

Curriculum Planning & Assessment Resource

Mathematics Grade 2



**Alberta Regional Professional
Development Consortia**

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Curriculum Planning & Assessment Resource

Mathematics

Grade 2 Geometry 1

About This Document

This Curriculum Planning & Assessment Resource is intended to be a collection of sample activities, assessments, and resources that teachers may wish to use as they develop their unit plans. This document is not intended to be a sequential list of activities. Rather, the intent is that teachers choose from this resource what is appropriate for their context, and sequence it in their planning.

The sample activities, assessments and resources included in this document have undergone an initial review to determine appropriateness and alignment to the curriculum. However, it is expected that teachers use their professional judgment in selecting activities, assessments and resources that are appropriate for their context.

While every attempt has been made to provide credit and receive permissions, some errors or omissions may have occurred. Please contact info@arpdc.ab.ca to report any error or omissions.

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Important Links	3	New Learn Alberta Progressions	Planners and Concept Maps
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KUSP 2G1.1	4	Recorded Video: <ul style="list-style-type: none"> • How to Read these Curriculum Planning & Assessment Resources 	Curriculum Progressions <ul style="list-style-type: none"> • Skills and Procedures Progression K-3 (under development) • Concept Progressions (under development)
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			Interactive Numbered Outcomes Document with Skills

Acknowledgements

Thank you to all the teachers, numeracy specialists, and technical expertise from Alberta school divisions and ARPDC who collaborated to develop, review, and revise these planning and assessment documents to support curriculum implementation.

Grade 2 Geometry 1

Organizing Idea

Geometry: Shapes are defined and related by geometric attributes.

Guiding Question

How can shape influence perception of space?

Learning Outcome

2G1 Students analyze and explain geometric attributes of shape.

Summative Assessment(s) - Transfer *(In Progress)*

Summative assessments can include the following.

- *Understanding/making sense of a novel context from the real world using one or more concepts (eg. "How are place value and money related?").*
- *Understanding/making sense of a novel context using one or more understandings (eg. Students use money to model the conversion of base 10 values and relate them to base 10 block').*
- *Being able to describe why (linking concepts) something is true, a result, or what might be an extension using learned concepts and understandings.*
- *Apply learning (create products; undertake projects; taking action such as creating a campaign) in a novel context or taking action using the understanding(s).*
- *Construct arguments by taking a position and verifying/proving it with known understandings.*

Summative Assessment(s)

[\[understanding surface vs deep vs transfer\]](#)

[2G1 Summative \(EN\)](#)

[2G1 Summative \(FR\)](#)



KUSP 2G1.1

Assumable Curriculum / Prerequisite Knowledge / Vocabulary

- 2 Dimensional (2D)
- 3 Dimensional (3D)
- Square, circle, rectangle, triangle, cube, sphere, cylinder, prism, pyramid, cone,
- A composite shape is made of 2 or more shapes.
- Symmetry

Student Language | Essential vocabulary & concepts

Geometric Attributes: the traits or properties that make a shape unique and distinct

Side: a line that joins two corners (vertices) of a 2-D shape

Line segment: a section of a line having two endpoints

Vertex/Vertices: represents the location where 2 or more lines (2-D) or edges (3-D) are connected

Edge: where two faces of a 3-D shape meet

Face: the 2-dimensional flat shape that, when combined, create a 3-dimensional shape; every flat surface of a 3-D shape

Two-dimensional (2-D): having length and width

Three-dimensional (3-D): having length, width, and height

Composite shape: a shape made from two or more shapes

Nelson Pre-Assessments

Pre-Assessment 1: Finding Each Students Pathway

Sorting 3D Objects - p. 27

Sorting 2D Shapes - p. 28

Pre-Assessments 2: Finding Each Students Pathway

Describing and Finding 3D Objects - p. 31

Describing and Finding 2D Shapes - p. 32

#Objects and 2D Shapes - p.33

Symmetry - p.34

Sorting 3D Objects - p.35

Sorting 2D Shapes - p. 36

Using 3D Objects - 37

2D Shape Pictures - p. 38

Making 3D Objects with Clay - p. 39

Making 3D Objects - p. 40

I Know Statements | Metacognition

- I know the attributes of shapes include sides, vertices, and faces.
- I know 2-D shapes may have sides that are line segments.
- I know 3-D shapes may have faces that are 2-D shapes.
- I know a shape can be made from other shapes.
- I know that shapes can be named by their attributes.

I Can Statements | Skills

- I can describe the attributes of 2-D shapes.
- I can describe the attributes of 3-D shape.
- I can identify the faces of 3-D shapes as 2-D shapes.
- I can sort 2-D shapes using two attributes and describe the sorting rule.
- I can sort 3-D shape using two attributes and describe the sorting rule.
- I can create a picture or design with shapes from instructions, by seeing the picture or design in my head, or from memory.

Pre-Assessments 3: Finding Each Students Pathway

Naming and Sorting 3D Objects - p.26

Exploring 3D Objects - p.27

Naming and Sorting 2D Shapes - p. 28







Sorting 2D Shapes - p.30

Leaps and Bounds Pages will be referenced in the PreAssessments answer Key for follow up for emerging learners.

Learning Recovery

- Draw ties to shapes in everyday life.
- Discuss how shapes are a part of each student's life.
- Play the 'I Spy' game.
- Play guess the shape game.
- Identify common 2-D shapes (e.g., circle, square, triangle, rectangle).
- Describe and compare the attributes of 2-D shapes.
- Sort 2-D shapes by a single attribute.

Enhancement

Learning Outcome		2G1.1 Students analyze and explain geometric attributes of shape.																					
Knowledge	Understanding	Skills & Procedures	Achievement Indicators	Illustrative Examples	Assessments (Explainer)																		
<p>Common geometric attributes include</p> <ul style="list-style-type: none"> • sides • vertices • faces or surfaces <p>Two-dimensional shapes may have sides that are line segments.</p> <p>Three-dimensional shapes may have faces that are two-dimensional shapes.</p>	<p>Shapes are defined according to geometric attributes.</p> <p>A shape can be visualized as a composition of other shapes.</p>	Sort shapes according to two geometric attributes and describe the sorting rule.	Sorts shapes according to two geometric attributes and describes the sorting rule.	Identify two attributes common to items within a sorted group.	<p>2G1.1a Identifying Common Attributes - Exit Ticket - Surface</p> <p>2G1.1a Identifying and Sorting 2D and 3d Shapes Based on Attributes - Deep</p>																		
		Relate the faces of three-dimensional shapes to two-dimensional shapes.	Relates the faces of three-dimensional shapes to two-dimensional shapes.	Describe 3-D shapes according to the shape of the faces, number of sides and vertices.		<table border="1"> <thead> <tr> <th>Shape</th> <th>Shape Name</th> <th>Number of Faces</th> <th>Vertices</th> <th>Edges</th> <th>Shapes of faces</th> </tr> </thead> <tbody> <tr> <td></td> <td>Cylinder</td> <td>3</td> <td>0</td> <td>2</td> <td>2 circles 1 rectangle</td> </tr> <tr> <td></td> <td>Square Based Pyramid</td> <td>5</td> <td>5</td> <td>8</td> <td>1 Square 4 Triangles</td> </tr> </tbody> </table>	Shape	Shape Name	Number of Faces	Vertices	Edges	Shapes of faces		Cylinder	3	0	2	2 circles 1 rectangle		Square Based Pyramid	5	5	8
Shape	Shape Name	Number of Faces	Vertices	Edges	Shapes of faces																		
	Cylinder	3	0	2	2 circles 1 rectangle																		
	Square Based Pyramid	5	5	8	1 Square 4 Triangles																		

		Create a picture or design with shapes from verbal instructions, visualization, or memory.	Creates a picture or design with shapes from verbal instructions, visualization, or memory.	Create a composite picture or shape using 2-D or 3-D shapes with materials such as modeling clay, cardboard boxes and tubes, pattern blocks (e.g., robot, vehicle, flower, building)	2G1.1c I Spy - Deep

Resources

Mathology

[ARPCD Math Little Books for Alberta Curriculum](#)
[Mathology Free Resources on New Learn Alberta](#)

Mathology Little Books

Mathology Little Book: [I Spy Awesome Buildings](#)
 Mathology Little Book: [Sharing Our Stories](#)

Math UP

- **AB_2-D Shapes**
 - o Lesson 1: Describing 2-D Shapes
 - o Lesson 2: Sorting and Classifying 2-D Shapes
 - o Lesson 3: Composing 2-D Shapes
 - o Lesson 4: Decomposing 2-D Shapes
 - o Lesson 5: 2-D Shapes and Motion
- **AB_3-D Shapes**
 - o Lesson 1: Describing 3-D Shapes
 - o Lesson 2: Sorting and Classifying 3-D Shapes
 - o Lesson 3: Representing 3-D Shapes

Existing Textbooks

Math Focus 2: pages 60-61, 64-65, 82 - 83, 84
Math Focus 3 - Chapter 11
Math Makes Sense 2 Workbook - Unit 6
Math Makes Sense 3 - pages 218-230

Core Knowledge

The image shows three resource covers for CKMath Unit 6: Geometry, Time, and Money. From left to right: the Student Workbook, the Teacher Guide, and the Teacher Resources. Each cover features a colorful illustration of two children sitting at a desk with a laptop, and a 3D cube made of smaller colored cubes. The Student Workbook cover is labeled 'Student Workbook', the Teacher Guide is labeled 'Teacher Guide', and the Teacher Resources is labeled 'Teacher Resources'.

[Student Workbook Link](#) [Teacher Guide Link](#) [Teacher Guide Resources](#)

Source: Core Knowledge

Indigenous Lesson Plans and Resources - [main website](#)

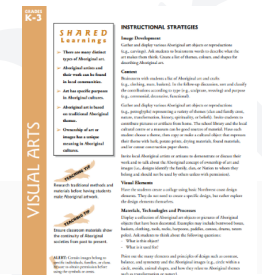
[Grade 2](#)

Suggested activities from the document: Identify and manipulate geometric shapes by

building and/or creating: • Beaded objects

- Origami
- Drums
- Use nature and community walks to locate and recognize geometric shapes (tree, house, fence, rock, signs).
- Plan activities that integrate measurement, geometry and patterns:
 - Tipi making, mini canoe making, blanket making (all seasons)
 - Cabin making (fall, spring)
 - Moose caller (fall)
 - Snowshoe making (winter)

Shapes and 3-D objects play an important role in the design and art of Indigenous communities. [Visual Arts Instructional Strategies](#), from [Shared Learnings. Integrating BC Aboriginal Content K-10](#), p. 30



Problem Solving

Additional Websites and Resources

- Zangle Card Game: [How to play Zangle!](#)

Gizmos

- [New Learn Alberta](#) (teacher login required)
- [Reflections](#)
- [Rock Art \(Transformations\)](#)

Access using your Gizmos account, to request an account alberta@explorelarning.com



KUSP 2G1.2

Prerequisite Knowledge

Common geometric attributes include

- sides
- vertices
- faces or surfaces

Two-dimensional shapes may have sides that are line segments.

Three-dimensional shapes may have faces that are two-dimensional shapes.

Vocabulary | Essential vocabulary & concepts

- **Slide (translation):** when a shape is moved along a straight line without turning
- **Turn (rotation):** when a shape is turned around a point
- **Flip (reflection):** when a shape is flipped in a straight line to form a mirror image
- **Position (orientation):** the location of a shape after a transformation

I Know Statements | Metacognition

- I know that I can slide, turn, or flip a shape.
- I know the attributes of a shape don't change when it is slid, turned, or flipped.

Nelson Pre-Assessments

Pre-Assessment 4: Finding Each Students Pathway

Identifying and sorting 3D Objects - p.45

Symmetry - p. 46

Lines of Symmetry - p.47

Leaps and Bounds Pages will be referenced in the PreAssessments answer Key for follow up for emerging learners.

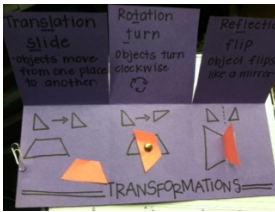

I Can Statements | Skills

- I can describe the attributes of 2-D and 3-D shapes in different positions.
- I can slide, turn, and flip 2-D and 3-D shapes.
- I can identify slides, turns, and flips of 2-D and 3-D shapes in art.

Learning Recovery

Enhancement

- Play the video game [Minecraft](#). Have students look at a line and rotate it to see that it becomes a sheet of glass.
- Perspective: disappearing into the horizon line
- Explore transformations using [Tinkercad](#).
- Explore perspective drawing.

Learning Outcome		2G1.2 Students analyze and explain geometric attributes of shape.			
Knowledge	Understanding	Skills & Procedures	Achievement Indicators	Illustrative Examples	Assessments (Explainer)
<p>A shape can change orientation or position through slides (translations), turns (rotations), or flips (reflections).</p> <p>Shapes can be turned or flipped in the creation of art.</p>	<p>Geometric attributes do not change when a shape is translated, rotated, reflected.</p>	<p>Investigate translation, rotation, and reflection of two- and three-dimensional shapes.</p>	<p>Translates, rotates, and reflects 2-D and 3-D shapes.</p>	 <p>Create a foldable. Try with different 2D shapes. Give students a 3D solid and have them perform a translation, rotation, and reflection. (source: https://curriculum.learnalberta.ca/home/en)</p>	<p>2G1.2a Applying What I Learned After My Investigation - Surface/Deep</p>
		<p>Describe geometric attributes of two- and three-dimensional shapes in various orientations.</p>	<p>Describes the attributes of 2-D and 3-D shapes with different orientations (after a transformation).</p>	<p>Teacher holds up a 2-D or 3-D shape and asks the class “Can you tell me an attribute about this shape?” Teacher performs a translation or reflection or rotation and asks “Does the shape still have the same attribute?”</p>	
		<p>Recognize the translation, rotation, or reflection of shapes represented in artwork.</p>	<p>Identifies shapes in artwork that have been translated, rotated, or reflected.</p>	<p>Look at triangle “A”. Compare the other triangles. Which other triangle has been translated? Which one has been reflected? Which one has been rotated?</p> 	<p>2G1.2c I See Transformations in Art - Deep</p>

Resources

Mathology

[ARPDC Math Little Books for Alberta Curriculum Mathology Free Resources on New Learn Alberta](#)

Mathology Little Books

Mathology Little Book: [Sharing Our Stories](#)
Mathology Little Book: [Gallery Tour](#)

Math UP

AB_2-D Shapes

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Existing Textbooks

Math Makes Sense 5 - Unit 8
Math Focus 5 - Chapter 5

NCETM

[Transforming Shapes](#)

Indigenous Lesson Plans and Resources - [main website](#)

Grade 2
 Suggested activities from the document: Identify and manipulate geometric shapes by building and/or creating:

- Beaded objects
 - Origami
 - Drums
 - Use nature and community walks to locate and recognize geometric shapes (tree, house, fence, rock, signs).
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Look for transformed designs on Indigenous regalia.

Problem Solving

NRich Math Tasks:

[National Flags](#) - this problem explores the shapes and symmetries in some national flags.

[Reflector! Rotcelfer](#) - Can you place blocks that will make this reflection?



Appropriate for 2-4 students working together.
Source: [nrich](#)

Additional Websites and Resources

Gizmos

New Learn Alberta (teacher login required)
[Reflections](#)
[Rock Art \(Transformations\)](#)

Access using your Gizmos account, to request an account alberta@explorellearning.com

Click to jump!



[KUSP 2G1.1](#)

[KUSP 2G1.2](#)

[Literature Connections](#)

Literature Connections

Title	Author	Format (Picture Book, Novel, Non-fiction, other)	Publisher	ISBN	Notes
Captain Invincible and the Space Shape	Stuart J. Murphy	Picture Book	HarperCollins; MathStart 2 edition (Aug. 21 2001)	0064467317	Faces and base of 3D shapes
3-D Shapes	Marina Cohen	Picture Book	Crabtree Publishing; Illustrated edition (Aug. 1 2010)	0778767884, 978-0778767886	Geometric attributes of 3D shapes, creating pictures of 3D shapes
When a Line Bends . . . A Shape Begins	Rhonda Gowler Greene	Picture Book	Clarion Books; Illustrated edition (Sept. 24 2001)	0618152415, 978-0618152414	Attributes of 2D shapes, shapes in natural world