## Big Idea(s) / Topic(s)

- Create and compose shapes

## Standard(s) Alignment

**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.

**MGSEK.G.2.** Correctly name shapes regardless of their orientations or overall size.

**MGSEK.G.3.** Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

**MGSEK.G.6.** Compose simple shapes to form larger shapes.

## Diagnostic Assessment

In the attached diagnostic assessment, students are asked to look at a shape or a group of shapes and read (or listen to) a statement about the shapes. Students then need to decide if the statement is true or false and share why they think so.

Teachers may choose to give this diagnostic to pairs, or small groups, of students and listen to their conversations for anecdotal evidence of understanding or misconceptions that students may have.
Instructional Design

Desmos Activity: Shapes In Our World

Overview: In this Desmos lesson, students will identify shapes found in their environment revealed through a photograph. Students will be given the opportunity to share what they notice and wonder about the image shown. They will be asked to sketch the shapes they see and count the number of shapes they see. In addition, students will be asked to sketch shapes that can be combined to create larger shapes.

For the discourse experience, we recommend two students per one device to increase accountable math conversation.

Engage

Teacher Moves

Most Kindergarten students don’t yet have the understanding of how to form a question. During Act 2 the students may need the teacher to facilitate the discussion until understanding of a question is achieved.

Sample Responses

Anticipated questions students may ask and wish to answer:
• What does the word say?
• What shapes are there?
• How many shapes are there?
• What are the different kinds of shapes?

Consider doing a think-pair-share so that students have an opportunity to talk with each other before sharing questions with the whole group.

- **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 multiple strategies used 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
Teacher Moves

During Act 2, students determine the main question(s) from Act 1 and decide on the facts, tools, and other information needed to answer the question(s). When students decide what they need to solve the problem, they should ask for those facts, tools, and information. It is pivotal to the problem-solving process that students decide that is needed without being given the information up front.

Teacher provides guidance as needed during this phase. Some groups may need scaffolds to guide them. Question any groups that may seem to moving in the wrong direction. Sample questions include:
- What is the problem you are trying to solve?
- Can you explain what you have done so far?
- What tools or models might help you?

- **Synchronous**: Complete Desmos activity during synchronous learning, either face to face, virtual, or blended.
- **Asynchronous**: Give students time to complete the screen 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 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

Teacher note on observed shapes: The purple rhombi are also squares. The blue squares are also rhombi. Thus, there are 7 of each. The two rightmost squares (doorway and right yellow square) together form a single rectangle, as do the two leftmost shapes (doorway and left yellow rectangle). These three shapes taken together also form a long rectangle. These three shapes plus the rectangle above them (the library sign) form another larger rectangle. Thus, there are 12 rectangles. Students may find only the uncombined shapes, which would change the numbers given in the reveal above. Students may see other shapes which are not outlined nor mentioned in this explanation. That’s wonderful! Encourage them to justify and explain what they see.

Student Supports

Lead discussion to compare these solutions, asking questions such as:
- What shapes did you find?
- How many shapes did you find?
- Did you find several of the same shape? If so, how many did you find?
• **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 activity and allow students to compare the results to their work. Have students submit responses via email/text/phone. Provide feedback, share these responses with other students, and share other students’ responses with them.

**Reflect**

• **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 activity and allow students to compare the results to their work. Have students submit responses via email/text/phone. Provide feedback, share these responses with other students, and share other students’ responses with them.
# Evidence of Student Success

**Formative Assessment Questions:**

- Can you show me the difference between a side and a corner (vertex)?
- Can you tell me the difference between a side and a corner (vertex)?
- Are all triangles the same?
- Are all four-sided shapes (quadrilaterals) the same?
- What is the same about these two shapes? What is different? (Discuss shapes from within the activity)
  
  Example:

  ![Shapes](image)

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# 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 Student Supports:**
- [add specific supports for this learning plan]

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# Engaging Families

- Hold a scavenger hunt to find shapes around your home. Ask your child to select two or more shapes to compose a larger shape. Determine the number of edges (sides) and corners (vertices).
<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>TRUE</th>
<th>FALSE</th>
<th>WHY I (OR WE) THINK SO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. These shapes are both triangles.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image1.png" alt="Triangle" /> <img src="image2.png" alt="Triangle" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. This shape is a square.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image3.png" alt="Square" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. If you joined these two squares together so the sides matched up, they</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would make a rectangle.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image4.png" alt="Square" /> <img src="image5.png" alt="Square" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The shapes below are the same.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image6.png" alt="Pentagon" /> <img src="image7.png" alt="Hexagon" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. These shapes are all rectangles.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><img src="image8.png" alt="Square" /> <img src="image9.png" alt="Rectangle" /> <img src="image10.png" alt="Rectangle" /></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>