

Planning Template for *Investigations* Sessions

Unit: Different Shapes, Equal Pieces

Investigation: 1– Parts of Squares:
Halves, Fourths, and Eighths

Session: Finding Halves of Crazy Cakes

Mathematical Emphases/Standards:

- Understanding that equal fractions of a whole have the same area.
- Understanding that equal parts of a whole are not necessarily congruent.

Classroom Routines/Ten–Minute Math:

–Math warm–up when students arrive in the morning (students pick a color and solve the problem using numbers written in that color):

Julio had 3 7 9 friends. He wanted to give each friend 5 8 10 balloons. How many balloons will he give in all?

–Introduction

Materials and Student Sheets:

- Scissors (1 per pair)
- Transparency of Student Sheet 1
- Student Sheet 1
(2 per student)
- Glue sticks
- Crayons/markers
- Rulers (1 per pair)
- Overhead projector
- Whiteboard

Teacher Supports:

Different Shapes/Equal Pieces Teacher's Manual

Management Issues:

Where will students be for instruction?

- at desks for introduction, board solutions, and whole–group discussion
- in pairs at desks for dividing shapes on student sheets in half

How will students get materials?

- instruct one student from each pair to remove scissors, glue from individual supply boxes in desks; place on desks

What groupings will students be in during work time?

- whole–group for introduction, discussion
- pairs for student sheet work

Where will students be for sharing?

- in desks next to partners; pairs go to overhead to show/explain strategies

Focus Questions:

To introduce the activity:

–“If this were a cake you had to share evenly between two people, how could you cut it? You need to be able to explain how you know that each person would get the same amount of cake.”

While students are working:

–“What did you do with that cake?”

–“How can you show that those pieces are equal/that you and your partner will get the same amount of cake?” (cut-outs? folds? drawings? words?)

–“Can you explain that in a different way?”

–If students think there’s no way to divide into equal halves, ask, “What about that shape makes you think you can’t divide it in half?”

–“Do you agree with your partner? Are those pieces equal? How do you know?”

–“What would happen if _____?”

To facilitate sharing of ideas:

–“Does anyone have a different way to divide the cake in half?”

–“Lily, I noticed that you have an idea no one has discussed yet. Would you explain it to us?”

–Have one student show method on the overhead. Ask other students to talk in pairs about how that cutting method results in equal halves.

Assessment Questions (if any):

(ask while circulating among groups and during whole-group discussion)

–“Are these pieces the same size? How do you know?”

Homework:

None

Things to anticipate (including modifications for special situations):

- Some students will need a lot of time for cutting. Assign partners so that at least one student in each pair has strong scissor skills.
- Students likely to think that equal parts must be congruent. If students get stuck on this idea, show them a sample cut that divides a cake into two incongruent pieces. Without telling them that the two pieces have the same area, encourage them to cut and overlay the pieces of the “cakes” to explore whether they have the same or different areas.
- Some pairs may be dominated by one student. To get both students involved, ask *each* student to come up with and explain at least one method of their own.
- A number of students are likely to have a hard time verbalizing their strategies. Support verbalization by going through strategy step by step. As students *show* each step with drawings/folds/cuts, prompt with language such as, “First I _____. Then I _____. I knew _____, so that meant that _____.”
- If pairs of students finish early: Make own Crazy Cakes and have partners try to divide in half.

Notes: