constructing rectangular prisms for a given volume</li> </ul> <p>[C, CN, ME, PS, R, V]</p> <p>5.SS.4. Demonstrate an understanding of capacity by</p> <ul style="list-style-type: none"> <li>describing the relationship between mL and L</li> <li>selecting and justifying referents for the units mL or L</li> <li>estimating capacity by using referents for mL or L</li> <li>measuring and recording capacity (mL or L)</li> </ul> <p>[C, CN, ME, PS, R, V]</p>	<p>6.SS.3. Develop and apply a formula for determining the</p> <ul style="list-style-type: none"> <li>perimeter of polygons</li> <li>area of rectangles</li> <li>volume of right rectangular prisms</li> </ul> <p>[C, CN, PS, R, V]</p>		<p>8.SS.4. Develop and apply formulas for determining the volume of right prisms and right cylinders.                      [C, CN, PS, R, V]</p>	

# Glance Across the Grades: SHAPE AND SPACE (Measurement)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use direct or indirect measurement to solve problems.

Specific Learning Outcomes

## Mass (Weight)

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>It is necessary to understand the attributes of the object before anything can be measured.</li> <li>Measurement involves a selected attribute of an object (length, area, mass, volume, capacity) and a comparison of the object being measured against non-standard and standard units of the same attribute.</li> <li>The longer the unit of measure, the fewer units it takes to measure the object.</li> <li>The use of standard measurement units simplifies communication about the size of objects.</li> </ul>	<p>K.SS.1. Use direct comparison to compare two objects based on a single attribute, such as length (height), mass (weight), and volume (capacity).                      [C, CN, PS, R, V]</p>	<p>1.SS.1. Demonstrate an understanding of measurement as a process of comparing by</p> <ul style="list-style-type: none"> <li>identifying attributes that can be compared</li> <li>ordering objects</li> <li>making statements of comparison</li> <li>filling, covering, or matching</li> </ul> <p>[C, CN, PS, R, V]</p>	<p>2.SS.2. Relate the size of a unit of measure to the number of units (limited to non-standard units) used to measure length and mass (weight).                      [C, CN, ME, R, V]</p> <p>2.SS.3. Compare and order objects by length, height, distance around, and mass (weight) using non-standard units, and make statements of comparison.                      [C, CN, ME, R, V]</p> <p>2.SS.5. Demonstrate that changing the orientation of an object does not alter the measurements of its attributes.                      [C, R, V]</p>	<p>3.SS.4. Demonstrate an understanding of measuring mass (g, kg) by</p> <ul style="list-style-type: none"> <li>selecting and justifying referents for the units g and kg</li> <li>modelling and describing the relationship between the units g and kg</li> <li>estimating mass using referents</li> <li>measuring and recording mass</li> </ul> <p>[C, CN, ME, PS, R, V]</p>						

# Glance Across the Grades: SHAPE AND SPACE (Measurement)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use direct or indirect measurement to solve problems.

Specific Learning Outcomes

## Time

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>It is necessary to understand the attributes of the object before anything can be measured.</li> <li>Measurement involves a selected attribute of an object (length, area, mass, volume, capacity) and a comparison of the object being measured against non-standard and standard units of the same attribute.</li> <li>The longer the unit of measure, the fewer units it takes to measure the object.</li> <li>The use of standard measurement units simplifies communication about the size of objects.</li> </ul>			2.SS.1. Relate the number of days to a week and the number of months to a year in a problem-solving context. [C, CN, PS, R]	3.SS.1. Relate the passage of time to common activities using non-standard and standard units (minutes, hours, days, weeks, months, years). [CN, ME, R]  3.SS.2. Relate the number of seconds to a minute, the number of minutes to an hour, and the number of days to a month in a problem-solving context. [C, CN, PS, R, V]	4.SS.1. Read and record time using digital and analog clocks, including 24-hour clocks. [C, CN, V]  4.SS.2. Read and record calendar dates in a variety of formats. [C, V]					

# Glance Across the Grades: SHAPE AND SPACE (Measurement)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use direct or indirect measurement to solve problems.

Specific Learning Outcomes

## Angles

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>It is necessary to understand the attributes of the object before anything can be measured.</li> <li>Measurement involves a selected attribute of an object (length, area, mass, volume, capacity) and a comparison of the object being measured against non-standard and standard units of the same attribute.</li> <li>The longer the unit of measure, the fewer units it takes to measure the object.</li> <li>The use of standard measurement units simplifies communication about the size of objects.</li> </ul>							<p>6.SS.1. Demonstrate an understanding of angles by</p> <ul style="list-style-type: none"> <li>identifying examples of angles in the environment</li> <li>classifying angles according to their measure</li> <li>estimating the measure of angles using <math>45^\circ</math>, <math>90^\circ</math>, and <math>180^\circ</math> as reference angles</li> <li>determining angle measures in degrees</li> <li>drawing and labelling angles when the measure is specified</li> </ul> <p>[C, CN, ME, V]</p> <p>6.SS.2. Demonstrate that the sum of interior angles is</p> <ul style="list-style-type: none"> <li><math>180^\circ</math> in a triangle</li> <li><math>360^\circ</math> in a quadrilateral</li> </ul> <p>[C, R]</p>	<p>7.SS.1. Demonstrate an understanding of circles by</p> <ul style="list-style-type: none"> <li>describing the relationships among radius, diameter, and circumference of circles</li> <li>relating circumference to pi (<math>\pi</math>)</li> <li>determining the sum of the central angles</li> <li>constructing circles with a given radius or diameter</li> <li>solving problems involving the radii, diameters, and circumferences of circles</li> </ul> <p>[C, CN, R, V]</p>		<p>9.SS.1. Solve problems and justify the solution strategy using circle properties, including</p> <ul style="list-style-type: none"> <li>the perpendicular from the centre of a circle to a chord bisects the chord</li> <li>the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc</li> <li>the inscribed angles subtended by the same arc are congruent</li> <li>a tangent to a circle is perpendicular to the radius at the point of tangency</li> </ul> <p>[C, CN, PS, R, T, V]</p> <p>9.SS.3. Demonstrate an understanding of similarity of polygons.</p> <p>[C, CN, PS, R, V]</p>

# Glance Across the Grades: SHAPE AND SPACE (3-D Objects and 2-D Shapes)

**[C]** Communication  
**[CN]** Connections  
**[ME]** Mental Mathematics  
 and Estimation

**[PS]** Problem Solving  
**[R]** Reasoning  
**[T]** Technology  
**[V]** Visualization

General Learning Outcome: Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

Specific Learning Outcomes

## Identifying, Sorting, Comparing, and Constructing

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Two- and three-dimensional objects can be described, classified, and analyzed by their attributes.</li> </ul>	<p>K.SS.2. Sort 3-D objects using a single attribute. [C, CN, PS, R, V]</p> <p>K.SS.3. Build and describe 3-D objects. [CN, PS, V]</p>	<p>1.SS.2. Sort 3-D objects and 2-D shapes using one attribute, and explain the sorting rule. [C, CN, R, V]</p> <p>1.SS.3. Replicate composite 2-D shapes and 3-D objects. [CN, PS, V]</p> <p>1.SS.4. Compare 2-D shapes to parts of 3-D objects in the environment. [C, CN, V]</p>	<p>2.SS.6. Sort 2-D shapes and 3-D objects using two attributes, and explain the sorting rule. [C, CN, R, V]</p> <p>2.SS.7. Describe, compare, and construct 3-D objects, including</p> <ul style="list-style-type: none"> <li>cubes</li> <li>spheres</li> <li>cones</li> <li>cylinders</li> <li>prisms</li> <li>pyramids</li> </ul> <p>[C, CN, R, V]</p> <p>2.SS.8. Describe, compare, and construct 2-D shapes, including</p> <ul style="list-style-type: none"> <li>triangles</li> <li>squares</li> <li>rectangles</li> <li>circles</li> </ul> <p>[C, CN, R, V]</p> <p>2.SS.9. Identify 2-D shapes as parts of 3-D objects in the environment. [C, CN, R, V]</p>	<p>3.SS.6. Describe 3-D objects according to the shape of their faces and the number of edges and vertices. [C, CN, PS, R, V]</p> <p>3.SS.7. Sort regular and irregular polygons, including</p> <ul style="list-style-type: none"> <li>triangles</li> <li>quadrilaterals</li> <li>pentagons</li> <li>hexagons</li> <li>octagons</li> </ul> <p>according to the number of sides. [C, CN, R, V]</p>	<p>4.SS.4. Solve problems involving 2-D shapes and 3-D objects. [CN, PS, V]</p> <p>4.SS.5. Describe and construct rectangular and triangular prisms. [C, CN, R, V]</p>	<p>5.SS.5. Describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes, that are</p> <ul style="list-style-type: none"> <li>parallel</li> <li>intersecting</li> <li>perpendicular</li> <li>vertical</li> <li>horizontal</li> </ul> <p>[C, CN, R, T, V]</p> <p>5.SS.6. Identify and sort quadrilaterals, including</p> <ul style="list-style-type: none"> <li>rectangles</li> <li>squares</li> <li>trapezoids</li> <li>parallelograms</li> <li>rhombuses</li> </ul> <p>according to their attributes. [C, R, V]</p>	<p>6.SS.4. Construct and compare triangles, including</p> <ul style="list-style-type: none"> <li>scalene</li> <li>isosceles</li> <li>equilateral</li> <li>right</li> <li>obtuse</li> <li>acute</li> </ul> <p>in different orientations. [C, PS, R, V]</p> <p>6.SS.5. Describe and compare the sides and angles of regular and irregular polygons. [C, PS, R, V]</p>	<p>7.SS.3. Perform geometric constructions, including</p> <ul style="list-style-type: none"> <li>perpendicular line segments</li> <li>parallel line segments</li> <li>perpendicular bisectors</li> <li>angle bisectors</li> </ul> <p>[CN, R, V]</p>	<p>8.SS.2. Draw and construct nets for 3-D objects. [C, CN, PS, V]</p> <p>8.SS.5. Draw and interpret top, front, and side views of 3-D objects composed of right rectangular prisms. [C, CN, R, T, V]</p>	<p>9.SS.2. Determine the surface area of composite 3-D objects to solve problems. [C, CN, PS, R, V]</p> <p>9.SS.3. Demonstrate an understanding of similarity of polygons. [C, CN, PS, R, V]</p>

# Glance Across the Grades: SHAPE AND SPACE (Transformations)

**[C]** Communication  
**[CN]** Connections  
**[ME]** Mental Mathematics  
 and Estimation

**[PS]** Problem Solving  
**[R]** Reasoning  
**[T]** Technology  
**[V]** Visualization

General Learning Outcome: Describe and analyze position and motion of objects and shapes.

Specific Learning Outcomes

## Position and Motion

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Shapes can be relocated and reoriented using mathematical procedures.</li> <li>Shapes can be described in terms of their location in a plane or in a space.</li> </ul>					<p>4.SS.6. Demonstrate an understanding of line symmetry by</p> <ul style="list-style-type: none"> <li>identifying symmetrical 2-D shapes</li> <li>creating symmetrical 2-D shapes</li> <li>drawing one or more lines of symmetry in a 2-D shape</li> </ul> <p>[C, CN, V]</p>	<p>5.SS.7. Perform a single transformation (translation, rotation, or reflection) of a 2-D shape, and draw and describe the image. [C, CN, T, V]</p> <p>5.SS.8. Identify a single transformation (translation, rotation, or reflection) of 2-D shapes. [C, T, V]</p>	<p>6.SS.6. Perform a combination of transformations (translations, rotations, or reflections) on a single 2-D shape, and draw and describe the image. [C, CN, PS, T, V]</p> <p>6.SS.7. Perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations. [C, CN, T, V]</p> <p>6.SS.8. Identify and plot points in the first quadrant of a Cartesian plane using whole-number ordered pairs. [C, CN, V]</p> <p>6.SS.9. Perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole-number vertices). [C, CN, PS, T, V]</p>	<p>7.SS.4. Identify and plot points in the four quadrants of a Cartesian plane using ordered pairs. [C, CN, V]</p> <p>7.SS.5. Perform and describe transformations of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral vertices). [C, CN, PS, T, V]</p>	<p>8.SS.6. Demonstrate an understanding of tessellation by</p> <ul style="list-style-type: none"> <li>explaining the properties of shapes that make tessellating possible</li> <li>creating tessellations</li> <li>identifying tessellations in the environment</li> </ul> <p>[C, CN, PS, T, V]</p>	<p>9.SS.4. Draw and interpret scale diagrams of 2-D shapes. [CN, R, T, V]</p> <p>9.SS.5. Demonstrate an understanding of line and rotation symmetry. [C, CN, PS, V]</p>

# Glance Across the Grades: STATISTICS AND PROBABILITY (Data Analysis)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 Reasoning  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: **Collect, display, and analyze data to solve problems.**

Specific Learning Outcomes

## Collection, Organization, and Analysis of Data

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>• Data is gathered and organized in order to answer questions.</li> <li>• The question that needs to be answered determines the data that will be collected.</li> <li>• The type of data determines the best way to organize and represent it.</li> <li>• Visual displays quickly reveal information about data.</li> <li>• Information from data representations is used to make references, to interpret, to draw conclusions, and to make predictions.</li> </ul>			<p>2.SP.1. Gather and record data about self and others to answer questions. [C, CN, PS, V]</p> <p>2.SP.2. Construct and interpret concrete graphs and pictographs to solve problems. [C, CN, PS, R, V]</p>	<p>3.SP.1. Collect first-hand data and organize it using</p> <ul style="list-style-type: none"> <li>■ tally marks</li> <li>■ line plots</li> <li>■ charts</li> <li>■ lists</li> </ul> <p>to answer questions. [C, CN, V]</p> <p>3.SP.2. Construct, label, and interpret bar graphs to solve problems. [PS, R, V]</p>	<p>4.SP.1. Demonstrate an understanding of many-to-one correspondence. [C, R, T, V]</p> <p>4.SP.2. Construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions. [C, PS, R, V]</p>	<p>5.SP.1. Differentiate between first-hand and second-hand data. [C, R, T, V]</p> <p>5.SP.2. Construct and interpret double bar graphs to draw conclusions. [C, PS, R, T, V]</p>	<p>6.SP.1. Create, label, and interpret line graphs to draw conclusions. [C, CN, PS, R, V]</p> <p>6.SP.2. Select, justify, and use appropriate methods of collecting data, including</p> <ul style="list-style-type: none"> <li>■ questionnaires</li> <li>■ experiments</li> <li>■ databases</li> <li>■ electronic media</li> </ul> <p>[C, PS, T]</p> <p>6.SP.3. Graph collected data and analyze the graph to solve problems. [C, CN, PS]</p>	<p>7.SP.1. Demonstrate an understanding of central tendency and range by</p> <ul style="list-style-type: none"> <li>■ determining the measures of central tendency (mean, median, mode) and range</li> <li>■ determining the most appropriate measures of central tendency to report findings</li> </ul> <p>[C, PS, R, T]</p> <p>7.SP.2. Determine the effect on the mean, median, and mode when an outlier is included in a data set. [C, CN, PS, R]</p> <p>7.SP.3. Construct, label, and interpret circle graphs to solve problems. [C, CN, PS, R, T, V]</p>	<p>8.SP.1. Critique ways in which data are presented. [C, R, T, V]</p>	<p>9.SP.1. Describe the effect of</p> <ul style="list-style-type: none"> <li>■ bias</li> <li>■ use of language</li> <li>■ ethics</li> <li>■ cost</li> <li>■ time and timing</li> <li>■ privacy</li> <li>■ cultural sensitivity on the collection of data.</li> </ul> <p>[C, CN, R, T]</p> <p>9.SP.2. Select and defend the choice of using either a population or a sample of a population to answer a question. [C, CN, PS, R]</p> <p>9.SP.3. Develop and implement a project plan for the collection, display, and analysis of data by</p> <ul style="list-style-type: none"> <li>■ formulating a question for investigation</li> <li>■ choosing a data collection method that includes social considerations</li> <li>■ selecting a population or a sample</li> <li>■ collecting the data</li> <li>■ displaying the collected data in an appropriate manner</li> <li>■ drawing conclusions to answer the question</li> </ul> <p>[C, PS, R, T, V]</p>

# Glance Across the Grades: STATISTICS AND PROBABILITY (Chance and Uncertainty)

[C] Communication  
 [CN] Connections  
 [ME] Mental Mathematics  
 and Estimation

[PS] Problem Solving  
 [R] Reasoning  
 [T] Technology  
 [V] Visualization

General Learning Outcome: Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.

Specific Learning Outcomes

## Probability

Big Ideas	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9
<ul style="list-style-type: none"> <li>Probability involves the use of mathematics to describe the level of certainty that an event will occur.</li> <li>Probabilities, both theoretical and experimental, can be determined in different ways.</li> </ul>						<p>5.SP.3. Describe the likelihood of a single outcome occurring, using words such as</p> <ul style="list-style-type: none"> <li>impossible</li> <li>possible</li> <li>certain</li> </ul> <p>[C, CN, PS, R]</p> <p>5.SP.4. Compare the likelihood of two possible outcomes occurring, using words such as</p> <ul style="list-style-type: none"> <li>less likely</li> <li>equally likely</li> <li>more likely</li> </ul> <p>[C, CN, PS, R]</p>	<p>6.SP.4. Demonstrate an understanding of probability by</p> <ul style="list-style-type: none"> <li>identifying all possible outcomes of a probability experiment</li> <li>differentiating between experimental and theoretical probability</li> <li>determining the theoretical probability of outcomes in a probability experiment</li> <li>determining the experimental probability of outcomes in a probability experiment</li> <li>comparing experimental results with the theoretical probability for an experiment</li> </ul> <p>[C, ME, PS, T]</p>	<p>7.SP.4. Express probabilities as ratios, fractions, and percents.                      [C, CN, R, T, V]</p> <p>7.SP.5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.                      [C, ME, PS]</p> <p>7.SP.6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table, or another graphic organizer) and experimental probability of two independent events.                      [C, PS, R, T]</p>	<p>8.SP.2. Solve problems involving the probability of independent events.                      [C, CN, PS, T]</p>	<p>9.SP.4. Demonstrate an understanding of the role of probability in society.                      [C, CN, R, T]</p>

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