

Alberta's Program of Studies (Curriculum) - Mathematics - Shape and Space (Strand and Sub-strands with Achievement Outcomes)

Note: These strands are not intended to be discrete units of instruction. The integration of outcomes across strands makes mathematical experiences meaningful. Students should make the connection between concepts both within and across strands.

PROGRESSION IS HIGHLIGHTED IN THE FOLLOWING DOCUMENT VIA **BOLDED TEXT**.

MATHEMATICAL PROCESSES

There are critical components that students must encounter in a mathematics program in order to achieve the goals of mathematics education and embrace lifelong learning in mathematics.

| MATHEMATICAL PROCESS | Communication [C] | Connections [CN] | Mental Mathematics and Estimation [ME] | Problem Solving [PS] | Reasoning [R] | Technology [T] | Visualization [V] |
|--------------------------|---|---|--|--|--------------------------------|--|---|
| Students are expected to | communicate in order to learn and express their understanding | connect mathematical ideas to other concepts in mathematics, to everyday experiences and to other disciplines | demonstrate fluency with mental mathematics and estimation | develop and apply new mathematical knowledge through problem solving | develop mathematical reasoning | select and use technologies as tools for learning and for solving problems | develop visualization skills to assist in processing information, making connections and solving problems |

| Kindergarten | | Grade 1 | | Grade 2 | | Grade 3 | | Grade 4 | | | |
|--|---|--|---|--|--|---|--|---|---|---|--|
| Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | | |
| <p>1. Use direct comparison to compare two objects based on single attributes, such as length (height), mass (weight) and volume (capacity).</p> <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Compare the length (height) of two given objects, and explain the comparison, using the words shorter, longer (taller) or almost the same. Compare the mass (weight) of two given objects, and explain the comparison, using the words lighter, heavier or almost the same. Compare the volume (capacity) of two given objects, and explain the comparison, using the words less, more, bigger, smaller or almost the same. | <p>1. Demonstrate an understanding of measurement as a process of comparing by:</p> <ul style="list-style-type: none"> identifying attributes that can be compared ordering objects making statements of comparison filling, covering or matching. <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Identify common attributes, such as length (height), mass (weight), volume (capacity) and area, that could be used to compare two given objects. Order a set of objects by length (height), mass (weight), volume (capacity) or area, and explain their ordering. Compare two given objects, and identify the attributes used to compare. Determine which of two or more given objects is longest/shortest by matching, and explain the reasoning. Determine which of two or more given objects is heaviest/lightest by comparing, and explain the reasoning. Determine which of two or more given objects holds the most/least by filling, and explain the reasoning. Determine which of two or more given objects has the greatest/least area by covering, and explain the reasoning. | <p>1. Relate the number of days to a week and the number of months to a year in a problem-solving context.</p> <p>[C, CN, PS, R]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Read a date on a calendar. Name and order the days of the week. Identify the day of the week and the month of the year for an identified calendar date. Communicate that there are seven days in a week and twelve months in a year. Determine whether a given set of days is more or less than a week. Identify yesterday's/tomorrow's date. Identify the month that comes before and the month that comes after a given month. Name and order the months of the year. Solve a given problem involving time that is limited to the number of days in a week and the number of months in a year. | <p>2. Relate the size of a unit of measure to the number of units (limited to nonstandard units) used to measure length and mass (weight).</p> <p>[C, CN, ME, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Explain why one of two given nonstandard units may be a better choice for measuring the length of an object. Explain why one of two given nonstandard units may be a better choice for measuring the mass (weight) of an object. Select a nonstandard unit for measuring the length or mass (weight) of an object, and explain why it was chosen. Estimate the number of nonstandard units needed for a given measurement task. Explain why the number of units of a measurement will vary depending upon the unit of measure used. | <p>2. Relate the passage of time to common activities, using nonstandard and standard units (minutes, hours, days, weeks, months, years).</p> <p>[CN, ME, R]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Select and use a nonstandard unit of measure, such as television shows or pendulum swings, to measure the passage of time, and explain the choice. Identify activities that can or cannot be accomplished in minutes, hours, days, weeks, months and years. Provide personal referents for minutes and hours. | <p>1. Read and record time, using digital and analog clocks, including 24-hour clocks.</p> <p>[C, CN, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> State the number of hours in a day. Express the time orally and numerically from a 12-hour analog clock. Express the time orally and numerically from a 24-hour analog clock. Express the time orally and numerically from a 12-hour digital clock. Express the time orally and numerically from a 24-hour digital clock. Describe time orally as "minutes to" or "minutes after" the hour. Explain the meaning of a.m. and p.m., and provide an example of an activity that occurs during the a.m., and another that occurs during the p.m. |
| | | | | <p>3. Compare and order objects by length, height, distance around and mass (weight), using nonstandard units, and make statements of comparison.</p> <p>[C, CN, ME, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Estimate, measure and record the length, height, distance around or mass (weight) of a given object, using nonstandard units. Compare and order the measure of two or more objects in ascending or descending order, and explain the method of ordering. | <p>3. Demonstrate an understanding of perimeter of regular and irregular shapes by:</p> <ul style="list-style-type: none"> estimating perimeter, using referents for cm or m measuring and recording perimeter (cm, m) constructing different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter. <p>[C, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Measure and record the perimeter of a given regular shape, and explain the strategy used. Measure and record the perimeter of a given irregular shape, and explain the strategy used. Construct a shape for a given perimeter (cm, m). Construct or draw more than one shape for a given perimeter. Estimate the perimeter of a given shape (cm, m), using personal referents. | <p>3. Demonstrate an understanding of area of regular and irregular 2-D shapes by:</p> <ul style="list-style-type: none"> recognizing that area is measured in square units selecting and justifying referents for the units cm² or m² estimating area, using referents for cm² or m² determining and recording area (cm² or m²) in order to demonstrate that many different rectangles may have the same area. <p>[C, CN, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Describe area as the measure of surface recorded in square units. Identify and explain why the square is the most efficient unit for measuring area. Provide a referent for a square centimetre, and explain the choice. Provide a referent for a square metre, and explain the choice. Determine which standard square unit is represented by a given referent. Estimate the area of a given 2-D shape, using personal referents. Determine the area of a regular 2-D shape, and explain the strategy. Determine the area of an irregular 2-D shape, and explain the strategy. Construct a rectangle for a given area. Demonstrate that many rectangles are possible for a given area by drawing at least two different rectangles for the same given area. | | |
| | | | | <p>4. Measure length to the nearest nonstandard unit by:</p> <ul style="list-style-type: none"> using multiple copies of a unit using a single copy of a unit (iteration process). <p>[C, ME, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Explain why overlapping or leaving gaps does not result in accurate measures. Count the number of nonstandard units required to measure the length of a given object, using a single copy or multiple copies of a unit. Estimate and measure a given object, using multiple copies of a nonstandard unit and using a single copy of the same unit many times, and explain the results. Estimate and measure, using nonstandard units, a given length that is not a straight line. | <p>3. Demonstrate an understanding of measuring length (cm, m) by:</p> <ul style="list-style-type: none"> selecting and justifying referents for the units cm and m modelling and describing the relationship between the units cm and m estimating length, using referents measuring and recording length, width and height. <p>[C, CN, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Provide a personal referent for one centimetre, and explain the choice. Provide a personal referent for one metre, and explain the choice. Match a given standard unit to a given referent. Show that 100 cm is equivalent to 1 m by using concrete materials. Estimate the length of an object, using personal referents. Determine and record the length and width of a given 2-D shape. Determine and record the length, width or height of a given 3-D object. Draw a line segment of a given length, using a ruler. Sketch a line segment of a given length without using a ruler. | <p>2. Read and record calendar dates in a variety of formats.</p> <p>[C, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Write dates in a variety of formats; e.g., yyyymm/dd, dd/mm/yyyy, Month 01, 2007, dd/mm/yy. Relate dates written in the format yyyy/mm/dd to dates on a calendar. Identify possible interpretations of a given date; e.g., 06/03/04. | | |
| | | | | <p>5. Demonstrate that changing the orientation of an object does not alter the measurements of its attributes.</p> <p>[C, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Measure a given object, change the orientation, re-measure, and explain the results. | <p>4. Demonstrate an understanding of measuring mass (g, kg) by:</p> <ul style="list-style-type: none"> selecting and justifying referents for the units g and kg modelling and describing the relationship between the units g and kg estimating mass, using referents measuring and recording mass. <p>[C, CN, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Provide a personal referent for one gram, and explain the choice. Provide a personal referent for one kilogram, and explain the choice. Match a given standard unit to a given referent. Explain the relationship between 1000 g and 1 kg, using a model. Estimate the mass of a given object, using personal referents. Determine and record the mass of a given 3-D object. Measure, using a scale, and record, using the units g and kg, the mass of given everyday objects. Provide examples of 3-D objects that have a mass of approximately 1 g, 100 g and 1 kg. Determine the mass of two given similar objects with different masses, and explain the results. Determine the mass of an object, change its shape, re-measure its mass, and explain the results. | | | | |

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| MATHEMATICAL PROCESSES | Communication [C] | Connections [CN] | Mental Mathematics and Estimation [ME] | Problem Solving [PS] | Reasoning [R] | Technology [T] | Visualization [V] |
|--------------------------|---|---|--|--|--------------------------------|--|--|
| Students are expected to | communicate in order to learn and express their understanding | connect mathematical ideas to other concepts in mathematics, to everyday experiences and to other disciplines | demonstrate fluency with mental mathematics and estimation | develop and apply new mathematical knowledge through problem solving | develop mathematical reasoning | select and use technologies as tools for learning and for solving problems | develop visualization skills to assist in processing information, making |

Sub-Strand: 3-D Objects and 2-D Shapes

| Kindergarten | | Grade 1 | | Grade 2 | | Grade 3 | | Grade 4 | |
|--|--|---|--|--|---|--|---|---|---|
| Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators |
| <p>General Outcome: B.1.1 Describe and construct right rectangular and right triangular prisms.</p> | | | | | | | | | |
| 2. Sort 3-D objects, using a single attribute. [C, CN, PS, R, V] | The following set of indicators may be used to determine whether: * Identify a common attribute in a given set of 3-D objects. * Sort a given set of familiar 3-D objects, using a single attribute such as size or shape, and explain the sorting rule. * Determine the difference between two given pre-sorted sets by explaining a sorting rule used to sort them. | It is expected that students will: 2. Sort 3-D objects and 2-D shapes, using one attribute, and explain the sorting rule. [C, CN, R, V] | The following set of indicators may be used to determine whether: * Sort a given set of familiar 3-D objects or 2-D shapes, using a given sorting rule. * Choose a single attribute to sort a given set of familiar 3-D objects, sort the set, and explain the sorting rule. * Choose a single attribute to sort a given set of 2-D shapes, sort the set, and explain the sorting rule. * Determine the difference between two given pre-sorted sets of familiar 3-D objects or 2-D shapes, and explain a possible sorting rule used to sort them. | It is expected that students will: 6. Sort 2-D shapes and 3-D objects, using two attributes, and explain the sorting rule. [C, CN, R, V] | The following set of indicators may be used to determine whether: * Determine the differences between two given pre-sorted sets, and explain the sorting rule. * Identify and name two common attributes of items within a given sorted group. * Sort a given set of 2-D shapes (regular and irregular), according to two attributes, and explain the sorting rule. * Sort a given set of 3-D objects, according to two attributes, and explain the sorting rule. | It is expected that students will: 7. Sort regular and irregular polygons, including: * triangles * quadrilaterals * pentagons * hexagons * octagons according to the number of sides. [C, CN, R, V] | The following set of indicators may be used to determine whether: * Classify a given set of regular and irregular polygons according to the number of sides. * Identify given regular and irregular polygons that have different dimensions. * Identify given regular and irregular polygons that have different orientations. | It is expected that students will: 4. Describe and construct right rectangular and right triangular prisms. [C, CN, R, V] | The following set of indicators may be used to determine whether: * Identify and name common attributes of right rectangular prisms from given sets of right rectangular prisms. * Identify and name common attributes of right triangular prisms from given sets of right triangular prisms. * Sort a given set of right rectangular and right triangular prisms, using the shape of the base. * Construct and describe a model of a right rectangular and a right triangular prism, using materials such as pattern blocks or modeling clay. * Construct right rectangular prisms from their nets. * Construct right triangular prisms from their nets. * Identify examples of right rectangular and right triangular prisms found in the environment. |
| <p>General Outcome: B.1.2 Build and describe 3-D objects.</p> | | | | | | | | | |
| 3. Build and describe 3-D objects. [CN, PS, V] | * Create a representation of a given 3-D object, using materials such as modeling clay and building blocks, and compare the representation to the original 3-D object. * Describe a given 3-D object, using words such as big, little, round, like a box and like a can. | 3. Replicate composite 2-D shapes and 3-D objects. [CN, PS, V] | * Select 2-D shapes from a given set to reproduce a given composite 2-D shape. * Select 3-D objects from a given set to reproduce a given composite 3-D object. * Predict and select the 2-D shapes used to produce a composite 2-D shape, and verify by deconstructing the composite shape. * Predict and select the 3-D objects used to produce a composite 3-D object, and verify by deconstructing the composite object. | 7. Describe, compare and construct 2-D objects, including: * cubes * spheres * cones * cylinders * pyramids. [C, CN, R, V] | * Sort a given set of 3-D objects, and explain the sorting rule. * Identify common attributes of cubes, spheres, cones, cylinders and pyramids from given sets of the same 3-D objects. * Identify and describe given 3-D objects with different dimensions. * Identify and describe given 3-D objects with different orientations. * Create and describe a representation of a given 3-D object, using materials such as modelling clay. * Identify examples of cubes, spheres, cones, cylinders and pyramids found in the environment. | 6. Describe 3-D objects according to the shape of the faces and the number of edges and vertices. [C, CN, PS, R, V] | * Identify the faces, edges and vertices of given 3-D objects, including cubes, spheres, cones, cylinders, pyramids and prisms. * Identify the shape of the faces of a given 3-D object. * Determine the number of faces, edges and vertices of a given 3-D object. * Construct a skeleton of a given 3-D object, and describe how the skeleton relates to the 3-D object. * Sort a given set of 3-D objects according to the number of faces, edges or vertices. | | |
| <p>General Outcome: B.1.3 Compare and match a given 2-D shape, such as a triangle, square, rectangle or circle, to the faces of 3-D objects in the environment.</p> | | | | | | | | | |
| <p>General Outcome: B.1.4 Describe, compare and construct 2-D shapes, including: * triangles * squares * rectangles * circles. [C, CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.5 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.6 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.7 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.8 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.9 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.10 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.11 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.12 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.13 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.14 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.15 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.16 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.17 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.18 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.19 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.20 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.21 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.22 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.23 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.24 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.25 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.26 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.27 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.28 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.29 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.30 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.31 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.32 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.33 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.34 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.35 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.36 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.37 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.38 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.39 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.40 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.41 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.42 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.43 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.44 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.45 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.46 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.47 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.48 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.49 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.50 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.51 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.52 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.53 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.54 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.55 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.56 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.57 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.58 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.59 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.60 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.61 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.62 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.63 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.64 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.65 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.66 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.67 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.68 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.69 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.70 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.71 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.72 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.73 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.74 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.75 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.76 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.77 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.78 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.79 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.80 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.81 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.82 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.83 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.84 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.85 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.86 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.87 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.88 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.89 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.90 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.91 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.92 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.93 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.94 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.95 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.96 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.97 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.98 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.99 Demonstrate an understanding of line symmetry by: * identifying symmetrical 2-D shapes * creating symmetrical 2-D shapes * drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]</p> | | | | | | | | | |
| <p>General Outcome: B.1.100 Demonstrate an understanding of congruency, concretely and pictorially. [CN, R, V]</p> | | | | | | | | | |

Alberta's Program of Studies (Curriculum) Curriculum - Mathematics - Shape and Space (Strand and Sub-strands with Achievement Outcomes)

Note: These strands are not intended to be discrete units of instruction. The integration of outcomes across strands makes mathematical experiences meaningful. Students should make the connection between concepts both within and across strands.

PROGRESSION IS HIGHLIGHTED IN THE FOLLOWING DOCUMENT VIA **BOLDED TEXT**.

MATHEMATICAL PROCESSES

There are critical components that students must encounter in a mathematics program in order to achieve the goals of mathematics education and embrace lifelong learning in mathematics.

| MATHEMATICAL PROCESS | Communication [C] | Connections [CN] | Mental Mathematics and Estimation [ME] | Problem Solving [PS] | Reasoning [R] | Technology [T] | Visualization [V] |
|--------------------------|---|---|--|--|--------------------------------|--|--|
| Students are expected to | communicate in order to learn and express their understanding | connect mathematical ideas to other concepts in mathematics, to everyday experiences and to other disciplines | demonstrate fluency with mental mathematics and estimation | develop and apply new mathematical knowledge through problem solving | develop mathematical reasoning | select and use technologies as tools for learning and for solving problems | develop visualization skills to assist in processing information, making connections and solving problems. |

| Grade 5 | | Grade 6 | | Grade 7 | | Grade 8 | | Grade 9 | |
|--|--|--|--|--|---|--|--|---|---|
| Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators | Specific Outcome | Achievement Indicators |
| <p>1. Identify 90° angles.</p> <p>It is expected that students will:</p> <p>[ME, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Provide examples of 90° angles in the environment. Sketch 90° angles without the use of a protractor. Label a 90° angle, using a symbol. | <p>2. Demonstrate that the sum of interior angles is:</p> <ul style="list-style-type: none"> 180° in a triangle 360° in a quadrilateral. <p>[C, R]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Explain, using models, that the sum of the interior angles of a triangle is the same for all triangles. Explain, using models, that the sum of the interior angles of a quadrilateral is the same for all quadrilaterals. | <p>3. Demonstrate an understanding of circles by:</p> <ul style="list-style-type: none"> describing the relationships among radius, diameter and circumference relating circumference to pi determining the sum of the central angles constructing circles with a given radius or diameter solving problems involving the radii, diameters and circumferences of circles. <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Illustrate and explain that the diameter is twice the radius in a given circle. Explain that, for all circles, pi is the ratio of the circumference to the diameter (C/d) and its value is approximately 3.14. Explain, using an illustration, that the sum of the central angles of a circle is 360°. Draw a circle with a given radius or diameter, with and without a compass. Solve a given contextual problem involving circles. | <p>4. Develop and apply formulas for determining the volume of right rectangular prisms and right cylinders.</p> <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Determine the volume of a given right prism, given the area of the base. Generalize and apply a rule for determining the volume of right cylinders. Explain the connection between the area of the base of a given right 3-D object and the formula for the volume of the object. Demonstrate that the orientation of a given 3-D object does not affect its volume. Apply a formula to solve a given problem involving the volume of a right cylinder or a right prism. | <p>1. Solve problems and justify the solution strategy, using the following circle properties:</p> <ul style="list-style-type: none"> the perpendicular from the centre of a circle to a chord bisects the chord the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc the inscribed angles subtended by the same arc are congruent a tangent to a circle is perpendicular to the radius at the point of tangency <p>[C, CN, PS, R, T, V] [CT, CS-3.1, CS-3.4]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Provide an example that illustrates: <ul style="list-style-type: none"> the perpendicular from the centre of a circle to a chord bisects the chord the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc the inscribed angles subtended by the same arc are congruent a tangent to a circle is perpendicular to the radius at the point of tangency Solve a given problem involving application of one or more of the circle properties. Determine the measure of a given angle inscribed in a semicircle, using the circle properties. Explain the relationship among the centre of a circle, a chord and the perpendicular bisector of the chord. |
| <p>4. Demonstrate an understanding of volume by:</p> <ul style="list-style-type: none"> selecting and justifying referents for cm³ or m³ units estimating volume, using referents for cm³ or m³ measuring and recording volume (cm³ or m³) constructing right rectangular prisms for a given volume. <p>[C, CN, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Identify the cube as the most efficient unit for measuring volume, and explain why. Provide a referent for a cubic centimetre, and explain the choice. Provide a referent for a cubic metre, and explain the choice. Determine which standard cubic unit is represented by a given referent. Estimate the volume of a given 3-D object, using personal referents. Determine the volume of a given 3-D object, using manipulatives, and explain the strategy. Construct a right rectangular prism for a given volume. Construct more than one right rectangular prism for the same given volume. | <p>1. Demonstrate an understanding of angles by:</p> <ul style="list-style-type: none"> identifying examples of angles in the environment classifying angles according to their measure estimating the measure of angles (using 45°, 90° and 180° as reference angles) determining angle measures in degrees drawing and labelling angles when the measure is specified. <p>[C, CN, ME, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Provide examples of angles found in the environment. Classify a given set of angles according to their measure; e.g., acute, right, obtuse, straight, reflex. Sketch 45°, 90° and 180° angles without the use of a protractor, and describe the relationship among them. Estimate the measure of an angle, using 45°, 90° and 180° as reference angles. Measure, using a protractor, given angles in various orientations. Draw and label a specified angle in various orientations, using a protractor. | <p>2. Develop and apply a formula for determining the area of:</p> <ul style="list-style-type: none"> triangles parallelograms circles. <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Illustrate and explain how the area of a rectangle can be used to determine the area of a triangle. Generalize a rule to create a formula for determining the area of triangles. Illustrate and explain how the area of a rectangle can be used to determine the area of a parallelogram. Generalize a rule to create a formula for determining the area of parallelograms. Illustrate and explain how to estimate the area of a circle without the use of a formula. Apply a formula for determining the area of a given circle. Solve a given problem involving the area of triangles, parallelograms and/or circles. | <p>1. Determine the surface area of:</p> <ul style="list-style-type: none"> right rectangular prisms right triangular prisms right cylinders circles. <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Explain, using examples, the relationship between the area of 2-D shapes and the surface area of a given 3-D object. Identify all the faces of a given prism, including right rectangular and right triangular prisms. Identify all the faces of a given right cylinder. Describe and apply strategies for determining the surface area of a given right rectangular or right triangular prism. Describe and apply strategies for determining the surface area of a given right cylinder. Solve a given problem involving surface area. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | |
| <p>2. Design and construct different rectangles, given either perimeter or area, or both (whole numbers), and make generalizations.</p> <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Construct or draw two or more rectangles for a given perimeter in a problem-solving context. Construct or draw two or more rectangles for a given area in a problem-solving context. Determine the shape that will result in the greatest area for any given perimeter. Determine the shape that will result in the least area for any given perimeter. Provide a real-life context for when it is important to consider the relationship between area and perimeter. | <p>3. Develop and apply a formula for determining the:</p> <ul style="list-style-type: none"> perimeter of polygons area of rectangles volume of right rectangular prisms <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Explain, using models, how the perimeter of any polygon can be determined. Generalize a rule (formula) for determining the perimeter of polygons, including rectangles and squares. Explain, using models, how the area of any rectangle can be determined. Generalize a rule (formula) for determining the area of rectangles. Explain, using models, how the volume of any right rectangular prism can be determined. Generalize a rule (formula) for determining the volume of right rectangular prisms. Solve a given problem involving the perimeter of polygons, the area of rectangles and/or the volume of right rectangular prisms. | <p>2. Develop and apply a formula for determining the area of:</p> <ul style="list-style-type: none"> triangles parallelograms circles. <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Illustrate and explain how the area of a rectangle can be used to determine the area of a triangle. Generalize a rule to create a formula for determining the area of triangles. Illustrate and explain how the area of a rectangle can be used to determine the area of a parallelogram. Generalize a rule to create a formula for determining the area of parallelograms. Illustrate and explain how to estimate the area of a circle without the use of a formula. Apply a formula for determining the area of a given circle. Solve a given problem involving the area of triangles, parallelograms and/or circles. | <p>1. Determine the surface area of:</p> <ul style="list-style-type: none"> right rectangular prisms right triangular prisms right cylinders circles. <p>[C, CN, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Explain, using examples, the relationship between the area of 2-D shapes and the surface area of a given 3-D object. Identify all the faces of a given prism, including right rectangular and right triangular prisms. Identify all the faces of a given right cylinder. Describe and apply strategies for determining the surface area of a given right rectangular or right triangular prism. Describe and apply strategies for determining the surface area of a given right cylinder. Solve a given problem involving surface area. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | |
| <p>3. Demonstrate an understanding of measuring length (mm) by:</p> <ul style="list-style-type: none"> selecting and justifying referents for the unit mm modelling and describing the relationship between mm and cm units, and between mm and m units. <p>[C, CN, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Provide a referent for one millimetre, and explain the choice. Provide a referent for one centimetre, and explain the choice. Provide a referent for one metre, and explain the choice. Show that 10 millimetres is equivalent to 1 centimetre, using concrete materials; e.g., a ruler. Show that 1000 millimetres is equivalent to 1 metre, using concrete materials; e.g., a metre stick. Provide examples of when millimetres are used as the unit of measure. | <p>4. Demonstrate an understanding of capacity by:</p> <ul style="list-style-type: none"> describing the relationship between mL and L selecting and justifying referents for mL or L units estimating capacity, using referents for mL or L measuring and recording capacity (mL or L) <p>[C, CN, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Demonstrate that 1000 millilitres is equivalent to 1 litre by filling a 1 litre container using a combination of smaller containers. Provide a referent for a litre, and explain the choice. Provide a referent for a millilitre, and explain the choice. Determine the capacity unit of a given referent. Estimate the capacity of a given container, using personal referents. Determine the capacity of a given container, using materials that take the shape of the inside of the container (e.g., a liquid, rice, sand, beads), and explain the strategy. | <p>2. Draw and construct nets for 3-D objects.</p> <p>[C, CN, PS, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | | |
| <p>5. Demonstrate an understanding of capacity by:</p> <ul style="list-style-type: none"> describing the relationship between mL and L selecting and justifying referents for mL or L units estimating capacity, using referents for mL or L measuring and recording capacity (mL or L) <p>[C, CN, ME, PS, R, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Demonstrate that 1000 millilitres is equivalent to 1 litre by filling a 1 litre container using a combination of smaller containers. Provide a referent for a litre, and explain the choice. Provide a referent for a millilitre, and explain the choice. Determine the capacity unit of a given referent. Estimate the capacity of a given container, using personal referents. Determine the capacity of a given container, using materials that take the shape of the inside of the container (e.g., a liquid, rice, sand, beads), and explain the strategy. | <p>2. Draw and construct nets for 3-D objects.</p> <p>[C, CN, PS, V]</p> | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | <p>The following set of indicators may be used to determine whether students have met the corresponding specific outcome:</p> <ul style="list-style-type: none"> Match a given net to the 3-D object it represents. Draw nets for a given right cylinder, right rectangular prism and right triangular prism, and verify by constructing the 3-D objects from the nets. Predict 3-D objects that can be created from a given net, and verify the prediction. | | |

