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Lesson: Parallelograms

Lesson Objective: To understand and apply the properties of parallelograms. Students will do this by discovering what "parallel" properties they share with their fellow classmates.

Essential Questions**:** What makes a parallelogram unique? What does "parallel" mean in math and non-math terms? What "parallels" do you share with your classmates? What happens when we have things in common with our peers?

Virginia SOLs: **G.9** Students will verify and use properties of quadrilaterals to solve problems, including practical problems. **G.10** The student will solve problems, including practical problems, involving angles of convex polygons. This will include determining the a) sum of the interior and/or exterior angles; b) measure of an interior and/or exterior angle; and c) number of sides of a regular polygon.

Duration: 90 Minutes

Lesson Activities

Parallel Mirror

Activity Focus: To get the students physically engaged and focused on one another while reinforcing the properties of parallelograms.

Description: Parallelogram ABCD will be taped on the ground. One student will stand on Side AB, one student will stand on Side BC. Half of the rest of class will stand on Side CD and the other half will stand on Side DA.

Students standing on Side AB and Side BC are the leaders of the activity. These students will make any slow movement they want with their arms, hands, or bodies. Students standing on Side CD will follow the movements the student standing on Side AB. Students standing on Side DA will follow the movements of the student standing on Side BC.

Debrief Questions:

- *Define Parallelogram:* ***A quadrilateral whose sides are parallel***
- *What does parallel mean?* ***Two lines that never touch***
- *What did you notice about the sides of our parallelogram?* ***The opposite sides are congruent***
- *What else are equal on the other side?* ***Angles***

Drawing Parallels

Activity Focus: Students will connect the content to their personal lives by finding "parallels" between one another.

Directions: Students will find a partner. Each pair will talk to figure out three "parallels", or things they have in common between them. Each pair will then pick one of those "parallels" and embody (create a frozen image with their body) an image that represents that parallel.

Using the parallelogram taped on the ground, one pair of students will present the "parallels" they embodied. One partner will stand on Side AB and the other partner will stand on Side CD. They will create their parallel image and the rest of the class will try to guess what these two students have in common based on their "congruent" image. This pair of students will then tell us why this is the "parallel" they have in common and how they found it out.

Debrief Questions:

- *What might be a non-math definition of "parallel"?*
- *How did you find out what you had in common with your partner?*

Parallelogram Quiz Show

Activity Focus: To demonstrate understanding of the properties of parallelograms through collaboration and teamwork.

Directions: Students will get into groups. Each group will receive a small whiteboard, marker, and eraser. They will come up with team names.

ROUND ONE: All teams will have 10 seconds to answer each of the following questions regarding parallelogram ABCD. We will check the answers after each 10 seconds is over.

- Side AB is equal to?
- Side BC is equal to?
- Measure of Angle B is equal to?
- Measure of Angle A + Measure of Angel ? = 180?
- Segment AZ is equal to?

ROUND TWO: Each group will create their own buzzer sound (some kind of noise and action they must make in order to be called on to answer a question). Groups will "buzz" in to answer the following questions regarding parallelogram ABCD. Groups have five seconds to answer once they "buzz" in.

- If BD = 16, BZ = ?
- If measure of Angle A = 56, measure of Angle C = ?
- If AC = 9, CZ = ?

ROUND THREE: Each group will draw and fill in their own parallelogram based on the following information. They will have one minute. We will check answers.

- **Parallelogram RSTU**
- RS = 27
- UR = 18
- UV = 7
- RT = 30
- Measure of Angel R = 127

- **FIND**:
- UT
- ST
- VS
- VT
- Measure of Angle T
- Measure of Angle S

*Note: V refers to the midpoint of Parallelogram RSTU

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