

Shape and Space (Measurement)

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

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Outcome Use direct and indirect measurement to solve problems.	General Outcome Use direct and indirect measurement to solve problems.	General Outcome Use direct and indirect measurement to solve problems.	General Outcome Use direct and indirect measurement to solve problems.	General Outcome Use direct and indirect measurement to solve problems.
Specific Outcomes	Specific Outcomes	Specific Outcomes	Specific Outcomes	Specific Outcomes
<ol style="list-style-type: none"> Identify 90° angles. [ME, V] Design and construct different rectangles, given either perimeter or area, or both (whole numbers), and make generalizations. [C, CN, PS, R, V] Demonstrate an understanding of measuring length (mm) by: <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. [C, CN, ME, PS, R, V] 	<ol style="list-style-type: none"> Demonstrate an understanding of angles by: <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. [C, CN, ME, V] Demonstrate that the sum of interior angles is: <ul style="list-style-type: none"> 180° in a triangle 360° in a quadrilateral. [C, R] 	<ol style="list-style-type: none"> Demonstrate an understanding of circles by: <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. [C, CN, PS, R, V] Develop and apply a formula for determining the area of: <ul style="list-style-type: none"> triangles parallelograms circles. [CN, PS, R, V] 	<ol style="list-style-type: none"> Develop and apply the Pythagorean theorem to solve problems. [CN, PS, R, T, V] [ICT: P2–3.4] Draw and construct nets for 3-D objects. [C, CN, PS, V] Determine the surface area of: <ul style="list-style-type: none"> right rectangular prisms right triangular prisms right cylinders to solve problems. [C, CN, PS, R, V] Develop and apply formulas for determining the volume of right rectangular prisms, right triangular prisms and right cylinders. [C, CN, PS, R, V] 	<ol style="list-style-type: none"> Solve problems and justify the solution strategy, using the following circle properties: <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. [C, CN, PS, R, T, V] [ICT: C6–3.1, C6–3.4]

Shape and Space (Measurement) (continued)

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

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Outcome Use direct and indirect measurement to solve problems.	General Outcome Use direct and indirect measurement to solve problems.			
Specific Outcomes 4. Demonstrate an understanding of volume by: <ul style="list-style-type: none"> • selecting and justifying referents for cm^3 or m^3 units • estimating volume, using referents for cm^3 or m^3 • measuring and recording volume (cm^3 or m^3) • constructing right rectangular prisms for a given volume. [C, CN, ME, PS, R, V] 5. Demonstrate an understanding of capacity by: <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). [C, CN, ME, PS, R, V]	Specific Outcomes 3. Develop and apply a formula for determining the: <ul style="list-style-type: none"> • perimeter of polygons • area of rectangles • volume of right rectangular prisms. [C, CN, PS, R, V]			

Shape and Space (3-D Objects and 2-D Shapes)

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

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Outcome Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.	General Outcome Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.	General Outcome Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.	General Outcome Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.	General Outcome Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.
Specific Outcomes 6. 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"> • parallel • intersecting • perpendicular • vertical • horizontal. [C, CN, R, T, V] [ICT: C6–2.2, P5–2.3]	Specific Outcomes 4. Construct and compare triangles, including: <ul style="list-style-type: none"> • scalene • isosceles • equilateral • right • obtuse • acute in different orientations. [C, PS, R, V]	Specific Outcomes 3. Perform geometric constructions, including: <ul style="list-style-type: none"> • perpendicular line segments • parallel line segments • perpendicular bisectors • angle bisectors. [CN, R, V]	Specific Outcomes 5. Draw and interpret top, front and side views of 3-D objects composed of right rectangular prisms. [C, CN, R, T, V] [ICT: C6–3.4]	Specific Outcomes 2. Determine the surface area of composite 3-D objects to solve problems. [C, CN, PS, R, V]
7. Identify and sort quadrilaterals, including: <ul style="list-style-type: none"> • rectangles • squares • trapezoids • parallelograms • rhombuses according to their attributes. [C, R, V]	5. Describe and compare the sides and angles of regular and irregular polygons. [C, PS, R, V]			3. Demonstrate an understanding of similarity of polygons. [C, CN, PS, R, V]

Shape and Space (Transformations)

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

Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
General Outcome Describe and analyze position and motion of objects and shapes.	General Outcome Describe and analyze position and motion of objects and shapes.	General Outcome Describe and analyze position and motion of objects and shapes.	General Outcome Describe and analyze position and motion of objects and shapes.	General Outcome Describe and analyze position and motion of objects and shapes.
Specific Outcomes	Specific Outcomes	Specific Outcomes	Specific Outcomes	Specific Outcomes
<p>8. Identify and describe a single transformation, including a translation, rotation and reflection of 2-D shapes. [C, T, V] [ICT: C6–2.1]</p> <p>9. Perform, concretely, a single transformation (translation, rotation or reflection) of a 2-D shape, and draw the image. [C, CN, T, V] [ICT: C6–2.1]</p>	<p>6. Perform a combination of translations, rotations and/or reflections on a single 2-D shape, with and without technology, and draw and describe the image. [C, CN, PS, T, V]</p> <p>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>8. Identify and plot points in the first quadrant of a Cartesian plane, using whole number ordered pairs. [C, CN, V]</p> <p>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] [ICT: C6–2.1]</p>	<p>4. Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs. [C, CN, V]</p> <p>5. Perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices). [C, CN, PS, T, V] [ICT: C6–3.4]</p>	<p>6. Demonstrate an understanding of the congruence of polygons. [CN, R, V]</p>	<p>4. Draw and interpret scale diagrams of 2-D shapes. [CN, R, T, V] [ICT: C6–3.4]</p> <p>5. Demonstrate an understanding of line and rotation symmetry. [C, CN, PS, V]</p>