

Sorting Polygons by Attributes

Teacher Guide

Duration: 20 minutes

Standards for Mathematics

TEKS.2.8.C.iii

Sort polygons with 12 or fewer sides according to attributes, including identifying the number of sides.

Focus Strategies

Think Aloud: The teacher models a process of thinking by speaking aloud what is thought. As an example, 'I think I need more color here in my drawing.' This strategy models for students the type of thinking they can use in an upcoming activity.

Think-Pair-Share: Students are prompted to think about an idea on their own. Students then share their idea with a partner and have a quick discussion. Selected students are asked to share their ideas with the whole group.

Materials

a set of paper polygons each with a unique letter label, (regular and irregular), whiteboards

Key Vocabulary

polygon, attributes, sides, vertices, triangle, quadrilateral, square, pentagon, hexagon, heptagon, octagon, nonagon, decagon, dodecagon

Warm-Up

Begin with a quick review of naming polygons by the number of sides. Ask students to name the polygons they know and how many sides each has. Write a list on the board, so students can refer to it during the lesson.

Introduction

Explain that today, we will be sorting polygons based on the number of sides. Introduce the Examples / Non-Examples routine and explain that we will learn by analyzing sets of shapes.

Exploration & Whole Class Discussion

Choose a set of 4 to 8 regular and irregular polygons from your collection, including examples and non-examples for each round of defining a polygon by the number of sides, (e.g., regular and irregular rectangles, hexagons, and pentagons). First, ask students to sort the cards by the number of sides, from least to greatest, using the letter labels to make a sorted list. Then, ask, 'Which of these polygons are pentagons? How do you know?'. After students have written answers individually, have them share with a partner. Repeat this task using different sets of polygons.

Application & Reflection

Have students work in pairs to sort a given set of five polygons by number of sides from least to greatest, naming each of the polygons they are given. When they have completed sorting, have student pairs share with other pairs to validate understanding.

Assessment

Observe students during the sorting activity and partner discussions to assess their understanding of sorting and identifying polygons by number of sides.

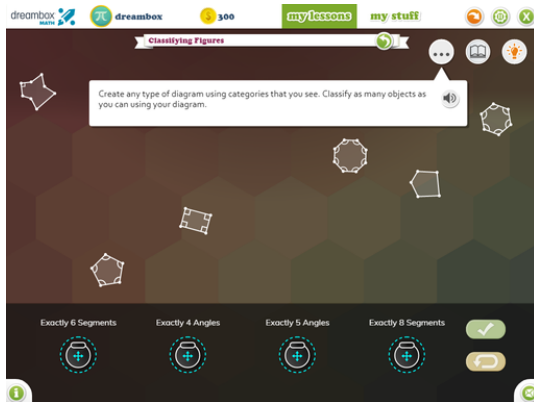
Strategies to Support Emergent Bilingual Students

To support emergent bilingual students, we recommend the following:

1. Provide independent think time after asking questions or posing prompts.
2. Have students pair up with a partner to generate responses together.
3. Have students restate each other's reasoning in classroom discussions.
4. Create a public record of classroom discussions.
5. Use color and annotation to help learners make connections for concepts.
6. Introduce academic vocabulary as needed.
7. Use iconic and semantic gestures to help students understand.

Additional Support Resources

If your students need additional support, you can click on one of the lessons below and present it to your whole class. You can use the interactive manipulatives and built in feedback to support students in a whole class discussion. Good questions to ask are 'What do you see?', 'What do you think?' 'What do you wonder?'



Classifying Polygons: Sides, Vertices, and Angles



Classifying Shapes by Number of Sides and Vertices

Sample Lesson Flow

- TEACHER SAY** *Today, we are going to sort polygons! Who can describe what defines a shape as a polygon?*
- STUDENTS DO** Volunteer polynomial descriptions.
- TEACHER DO** Call on students for responses.
- TEACHER SAY** *Great! Now, let's review the names of some polygons based on the number of sides. Who can name a polygon and describe how many sides it has?*
- STUDENTS DO** list the names of polynomials with the number of sides.
- TEACHER DO** Write student responses on the board. After students have contributed the polygons they know, complete the list through dodecagon.
- TEACHER SAY** *Super! Now let's sort polygons based on the number of sides using my set.*
- TEACHER DO** Display a set of regular and irregular polygons with unique letter labels.
- TEACHER SAY** *Let's start by sorting these polygons from least to greatest number of sides. Work with your shoulder partner to create a sorted list using the letter labels.*
- STUDENTS DO** Sort the polygons from least number of sides to greatest.
- TEACHER SAY** *Give a Thumbs Up when you are ready to share your sorted list!*
- TEACHER DO** Call on a few students to share their sorted lists.
- TEACHER SAY** *Now, how do you know which of these polygons are pentagons?*
- TEACHER DO** Allow students to write their answers individually.
- TEACHER SAY** *Turn to your partner and share your thoughts.*
- TEACHER DO** Walk around and listen to partner discussions.
- TEACHER SAY** *Let's try another set of polygons!*
- TEACHER DO** Display a new set of polygons.
- TEACHER SAY** *This time, sort these polygons again and identify which ones are hexagons.*
- STUDENTS DO** Sort the new set of shapes for hexagons and discuss their results in pairs.
- TEACHER SAY** *Now, I want you to work in pairs to sort a new set of five polygons by number of sides from least to greatest. Name each polygon as you sort.*
- TEACHER DO** Distribute the new set of polygons to each pair.
- TEACHER SAY** *Once you have sorted them, share your results with another pair to validate your understanding.*
- STUDENTS DO** Sort the set of polygons with a partner. Then check with another pair.
- TEACHER DO** Monitor discussion during this activity to assess their understanding.