**Grade: 1 Subject(s): Mathematics →1. E1. Geometric and Spatial Reasoning 2. Visual Arts→ D1. Creating and Presenting Unit of study for 3 Weeks**

|  **Curriculum Expectations Selected for Focus** - What cluster of expectations will be the focus for learning?**Mathematics** E1. Geometric and Spatial Reasoning: describe and represent shape, location, and movement by applying [geometric properties](https://www.dcp.edu.gov.on.ca/en/) and spatial relationships in order to navigate the world around them E1.1 [sort three-dimensional objects](https://www.dcp.edu.gov.on.ca/en/) and [two-dimensional shapes](https://www.dcp.edu.gov.on.ca/en/) according to one [attribute](https://www.dcp.edu.gov.on.ca/en/) at a time, and identify the sorting rule being usedE1.2 construct three-dimensional objects, and identify two-dimensional shapes contained within structures and objectsE1.3 construct and describe two-dimensional shapes and three-dimensional objects that have matching halves**Visual Arts**D1. Creating and Presenting: apply the creative process (see pages 19–22) to produce a variety of two- and three-dimensional art works, using elements, principles, and techniques of visual arts to communicate feelings, ideas, and understandingsElement of design focus: shape and form: geometric and organic shapes and forms of familiar objects (e.g., geometric: circles,blocks; organic: clouds, flowers)D1.1 create two- and three-dimensional works of art that express feelings and ideas inspired by personal experiences (e.g., a tempera painting that communicates their feelings about a special occasion or event such as a fair or a parade; a sculpture of a favourite musical instrument made with found objects; a watercolour painting of a favourite part of the schoolyard; an assemblage in which images and objects from home and school are used to represent special memories)D1.2 demonstrate an understanding of composition, using principles of design to create narrative artworks or art works on a theme or topic (e.g., a drawing of an approaching storm that uses a variety of lines to create contrast [dashed, jagged, curved, spiral]; a cardboard orpapier mâché sculpture of a mythical animal in a dynamic pose that uses surface materials to show a contrast in texture [fuzzy yarn; coarse,prickly sawdust])D1.3 use elements of design in art works to communicate ideas, messages, and personal understandings (e.g., a pattern of broken, wavy, and zigzag lines to make the bark of a tree look rough in a drawing; size and arrangement of organic shapes in a painting of flowers to create the impression that the various flowers are at different distances from the viewer) | What do students need to know and be able to do to demonstrate that they have met these expectations?

| **KNOW (nouns)** | **DO (verbs)**

| **Say (verbs)** | **Think (verbs)** | **Do (verbs)** |
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| shape location movement geometric properties spatial relationships 3D and 2D shapes sorting rules of 2D/3D shapes 2D shapes within 3D shapes 2D/3D shapes with matching halves creative process 2D and 3D artworks shape and form element of design theme/topic |

| describe identify representcommunicate demonstrate applying express use navigate world  understand sort construct create |
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**The “Sticky Pause” Wait a Minute ….****What are the Key Concepts (knowledge/nouns):**3D and 2D shapes geometric properties matching halves shape/form**What are the Key Skills (do/verbs):**creating/constructing shapes Using shapes to communicate ideas/feelings sorting shapes finding shapes in the real world **What learning do you want to stick at the end of the unit?**what is a shape, how to find/identify shapes in the world, create/constructing shapes (and using them for a purpose–creating artwork, sorting them, knowing how to use them, what makes the shape similar vs congruent) |
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| **Success Criteria -** How will students know if they have achieved the learning goals? What criteria needs to be identified? The feedback that students receive (e.g. oral, written) during the work, as well as at the conclusion of such activities is based upon the success criteria. I can:I can use at least three different geometric shapes in my painting. (Knowledge/Understanding, Communication, Thinking)I can use geometric shapes in my painting to create a picture or scene that tells a story. (Communication, Application, Thinking)I can explain the difference between 2D and 3D shapes. (Knowledge/Understanding, Communication) I can describe the 2D shapes on 3D shapes. (Communication, Thinking, Application)I can sort shapes in different categories when I am given a description of types of shapes (ie., shapes with only straight lines, shapes with vertices.) (Knowledge/Understanding, Application, Thinking)I can make 3D shapes from different materials (paper, dough, etc.,) I can explain what congruent shapes are and use them to create new shapes. (Knowledge/Understanding, Application,Communication) \*Annotate each criterion with the 4 categories of the AC (K/U, T, C, A)\*\*Colour code each criterion to be addressed in the beginning, middle, end & throughout phases of learning | **Learning Goals** – What are students expected to know and be able to do by the end of the unit? What relationships exist in the above box? How can these relationships be stated in brief, student-friendly language to illustrate the intended learning?We are learning to:We are learning to notice and name 2D and 3D shapes.We are learning to sort 3D and 2D shapes by their vertices, edges, lines, faces, and sides.We are learning to create 3D shapes. We are learning to notice if shapes are similar or congruent and see if shapes have matching halves. We are learning to use different shapes like circles, squares, and triangles in our artwork. |

| **Planned Learning Activities in-service of Learning Goals**How will these learning opportunities represent a progression of learning (i.e. surface, deep, transfer, mastery) that supports the attainment of learning goals? * **Beginning, Middle, End & Throughout**
 | **Assessment FOR and AS Learning Opportunities**How is the information gathered from this learning activity used to inform next steps for instruction by the teacher and/or by the students to improve their learning?* **Task - What am I and/students doing from the *Assessment Framework* in GS?**
* **Write the Question(s) I will ask**
 | **Differentiation**How will the instruction be responsive to the needs of All, Some and Few?* **Process - how students engage in the learning**
* **Product - how students show their learning**
* **Environment - how to support students with self-regulation**
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| * Reviewing 2D shapes (identifying shape names on smartboard game)
* Watching video on 2D shapes
* Creating an anchor chart as a class about 2D shapes
* 3D shapes song
* Finding the 2D shapes on 3D shapes (drawing them on the worksheet, independent activity, students look around for 3D shapes and draw the 2D shapes they see on top of them)
* Creating a painting based off “Castle and Sun” by Paul Klee where students use shape stamps to create a painting of a scene
 | Assessment for: * recording initial answers to anchor chart (and which students are giving correct responses)
* Product: 2D shapes on 3D shapes worksheet
* Product: Painting using shape stamps
* Observing students conversations about shapes

Assessment as: * Hearing other students’ answers about anchor chart
* Checking for understanding when interacting with 3D shapes
 | * stamps given for painting so shapes do not need to be drawn
* Students given visuals of 3D shapes and draw 2D shapes (instead of writing them)
* Some students work with teacher to find 2D shapes
* Names of 2D shapes can be found on anchor chart that was just created
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| * 3D shapes song
* Game show (introduce 3D shapes, students guess attributes about each 3D shapes and win smelly stickers)
* Identify the 3D shape video (movement break with exercises)
* Defining faces (relate to worksheet/activity from the previous lesson), edges, vertices)
* Rotations: exploring whether the shape can roll/stack/slide experiment, sorting real life objects based off what type of 3D shape they are, and constructing 3D shapes with toothpicks and marshmallows
* Brain break (shape yoga)
* identifying shape names (game on smartboard)
* Creating success criteria
 | Assessment for: * recording initial answers to anchor chart (and which students are giving correct responses)
* Product: Roll/Stack/Slide experiment sheet
* Product: Taking pictures of marshmallow/toothpick creations
* Product: Taking pictures of how each group did while sorting the shapes

Assessment as:* Movement break (checking if you identified shape correctly, hearing the answers of other students in the class)
* Seeing others responses on smartboard game
 | * some students given the option to stay at one rotation (self-reg IEP)
* Some students given 2D shapes to create instead of 3D shapes
* Students used checkmarks and xs instead of writing “yes” or “no” on the roll/stack/slide worksheet
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| * “How many shapes are there in this image?” (Math talk)
* 3D shapes song
* Reviewing definitions: faces, edges, vertices
* DannyGo! Shape movement break
* Read “Kitten Castle” by Mel Friedman & Ellen Weiss
* Students create their own kitten castle out of homemade playdough
 | Assessment for: * Observe how well students are able to create 3D shapes using playdough, record if students are able to correctly name the shapes on their castle (record their quotes.)
* Take photos of the students’ creations to assess what 3D shapes were created.

Assessment as:* Ask students to describe the shape they are building and the geometric properties they are using and see if they self-correct.
* Posting photos of castles on bulletin boards for students to see their peers’ shapes.
 | * Students could choose to create one shape or two and some students were given the option to not have to create 3D shapes
* Some students were shown how to create cubes or had some shapes sculpted for them based off fine/gross motor capabilities
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| * Math talk: using 2D shapes to construct new 2D shapes
* 3D shapes song
* Game on smartboard (creating 2D shapes)
* Reviewing definitions: Faces, edges, vertices
* Elmo shapes movement break
* Activities assigned based off student needs: Group 1 (the kindergarteners) try to see what shapes build solid structures, Group 2 (Grade 1s needing extra support) work with me to practice identifying shapes and their attributes, and Group 3 (the rest of the Grade 1s) make a fill-in-the-blank flipbook about shapes and their attributes
* Guess the shape brain break video
 | Assessment for: * Walk around and observe students during the shape construction task. Are they using the correct number of sides, vertices, and faces?
* Talking photos of student toothpick/marshmallow constructions
* seeing how class responds on smartboard game
* See how students sort objects based on whether they roll, stack, or slide by looking at the worksheet they hand in.

Assessment as:* Ask students to explain their thought process while constructing the shapes and see if students self-correct (e.g., how did they decide which shapes to build?)
* Have students help each other at each center
* Allowing students to compare their results and reasoning with one another
 | * Grouped based on student needs
* Students were able to reference anchor charts and taught to reference anchor charts
* I filled out the shape names for some students who have difficulties writing letters in the flipbook
* Some students had less shapes in their flipbook
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| * Students learn about pointillism and fill in a mandala using circles (q-tips dipped in paint)
* 3D shapes song
* Review definitions: faces, edges, vertices
* Say the number of sides & exercise movement break
* All students work on flipbooks (some students began activity the previous lesson.) When completed, students colour in an “I-Spy” page about 2D shapes
 | Assessment for: * Ask students about the shapes in their artwork. Observe how accurately students can identify shapes in their artwork.
* Product of art (assess how well pointillism was shown in their piece.)
* Product of flipbook (assess whether students have an understanding of what vertices, edges, faces are and if they could be correctly identified while having access to classroom materials.)

Assessment as:* Time for students to critique their own artwork, using shape vocabulary
* Students can use anchor charts to fill out a shape flipbook (do students use these charts to self-correct work.)
* Students who are done with flipbooks early help out their classmates.
 | * Students were able to reference anchor charts and taught to reference anchor charts
* I filled out the shape names for some students who have difficulties writing letters in the flipbook
* Some students had less shapes in their flipbook
* Students in small group from the previous lesson were reminded of the shapes in their flipbook
* Some students had me start the mandala pointillism painting for them
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| * Math talk: what shape is most alike?
* 3D shapes song
* Review definitions: faces, edges, vertices
* Learn about similar vs congruent shapes
* Watch video of similar vs congruent
* Is the shape similar or congruent? move to side of the room based off what you think the answer is
* Movement break (make a shape and freeze)
* Seeing if the letters of your name have matching halves (cutting/folding activity)
 | Assessment for: * In movement break, observe students' ability to categorize shapes correctly based on whether the shapes are congruent or similar. .
* Product: how letters were sorted on the worksheet.

Assessment as:* In movement break, students can explain why they classified shapes as congruent or similar.
 | * Some students had the letters of their name cut out for them before activity was explained
* Some students received more 1:1 support with the activity depending on the class’s needs
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| * Making our own shape colouring/I-Spy page (drawing straight lines with ruler and coloring in each shape a specific colour)
* Practice moving around shapes on a smartboard (does moving a shape change a shape’s name?)
* 3D shapes song
* Review definitions: faces, edges, vertices, congruent
* Cutting square into 4 triangles and students independently see if they can create new shapes with four triangles
 | Assessment for: * Product: creating their own I-Spy page (assess on how well students used different shapes and coloured in their piece and all the shapes students could create.)
* Product: Seeing what shapes students created with four congruent triangles

Assessment as:* Have students done early help students who are not finished.
* Students telling each other definitions as a class.m
 | * Some students had the colouring page made for them and they just had to colour in the shapes
* I gave some students the option to only colour in half the page (self-reg)
* I cut out the triangles for some students beforehand
* I had some students create more shapes with the triangles (enrichment)
* I had some students create one shape with two triangles
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| * Math talk:revisiting how to cut shapes in half so each side is congruent
* Shape match smartboard game
* Review LG and SC
* 3D Shapes song
* Review definitions: faces, edges, vertices, congruent
* Shape yoga movement break
* Congruent vs similar shape sort on the smartboard
* Congruent linking cube activity: recreate linking cube structures twice then connect them together to create a new shape with a line of symmetry
 | Assessment for: * Observe students as they recreate linking cube structures and sort them based on symmetry. Take note of correct classifications and constructions.
* Take photos of linking cube creations. (the new shapes and if shapes were accurately recreated.)

Assessment as:* Encourage peer discussion about the shape properties they are noticing.
* Congruent vs similar smartboard game (students explain understanding to the class.)
 | * Provide visuals for all activities
* For those with fine motor challenges, provide pre-built cubes or 3D printed shapes to manipulate.
* Students who may need additional support during the linking cube activity, work in a small group with the teacher.
* Instruct students who are confident with these concepts to help peers by explaining the steps and providing demonstrations for how to recreate the linking cube structures.
* Advanced Extension: Encourage students to create a complex 3D shape and explore how symmetry can be applied in larger, more intricate structures. Challenge them to discuss the number of lines of symmetry in their creation and how congruency applies to each part of the shape.
* Ensure that students have plenty of space to work on the linking cubes activity, with clear instructions displayed on the board and/or handouts. Arrange seating so that students can focus without distractions.
* Offer a quiet work area for students who are easily distracted or become overwhelmed.
* Provide a visual timer for when activity is completed
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| * Explain what symmetry is, how a line of symmetry creates shapes with matching halves, and how it can make our art look better
* Review LG and SC
* 3D Shapes song
* Review definitions: faces, edges, vertices, congruent
* Circling what objects are symmetrical as a class
* Making symmetrical butterflies: students paint butterfly on one side, fold paper in half (while paint is still wet), and see how each side of the butterfly is symmetrical
* Draw the line of symmetry worksheet
 | Assessment for: * Observe students’ butterfly symmetry activity. Are they using the line of symmetry correctly?
* Product: butterfly art (assess for art and line of symmetry)
* Product: Find the line of symmetry worksheet

Assessment as:* Encourage students to reflect on why their butterflies are symmetrical and how the line of symmetry works.
* Shape match smartboard game (students explain understanding to the class.)
 | * Step-by-Step Demonstration: Demonstrate the process of creating a symmetrical butterfly by painting one side and folding the paper to create a mirrored effect.
* Throughout the lesson, guide students in identifying and discussing the line of symmetry in the butterflies and in other objects (e.g., classroom objects, natural items).
* For students who need additional support with fine motor skills, provide templates to help them with the painting process. Work with these students during the butterfly project to reinforce symmetry by providing hands-on assistance.
* Provide students surpassing LG/SC expectations with a challenge to create a more intricate symmetrical design.
* Work with students in a small group who need extra help with line of symmetry worksheet
* provide visual timer for transitions
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| **Assessment of Learning Task(s) with a Rubric:**How will this **meaningful culminating task(s)** allow students to demonstrate the depth and breadth of learning from the unit of study?Overview:For this culminating task, students will create an artwork that demonstrates their understanding of 2D and 3D shapes, symmetry, congruency, and geometric properties. They will incorporate both mathematical concepts and artistic creativity by choosing a theme or scene from the world around them, identifying geometric shapes and symmetry within it, and using geometric shapes to construct and create the artwork.Part 1: Math Component - Shape Exploration and Symmetry (worksheet)1. Theme Selection:
	* Students will first select a real-world scene or object that interests them. This could be something from nature (a flower, tree, animal), a familiar object (a house, vehicle, or toy), or an abstract concept (patterns, architecture).
	* Goal: Identify 2D and 3D shapes within the chosen scene and the lines of symmetry in these objects.
2. Shape Identification and Symmetry Analysis:
	* Students will list at least three geometric shapes (2D and/or 3D) found in their scene or object. For example, they might identify squares, circles, triangles (2D) or cubes, spheres, cones (3D).
	* Goal: Determine whether the object has symmetry and identify congruent shapes in the scene.
	* Students will draw simple sketches of the identified shapes and label the faces, edges, vertices, and any lines of symmetry they find in each shape.

Part 2: Art Component - Creating the Artwork* Students will use 2D and 3D geometric shapes to create a piece of art that represents their chosen scene or object. The artwork must include at least three different geometric shapes and should showcase symmetry(i.e., objects or shapes within the art should be symmetrical or use congruent shapes to create balance and harmony).
* Students create a sculpture out of air dry clay

\*\*Part 3: Final Presentation - Sharing the Mathematical and Artistic Process* Each student will present their final artwork to the class, explaining the geometric shapes they used, how they identified symmetry and congruency, and how the shapes work together in the art.
* The presentation will also include a brief explanation of the math behind the art: how they analyzed the shapes, symmetry, congruency, and the geometric properties in their selected scene.

Rubric on last page |
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| **Monitoring of Student Progress throughout the unit (How close in proximity are students to meeting the SC?)**

| **Phase of Learning** **(beginning, middle, end & throughout)** | **Observations** | **Conversations** | **Products** |
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**Resources:**

| **Print** | **Media** | **Internet** | **Other****Experiential Learning opportunities****Community Experts** |
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| **Criteria** | **Level 1 (Limited)** | **Level 2 (Basic)** | **Level 3 (Proficient)** | **Level 4 (Exemplary)** |
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| **Mathematical Understanding** | **Struggles to identify 2D and 3D shapes and symmetry. Needs significant support to apply basic geometric concepts.** | **Identifies some 2D and 3D shapes but shows limited understanding of symmetry and congruency.** | **Identifies most 2D and 3D shapes correctly and shows basic understanding of symmetry and congruency.** | **Accurately identifies a wide range of 2D and 3D shapes and demonstrates a strong understanding of symmetry and congruency.** |
| **Shape Usage in Artwork** | **Uses few geometric shapes in artwork; shapes are not clearly defined or symmetrical.** | **Uses some geometric shapes, but the shapes may not be well integrated or symmetrical.** | **Effectively uses geometric shapes in the artwork, with a clear focus on symmetry and congruency.** | **Uses a variety of geometric shapes with a high level of symmetry and congruency; shapes are creatively and effectively integrated into the artwork.** |
| **Artistic Expression** | **Artwork lacks clear expression of the chosen scene/object; little connection between shapes and idea.** | **Artwork expresses the chosen scene/object, but connection between shapes and idea is basic or unclear.** | **Artwork expresses the chosen scene/object clearly, using shapes to communicate the idea.** | **Artwork demonstrates a deep and thoughtful expression of the chosen scene/object, with shapes being used meaningfully and creatively to convey the idea.** |
| **Mathematical Reflection** | **Reflection is vague and does not clearly explain the relationship between math and art.** | **Provides a simple reflection, but the explanation of the connection between math and art is basic.** | **Provides a clear and thoughtful reflection, explaining how math concepts (shapes, symmetry) are used in the artwork.** | **Provides an insightful reflection, thoroughly explaining how math concepts (shapes, symmetry) are applied in the artwork and discussing the deeper connections between math and art.** |
| **Presentation and Explanation** | **Struggles to explain artwork and mathematical concepts; presentation lacks clarity.** | **Presents artwork and mathematical concepts with some explanation, but lacks clarity or detail.** | **Effectively explains artwork and mathematical concepts, demonstrating an understanding of both math and art.** | **Presents artwork and mathematical concepts with confidence, providing a detailed and clear explanation of the mathematical concepts and artistic choices made.** |
| **Creativity and Effort** | **Minimal effort and creativity shown in the artwork; does not demonstrate a strong connection to the task.** | **Artwork shows some effort and creativity, but may lack complexity or depth.** | **Demonstrates creativity and effort in artwork, showing a good connection to the task.** | **Demonstrates exceptional creativity and effort, with a highly original and thoughtful approach to the task.** |