

Grade 5

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

<b>Strand:</b> Number	<b>General Learning Outcome:</b> Develop number sense.
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**Specific Learning Outcomes**

*It is expected that students will:*

**Achievement Indicators**

*The following set of indicators **may** be used to determine whether students have met the corresponding specific outcome.*

5.N.1. Represent and describe whole numbers to 1 000 000.  
[C, CN, T, V]

- Write a numeral using proper spacing without commas (e.g., 934 567 and not 934,567).
- Describe the pattern of adjacent place positions moving from right to left.
- Describe the meaning of each digit in a numeral.
- Provide examples of large numbers used in print or electronic media.
- Express a given numeral in expanded notation (e.g.,  $45\,321 = [4 \times 10\,000] + [5 \times 1000] + [3 \times 100] + [2 \times 10] + [1 \times 1]$  or  $40\,000 + 5000 + 300 + 20 + 1$ ).
- Write the numeral represented in expanded notation.

5.N.2. Apply estimation strategies, including

- front-end rounding
- compensation
- compatible numbers

in problem-solving contexts.  
[C, CN, ME, PS, R, V]

- Provide a context for when estimation is used to
  - make predictions
  - check reasonableness of an answer
  - determine approximate answers
- Describe contexts in which overestimating is important.
- Determine the approximate solution to a problem not requiring an exact answer.
- Estimate a sum or product using compatible numbers.
- Estimate the solution to a problem using compensation, and explain the reason for compensation.
- Select and use an estimation strategy to solve a problem.
- Apply front-end rounding to estimate
  - sums (e.g.,  $253 + 615$  is more than  $200 + 600 = 800$ )
  - differences (e.g.,  $974 - 250$  is close to  $900 - 200 = 700$ )
  - products (e.g., the product of  $23 \times 24$  is greater than  $20 \times 20$  or 400 and less than  $25 \times 25$  or 625)
  - quotients (e.g., the quotient of  $831 \div 4$  is greater than  $800 \div 4$  or 200)

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<b>Strand:</b> Number <i>(continued)</i>	<b>General Learning Outcome:</b> Develop number sense.
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<b>Specific Learning Outcomes</b> <i>It is expected that students will:</i>	<b>Achievement Indicators</b> <i>The following set of indicators <b>may</b> be used to determine whether students have met the corresponding specific outcome.</i>
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5.N.3. Apply mental math strategies to determine multiplication and related division facts to 81 ( $9 \times 9$ ).  
[C, CN, ME, R, V]

Recall of multiplication facts to 81 and related division facts is expected by the end of Grade 5.

- Describe the mental mathematics strategy used to determine a basic fact, such as
  - skip-count up by one or two groups from a known fact (e.g., if  $5 \times 7 = 35$ , then  $6 \times 7$  is equal to  $35 + 7$  and  $7 \times 7$  is equal to  $35 + 7 + 7$ )
  - skip-count down by one or two groups from a known fact (e.g., if  $8 \times 8 = 64$ , then  $7 \times 8$  is equal to  $64 - 8$  and  $6 \times 8$  is equal to  $64 - 8 - 8$ )
  - halving/doubling (e.g., for  $8 \times 3$  think  $4 \times 6 = 24$ )
  - use patterns when multiplying by 9 (e.g., for  $9 \times 6$ , think  $10 \times 6 = 60$ , then  $60 - 6 = 54$ ; for  $7 \times 9$ , think  $7 \times 10 = 70$ , and  $70 - 7 = 63$ )
  - repeated doubling (e.g., if  $2 \times 6$  is equal to 12, then  $4 \times 6$  is equal to 24, and  $8 \times 6$  is equal to 48)
  - repeated halving (e.g., for  $60 \div 4$ , think  $60 \div 2 = 30$  and  $30 \div 2 = 15$ )
  - relating multiplication to division facts (e.g., for  $7 \times 8$ , think  $56 \div 7 = \square$ )
  - use multiplication facts that are squares ( $1 \times 1$ ,  $2 \times 2$ , up to  $9 \times 9$ )
- Refine personal strategies to increase efficiency (e.g., for  $7 \times 6$ , use known square  $6 \times 6 + 6$  instead of repeated addition  $6 + 6 + 6 + 6 + 6 + 6 + 6$ ).

5.N.4. Apply mental mathematics strategies for multiplication, such as

- annexing then adding zeros
- halving and doubling
- using the distributive property

[C, ME, R]

- Determine the products when one factor is a multiple of 10, 100, or 1000 by annexing zero or adding zeros (e.g., for  $3 \times 200$  think  $3 \times 2$  and then add two zeros).
- Apply halving and doubling when determining a product (e.g.,  $32 \times 5$  is the same as  $16 \times 10$ ).
- Apply the distributive property to determine a product involving multiplying factors that are close to multiples of 10 [e.g.,  $98 \times 7 = (100 \times 7) - (2 \times 7)$ ].

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<b>Strand:</b> Number <i>(continued)</i>	<b>General Learning Outcome:</b> Develop number sense.
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**Specific Learning Outcomes**  
*It is expected that students will:*

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<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</li> </ul> <p>to solve problems. [C, CN, ME, PS, V]</p>	<ul style="list-style-type: none"> <li>■ Illustrate partial products in expanded notation for both factors [e.g., for <math>36 \times 42</math>, determine the partial products for <math>(30 + 6) \times (40 + 2)</math>].</li> <li>■ Represent both 2-digit factors in expanded notation to illustrate the distributive property [e.g., to determine the partial products of <math>36 \times 42</math>, <math>(30 + 6) \times (40 + 2) = 30 \times 40 + 30 \times 2 + 6 \times 40 + 6 \times 2 = 1200 + 60 + 240 + 12 = 1512</math>].</li> <li>■ Model the steps for multiplying 2-digit factors using an array and base-10 blocks, and record the process symbolically.</li> <li>■ Describe a solution procedure for determining the product of two 2-digit factors using a pictorial representation, such as an area model.</li> <li>■ Model and explain the relationship that exists between an algorithm, place value, and number properties.</li> <li>■ Determine products using the standard algorithm of vertical multiplication. (Numbers arranged vertically and multiplied using single digits which are added to form a final product.)</li> <li>■ Solve a multiplication problem in context using personal strategies, and record the process.</li> <li>■ Refine personal strategies such as mental math strategies to increase efficiency when appropriate [e.g., <math>16 \times 25</math> think <math>4 \times (4 \times 25) = 400</math>].</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</li> </ul> <p>to solve problems. [C, CN, ME, PS]</p>	<ul style="list-style-type: none"> <li>■ Model the division process as equal sharing using base-10 blocks, and record it symbolically.</li> <li>■ Explain that the interpretation of a remainder depends on the context:             <ul style="list-style-type: none"> <li>■ ignore the remainder (e.g., making teams of 4 from 22 people)</li> <li>■ round up the quotient (e.g., the number of five passenger cars required to transport 13 people)</li> <li>■ express remainders as fractions (e.g., five apples shared by two people)</li> <li>■ express remainders as decimals (e.g., measurement or money)</li> </ul> </li> <li>■ Model and explain the relationship that exists between algorithm, place value, and number properties.</li> <li>■ Determine quotients using the standard algorithm of long division. (The multiples of the divisor are subtracted from the dividend.)</li> <li>■ Solve a division problem in context using personal strategies, and record the process.</li> <li>■ Refine personal strategies such as mental math strategies to increase efficiency when appropriate (e.g., <math>860 \div 2</math> think <math>86 \div 2 = 43</math> then <math>860 \div 2</math> is 430).</li> </ul>

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<b>Strand:</b> Number <i>(continued)</i>	<b>General Learning Outcome:</b> Develop number sense.
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<b>Specific Learning Outcomes</b> <i>It is expected that students will:</i>	<b>Achievement Indicators</b> <i>The following set of indicators <b>may</b> be used to determine whether students have met the corresponding specific outcome.</i>
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<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>	<ul style="list-style-type: none"> <li>■ Create a set of equivalent fractions and explain why there are many equivalent fractions for any fraction using concrete materials.</li> <li>■ Model and explain that equivalent fractions represent the same quantity.</li> <li>■ Determine if two fractions are equivalent using concrete materials or pictorial representations.</li> <li>■ Formulate and verify a rule for developing a set of equivalent fractions.</li> <li>■ Identify equivalent fractions for a fraction.</li> <li>■ Compare two fractions with unlike denominators by creating equivalent fractions.</li> <li>■ Position a set of fractions with like and unlike denominators on a number line (vertical or horizontal), and explain strategies used to determine the order.</li> </ul>
<p>5.N.8. Describe and represent decimals (tenths, hundredths, thousandths) concretely, pictorially, and symbolically.</p> <p>[C, CN, R, V]</p>	<ul style="list-style-type: none"> <li>■ Write the decimal for a concrete or pictorial representation of part of a set, part of a region, or part of a unit of measure.</li> <li>■ Represent a decimal using concrete materials or a pictorial representation.</li> <li>■ Represent an equivalent tenth, hundredth, or thousandth for a decimal, using a grid.</li> <li>■ Express a tenth as an equivalent hundredth and thousandth.</li> <li>■ Express a hundredth as an equivalent thousandth.</li> <li>■ Describe the value of each digit in a decimal.</li> </ul>
<p>5.N.9. Relate decimals to fractions (tenths, hundredths, thousandths).</p> <p>[CN, R, V]</p>	<ul style="list-style-type: none"> <li>■ Write a decimal in fractional form.</li> <li>■ Write a fraction with a denominator of 10, 100, or 1000 as a decimal.</li> <li>■ Express a pictorial or concrete representation as a fraction or decimal (e.g., 250 shaded squares on a thousandth grid can be expressed as 0.250 or <math>\frac{250}{1000}</math>).</li> </ul>
<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>	<ul style="list-style-type: none"> <li>■ Order a set of decimals by placing them on a number line (vertical or horizontal) that contains benchmarks, 0.0, 0.5, 1.0.</li> <li>■ Order a set of decimals including only tenths using place value.</li> <li>■ Order a set of decimals including only hundredths using place value.</li> <li>■ Order a set of decimals including only thousandths using place value.</li> <li>■ Explain what is the same and what is different about 0.2, 0.20, and 0.200.</li> <li>■ Order a set of decimals including tenths, hundredths, and thousandths using equivalent decimals.</li> </ul>

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<b>Strand:</b> Number <i>(continued)</i>	<b>General Learning Outcome:</b> Develop number sense.
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**Specific Learning Outcomes**

*It is expected that students will:*

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<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>	<ul style="list-style-type: none"> <li>■ Estimate a sum or difference using front-end estimation (e.g., for <math>6.3 + 0.25 + 306.158</math>, think <math>6 + 306</math>, so the sum is greater than 312) and place the decimal in the appropriate place.</li> <li>■ Correct errors of decimal point placements in sums and differences without using paper and pencil.</li> <li>■ Explain why keeping track of place value positions is important when adding and subtracting decimals.</li> <li>■ Predict sums and differences of decimals using estimation strategies.</li> <li>■ Solve a problem that involves addition and subtraction of decimals, to thousandths.</li> <li>■ Model and explain the relationship that exists between an algorithm, place value, and number properties.</li> <li>■ Determine the sum and difference using the standard algorithms of vertical addition and subtraction. (Numbers are arranged vertically with corresponding place value digits aligned.)</li> <li>■ Refine personal strategies, such as mental math, to increase efficiency when appropriate (e.g., <math>3.36 + 9.65</math> think, <math>0.35 + 0.65 = 1.00</math>, therefore, <math>0.36 + 0.65 = 1.01</math> and <math>3 + 9 = 12</math> for a total of 13.01).</li> </ul>
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<b>Strand:</b> Patterns and Relations (Patterns)	<b>General Learning Outcome:</b> Use patterns to describe the world and solve problems.
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5.PR.1. Determine the pattern rule to make predictions about subsequent elements.  
[C, CN, PS, R, V]

- Extend a pattern with or without concrete materials, and explain how each element differs from the proceeding one.
- Describe, orally or in writing, a pattern using mathematical language, such as one more, one less, five more.
- Write a mathematical expression to represent a pattern, such as  $r + 1, r - 1, r + 5$ .
- Describe the relationship in a table or chart using a mathematical expression.
- Determine and explain why a number is or is not the next element in a pattern.
- Predict subsequent elements in a pattern.
- Solve a problem by using a pattern rule to determine subsequent elements.
- Represent a pattern visually to verify predictions.

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	<b>[V]</b> Visualization

<b>Strand:</b> Patterns and Relations (Variables and Equations)	<b>General Learning Outcome:</b> Represent algebraic expressions in multiple ways.
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<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>	<ul style="list-style-type: none"> <li>■ Express a problem in context as an equation where the unknown is represented by a letter variable.</li> <li>■ Solve a single-variable equation with the unknown in any of the terms (e.g., <math>n + 2 = 5</math>, <math>4 + a = 7</math>, <math>6 = r - 2</math>, <math>10 = 2c</math>).</li> <li>■ Create a problem in context for an equation.</li> </ul>
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<b>Strand:</b> Shape and Space (Measurement)	<b>General Learning Outcome:</b> Use direct or indirect measurement to solve problems.
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<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>	<ul style="list-style-type: none"> <li>■ Construct or draw two or more rectangles for a given perimeter in a problem-solving context.</li> <li>■ Construct or draw two or more rectangles for a given area in a problem-solving context.</li> <li>■ Illustrate that for any perimeter, the square or shape closest to a square will result in the greatest area.</li> <li>■ Illustrate that for any perimeter, the rectangle with the smallest possible width will result in the least area.</li> <li>■ Provide a real-life context for when it is important to consider the relationship between area and perimeter.</li> </ul>
<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>	<ul style="list-style-type: none"> <li>■ Provide a referent for one millimetre and explain the choice.</li> <li>■ Provide a referent for one centimetre and explain the choice.</li> <li>■ Provide a referent for one metre and explain the choice.</li> <li>■ Show that 10 millimetres is equivalent to 1 centimetre using concrete materials (e.g., ruler).</li> <li>■ Show that 1000 millimetres is equivalent to 1 metre using concrete materials (e.g., metre stick).</li> <li>■ Provide examples of when millimetres are used as the unit of measure.</li> </ul>

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	<b>[V]</b> Visualization

<b>Strand:</b> Shape and Space (Measurement) <i>(continued)</i>	<b>General Learning Outcome:</b> Use direct or indirect measurement to solve problems.
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<p>5.SS.3. Demonstrate an understanding of volume by</p> <ul style="list-style-type: none"> <li>■ selecting and justifying referents for <math>\text{cm}^3</math> or <math>\text{m}^3</math> units</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>	<ul style="list-style-type: none"> <li>■ Identify the cube as the most efficient unit for measuring volume and explain why.</li> <li>■ Provide a referent for a cubic centimetre and explain the choice.</li> <li>■ Provide a referent for a cubic metre and explain the choice.</li> <li>■ Determine which standard cubic unit is represented by a given referent.</li> <li>■ Estimate the volume of a 3-D object using personal referents.</li> <li>■ Determine the volume of a 3-D object using manipulatives and explain the strategy.</li> <li>■ Construct a rectangular prism for a given volume.</li> <li>■ Explain that many rectangular prisms are possible for a given volume by constructing more than one rectangular prism for the same volume.</li> </ul>
<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 mL or L units</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>	<ul style="list-style-type: none"> <li>■ Demonstrate that 1000 millilitres is equivalent to 1 litre by filling a 1-litre container using a combination of smaller containers.</li> <li>■ Provide a referent for a litre and explain the choice.</li> <li>■ Provide a referent for a millilitre and explain the choice.</li> <li>■ Determine which capacity unit (mL or L) is represented by a given referent.</li> <li>■ Estimate the capacity of a container using personal referents.</li> <li>■ Determine the capacity of a container using materials that take the shape of the inside of the container (e.g., a liquid, rice, sand, beads), and explain the strategy.</li> </ul>

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<b>Strand:</b> Shape and Space (3-D Objects and 2-D Shapes)	<b>General Learning Outcome:</b> Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.
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5.SS.5. Describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes, that are <ul style="list-style-type: none"> <li>■ parallel</li> <li>■ intersecting</li> <li>■ perpendicular</li> <li>■ vertical</li> <li>■ horizontal</li> </ul> [C, CN, R, T, V]	<ul style="list-style-type: none"> <li>■ Identify parallel, intersecting, perpendicular, vertical, and horizontal edges and faces on 3-D objects.</li> <li>■ Identify parallel, intersecting, perpendicular, vertical, and horizontal sides on 2-D shapes.</li> <li>■ Provide examples from the environment that show parallel, intersecting, perpendicular, vertical, and horizontal line segments.</li> <li>■ Find examples of edges, faces, and sides that are parallel, intersecting, perpendicular, vertical, and horizontal in print and electronic media, such as newspapers, magazines, and the Internet.</li> <li>■ Draw 2-D shapes or 3-D objects that have edges, faces, and sides that are parallel, intersecting, perpendicular, vertical, or horizontal.</li> <li>■ Describe the faces and edges of a 3-D object using terms such as parallel, intersecting, perpendicular, vertical, or horizontal.</li> <li>■ Describe the sides of a 2-D shape using terms such as parallel, intersecting, perpendicular, vertical, or horizontal.</li> </ul>
5.SS.6. Identify and sort quadrilaterals, including <ul style="list-style-type: none"> <li>■ rectangles</li> <li>■ squares</li> <li>■ trapezoids</li> <li>■ parallelograms</li> <li>■ rhombuses</li> </ul> according to their attributes. [C, R, V]	<ul style="list-style-type: none"> <li>■ Identify and describe the characteristics of a pre-sorted set of quadrilaterals.</li> <li>■ Sort a set of quadrilaterals and explain the sorting rule.</li> <li>■ Sort a set of quadrilaterals according to the lengths of the sides.</li> <li>■ Sort a set of quadrilaterals according to whether or not opposite sides are parallel.</li> </ul>

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<b>Strand:</b> Shape and Space (Transformations)	<b>General Learning Outcome:</b> Describe and analyze position and motion of objects and shapes.
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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]

- Translate a 2-D shape horizontally, vertically, or diagonally, and describe the position and orientation of the image.
- Rotate a 2-D shape about a point, and describe the position and orientation of the image.
- Reflect a 2-D shape in a line of reflection, and describe the position and orientation of the image.
- Perform a transformation of a 2-D shape by following instructions.
- Draw a 2-D shape, translate the shape, and record the translation by describing the direction and magnitude of the movement (e.g., the circle moved 3 cm to the left).
- Draw a 2-D shape, rotate the shape, and describe the direction of the turn (clockwise or counter-clockwise), the fraction of the turn, and point of rotation.
- Draw a 2-D shape, reflect the shape, and identify the line of reflection and the distance of the image from the line of reflection.
- Predict the result of a single transformation of a 2-D shape and verify the prediction.

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<b>Strand:</b> Shape and Space (Transformations) <i>(continued)</i>	<b>General Learning Outcome:</b> Describe and analyze position and motion of objects and shapes.
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<b>Specific Learning Outcomes</b> <i>It is expected that students will:</i>	<b>Achievement Indicators</b> <i>The following set of indicators <b>may</b> be used to determine whether students have met the corresponding specific outcome.</i>
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<p>5.SS.8. Identify a single transformation (translation, rotation, or reflection) of 2-D shapes. [C, T, V]</p>	<ul style="list-style-type: none"> <li>■ Provide an example of a translation, a rotation, and a reflection.</li> <li>■ Identify a single transformation as a translation, rotation, or reflection.</li> <li>■ Describe a rotation by the direction of the turn (clockwise or counter-clockwise).</li> </ul>
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Grade 5

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

<b>Strand:</b> Statistics and Probability (Data Analysis)	<b>General Learning Outcome:</b> Collect, display, and analyze data to solve problems.
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**Specific Learning Outcomes**  
*It is expected that students will:*

**Achievement Indicators**  
*The following set of indicators **may** be used to determine whether students have met the corresponding specific outcome.*

<p>5.SP.1. Differentiate between first-hand and second-hand data. [C, R, T, V]</p>	<ul style="list-style-type: none"> <li>■ Explain the difference between first-hand and second-hand data.</li> <li>■ Formulate a question that can best be answered using first-hand data and explain why.</li> <li>■ Formulate a question that can best be answered using second-hand data and explain why.</li> <li>■ Find examples of second-hand data in print and electronic media, such as newspapers, magazines, and the Internet.</li> </ul>
<p>5.SP.2. Construct and interpret double bar graphs to draw conclusions. [C, PS, R, T, V]</p>	<ul style="list-style-type: none"> <li>■ Determine the attributes (title, axes, intervals, and legend) of double bar graphs by comparing a set of double bar graphs.</li> <li>■ Represent a set of data by creating a double bar graph, label the title and axes, and create a legend with or without the use of technology.</li> <li>■ Draw conclusions from a double bar graph to answer questions.</li> <li>■ Provide examples of double bar graphs used in a variety of print and electronic media, such as newspapers, magazines, and the Internet.</li> <li>■ Solve a problem by constructing and interpreting a double bar graph.</li> </ul>

Grade 5

<b>[C]</b> Communication	<b>[PS]</b> Problem Solving
<b>[CN]</b> Connections	<b>[R]</b> Reasoning
<b>[ME]</b> Mental Mathematics and Estimation	<b>[T]</b> Technology
	<b>[V]</b> Visualization

<b>Strand:</b> Statistics and Probability (Chance and Uncertainty)	<b>General Learning Outcome:</b> Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.
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<b>Specific Learning Outcomes</b> <i>It is expected that students will:</i>	<b>Achievement Indicators</b> <i>The following set of indicators <b>may</b> be used to determine whether students have met the corresponding specific outcome.</i>
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<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>	<ul style="list-style-type: none"> <li>■ Provide examples of events that are impossible, possible, or certain from personal contexts.</li> <li>■ Classify the likelihood of a single outcome occurring in a probability experiment as impossible, possible, or certain.</li> <li>■ Design and conduct a probability experiment in which the likelihood of a single outcome occurring is impossible, possible, or certain.</li> <li>■ Conduct a probability experiment a number of times, record the outcomes, and explain the results.</li> </ul>
<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>	<ul style="list-style-type: none"> <li>■ Identify outcomes from a probability experiment which are less likely, equally likely, or more likely to occur than other outcomes.</li> <li>■ Design and conduct a probability experiment in which one outcome is less likely to occur than the other outcome.</li> <li>■ Design and conduct a probability experiment in which one outcome is equally as likely to occur as the other outcome.</li> <li>■ Design and conduct a probability experiment in which one outcome is more likely to occur than the other outcome.</li> </ul>