What's In a Name?

Unit 4: Plane and Solid Figures

Grade Level

Grade 2

Overview

In this task, students will identify and describe plane geometric figures.

Key Standards

M2G1. Students will describe and classify plane figures (triangles, square, rectangle, trapezoid, quadrilateral, pentagon, hexagon, and irregular polygonal shapes) according to the number of edges and vertices and the sizes of angles (right angle, obtuse, acute).

Possible Materials

- The Greedy Triangle by Marilyn Burns (another book with similar content)
- flipchart or PowerPoint with screen or whiteboard
- geoboards with rubber bands
- polygon/not polygon cards for each group
- "What's In a Name" task sheets and name printouts
- extra: Dot Paper, Writing Task Sheet

Task

1. Preview the story The Greedy Triangle by Marilyn Burns by looking at the cover and predicting a topic for today's lesson.
2. Introduce the key standard and make a connection between LA and Math using vocabulary standards. Guide students to identify key vocabulary words in their heads as they actively listen to the story read aloud.
3. Have students brainstorm and list as many vocabulary words from the story as possible. List these on the board/flipchart.
4. Introduce the VIP word that is not in the book: polygon. Show the definition and deconstruct its meaning using a word web graphic organizer on the board.
5. Ask students to create shapes on their geoboards that follow the definition of a polygon. Monitor students as they create these shapes and have them justify the reasons for their creations as you discuss parts of polygons.
6. Share examples of student work and ask what is missing from the definition of a polygon – angles!
7. Use body parts to demonstrate types of angles. Discuss the word "angle" and its closeness

to the word "ankle". Show how this part of your body forms an angle.
8. Describe rules for "Simon Sees Angles" as shown in Unit 4 Tasks on www.georgistandards.org. Play game in a circle.
9. Ask students to return to the geoboards and create different types of angles. Use this opportunity to differentiate for students as you discuss attributes of angles and their connection to the creation of polygons (i.e. introduce degrees for an advanced learner or review right angles in a square for remediation).
10. Share examples of discussions and created shapes.
11. Guide students to "uncover" what regular and irregular polygons are using the discovery model.
12. Review the definitions for both by recreating shapes that match the definitions.
13. Pass out Polygon/Not Polygon cards to each group of students. Have groups work together to sort the cards into 2 groups using the previously-given definition. Monitor groups and ask them to defend their choices with substantive reasoning.
14. Check group work with magnetic cards on the board and explain.
15. Pause for questions and/or clarifications.
16. On the board model "What's in a Name?" task with your own name. Find and label different types of angles, shapes, and other geometric figures in the name. Then, show how to add details telling more about the geometry found in the name.
17. Pass out printed name papers to each student (or have them print their own name in large block letters) and ask students to complete the task for their own names.
18. Guide students to add more details explaining everything they know about the labeled geometry.
19. Share results and let students make connections between and among names. Question: Does anyone have a letter that is a polygon all by itself? Why not?
20. For extra work, have students take a piece of dot paper and use straight line segments to create crazy polygons.
21. Review the key standard and make a connection to the math process standard of communication. Lead into the final task: connecting math to the real world with writing.
22. Pass out the Writing Task. Review the choices and allow students to select and/or create a new crazy polygon and then create a transformational picture.
23. Students work on completing a differentiated writing task as you further remediate instruction as needed toward the standard.

Sample Questions

1. Why is vocabulary important in math class?
2. How are polygons and angles related?
3. How do you describe geometric figures?
4. Where can you find polygons and/or angles in the world?
5. What makes a polygon regular?
6. Why are there no polygons on the alphabet?
7. How many ways can you classify plane geometric figures? Justify your reasons.
8. What else can you determine about a polygon that is not described in its definition?

Sample Question Solutions

1. You have to read, write, listen, and speak in math class too.
2. Line segments have to connect to make a closed figure and connected line segments form angles. There are at least 3 angles in a polygon in order to make it closed.
3. By the number of vertices, sides, and/or angles. (advanced: Concave/convex)
4. On our bodies, on buildings, or anywhere in the world.
5. All sides are the same size and all angles are the same.
6. Because all letters have either a curved side or an open space.
7. Multiple ways: regular/irregular, concave/convex, number of sides, etc.
8. You must have angles!

Assessment Ideas

- Polygon/Not Polygon sort or chart
- What's in a Name? labeled diagram
- Crazy Polygons transformation
- Geoboard drawings
- Real world photograph highlighting (identifying and labeling geometric figures in the real world)