**Sample Mathematics Learning Plan – Shapes and Space**

<table>
<thead>
<tr>
<th>Big Idea(s) / Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reason with shapes and space</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard(s) Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGSEK.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.</td>
</tr>
<tr>
<td>MGSEK.G.2 Correctly name shapes regardless of their orientations or overall size.</td>
</tr>
<tr>
<td>MGSEK.G.3 Identify shapes as two dimensional (lying in a plane, “flat”) or three dimensional (“solid”).</td>
</tr>
</tbody>
</table>

**Diagnostic Assessment**

In the attached diagnostic assessment, students will show their understanding of two-dimensional shapes and their use of positional words with shapes.
Instructional Design

Desmos Activity: Shapes All Around Us

Overview: In this Desmos activity, students will identify, draw, and describe shapes in the environment. Teachers may wish for students to work in pairs for this activity, so they can talk about the math as they make sense of each challenge.

Engage

Teacher Moves

The purpose of this activity is for students to learn about plane figures (two dimensional) and solid figures (three dimensional). Student sort shapes in a way that make sense to them. Then as a follow up students could sort by flat or solid if they did not previously. Student can look for items in the classroom or in their home that could be added to each category.

Sample Responses

Student may sort by flat or solid, others may choose to sort by things you eat or cannot eat.

- Synchronous Complete during a classroom discussion while pausing the activity to highlight student responses.
- Asynchronous Introduce the problem to students in a virtual platform; this can be done via e-document or video. Allow students to share responses within the Desmos platform and provide feedback via the teacher dashboard. Additionally, students could use an audio/video to share. Provide feedback to individual student responses and highlight unique sorts by students.
- Unplugged/ Offline Provide the opening image for students to engage in the task. Have students share ideas through email/text/phone. Provide feedback to students and share other students’ ideas before engaging in the remaining sections.

Explore
Students have an opportunity to identify and sketch on screens 1-5. In the application section, below, students will have the opportunity to apply their knowledge of shapes and positional words to describe shapes in a picture.

- **Synchronous**: Complete Desmos activity during synchronous learning, either face to face, virtual, or blended.
- **Asynchronous**: Give students time to complete the screens and provide feedback. Ensure that enough time is provided for students to participate and respond to your feedback and edit responses as needed.
- **Unplugged/ Offline**: With the assistance of an adult or family member: Provide paper/electronic versions of the activity. Allow students time to complete the work and submit through email/text or other means. Provide feedback and share with other students and provide access to other students’ thinking.

**Apply**

- **Teacher Moves**
  Students will use the relative position to describe the location of plane and solid figures i.e. cube "block" is in front of the bed, rectangle "poster" is below the shelf.

**Synchronous** Complete Desmos activity during synchronous learning, either face to face, virtual, or blended.

**Asynchronous** Give students time to complete the screens and provide feedback. Ensure that enough time is provided for students to participate and respond to your feedback and edit responses as needed.

**Unplugged/ Offline** Provide students with access to the paper version of the picture. Ask students to complete the task and have them submit responses via email/text/phone. Provide feedback, share these responses with other students, and share other students’ responses with them.
Reflect

Students could have an opportunity to reflect with an exit ticket. Wrapping up the lesson with “Today we practiced sorting shapes. Name one way to sort shapes?”

- **Synchronous** - Students will reflect upon the Desmos lesson in a journal. Students will share 1 way to sort shapes. Share reflections anonymously with the class.
- **Asynchronous** - Students will reflect upon the Desmos lesson in a journal. Students will share 1 way to sort shapes. Students could utilize a video/recording application.
- **Unplugged/ Offline** - A paper copy could be sent to the student to reflect with pencil and paper. If math notebooks are a part of teacher routines, the reflection could be performed here.
### Evidence of Student Success

At the conclusion of the Shapes in Our World Desmos activity, provide students with example/ non example diagnostic to gauge student growth on meeting the intended learning targets. Compare results of initial assessment to the assessment at the conclusion of the lesson.

Questions and responses are incorporated throughout the guided Desmos lesson which include multiple choice questions and explaining student thinking. These items can be seen from the Desmos Teacher Dashboard. From these items, the teacher will have insight to student thinking and thought processes that can be used to guide instruction for subsequent lessons. Student success can be measured with the formative assessment provided.

### Student Learning Supports

**Establish mathematics goals to focus learning.**
- Make instructions and expectations clear for the activities.
- Make explicit connections between current and prior lessons or units.

**Facilitate meaningful mathematical discourse.**
- Explicitly model and teach good “discussion board” etiquette.

**Pose purposeful questions.**
- Predetermine when you will call on the student or use the pause feature within the activities.
- Break class into small discussion groups to work collaboratively and then have groups report back to the whole group.

**Support productive struggle in learning mathematics.**
- Offer outlines and other scaffolding tools and share tips that might help students learn.
- Provide feedback using the feedback feature within activities and offer corrective opportunities.
- Consider the pacing of the lesson.

**Elicit and use evidence of student thinking.**
- Anticipate any misconceptions or questions students might have about the task, materials or technology. Proactively address them with readily available and accessible resources.

**Additional Supports:**
- Chunk this task into manageable parts to support organizational skills in problem solving. Some students may benefit from explicit guidance for how to begin.
- Invite students to take turns selecting a shape, and explaining how they should sort it to their partner. Display the following sentence frames: “This shape belongs with _____, because . . .” Encourage students to challenge each other when they disagree.
Engaging Families

- Real World Applications such as identifying two and three dimensional shapes in their home. Additionally, building shapes can lead into students learning how shapes are composed of other shapes. Building and manipulating figures will develop the concrete understanding and relationships of complex figures.
# Appendix

1. Provide an example or non-example

<table>
<thead>
<tr>
<th>Draw some examples of two-dimensional shapes.</th>
<th>What are some objects that are not two-dimensional shapes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>How can you tell if something is a two-dimensional shape or not a two-dimensional shape?</td>
<td></td>
</tr>
</tbody>
</table>

2. Draw a circle beside the square.

3. Draw a rectangle above the cube.