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Mathematics: The Language of STEM
Dividing Fractions into Equal Parts

CONTENT AND TASK DECISIONS

Grade Level(s): First Grade

Description of the Task: Students will work in partners or groups to divide their Play-Doh shapes equally.

Indiana Mathematics Content Standards: 1.G.4 Partition circles and rectangles into two and four equal parts using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter.

Indiana Mathematics Process Standards: PS.4: Model with mathematics.

Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace using a variety of appropriate strategies. They create and use a variety of representations to solve problems and to organize and communicate mathematical ideas. Mathematically proficient students apply what they know and are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

Mathematics Content Goals: I want students to be able to divide multiple geometry shapes into different fractions; such as, halves and fourths, equally.

Language Objectives: Students will demonstrate to the class how they solved the problem of dividing their shapes into equal fractions; halves and fourths. by using chart paper to present to their peers how their parts are the same and different.

Materials: Marker Boards and markers, Play-Doh, cookie cutter shapes (circles, squares, triangles, and rectangles), chart paper/construction paper, pencils, markers and/or crayons.

THE LESSON

Before:

- Ask students to solve this problem, using marker boards and markers or paper and pencil.
- Draw a rectangle on your marker board and divide it into 4 parts.
- Walk around and observe students dividing their shapes. Do they have 4 parts? Are the parts equal or unequal?
- Have students share with the class how they divided their shapes. Some students may have 4 equal parts or 4 unequal parts.

During:

- Student Actions-Students will work with partners to divide their Play-Doh shape. They will each get some Play-Doh and cookie cutter shapes. Students will be asked to divide their shape into 2 parts with their partner. Students will get to talk with their partner and discuss how they each divided their shapes. Are the shapes equally divided? Would it be fair if your partner gave you a smaller part?
- Next students will be asked to divide a different shape into equal parts. Sentence Frame: My shape was divided into _____ parts and my partner also divided their shape into _____ parts. They may discuss how their shapes are the same or different.
- With chart paper partners can work together to draw their shape and how they chose to divide each their shapes.
- Teacher Actions-Teacher will walk around asking students to tell me about their shapes. I will be listening for students using words like equal, unequal, parts, whole, fourth, halves, symmetry, same, and different.

After:

- Student Actions-Students will come together as a group to present their chart paper and how they divided their shapes. My shape is a _____ and I choose to divide it into _____ equal parts.
- Teacher Actions-I will listen as each partner explains to the class how they divided their shape. I will ask them questions to help them prove their thinking and use vocabulary words like halves, fourths, quarters, equal and unequal.
- I will encourage students to have math conversations by interacting during presentations. I will only record the students' findings and tell them if their answers are right or wrong.
- We will discuss each students way of dividing their shapes as a class. How many students will get a part and is it equal?
- When students illustrate key vocabulary words such as equal, halves, and fourths I will point out these findings. "I see you divided your shape into fourths." "Your parts look like they are equal."

ASSESSMENT

Observe: As students are working with their partners do I observe their shapes divided into equal parts? Look for students who are and are not showing equal parts with their shapes. Students are able to demonstrate how they divided their shapes with their partners and the whole class during presentations.

Ask:

Are the parts you have fair or equal?

How many students would get a part of your shape?

Can students identify a half, fourth, and whole of shapes?

Can students compare and contrast the shape they made with another shape of a peer?

Is there another way you could divide your shape in half or fourths?