



Introduction to the Mamadou-Half-Rectangle Video¹




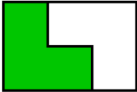
The short classroom episode shown in this video occurred on July 17, 2007, the seventh class session of a ten-day summer mathematics program for entering fifth-grade students from a local public school district.²

Previous work

The class had just begun their work together on fractions the day before, looking at problems that involved a variety of fractions representations, such as:

- Fraction riddles exploring relationships between the different lengths of Cuisenaire rods³ (e.g., *Which rod is half as long as the orange one? Which rod is three-fourths as long as the purple one? One rod is one-fourth as long as another rod – what colors might the rods be?*)
- Questions involving shaded regions of rectangles (e.g., *What fraction of the rectangle is shaded brown: ? What fraction of the rectangle is shaded orange: ?)*
- Problems that asked students to label integer points (e.g., -1 , 0 , 13) and a few simple fraction points (e.g., $\frac{1}{2}$, $1\frac{1}{2}$, $-\frac{1}{2}$) on the number line.

The lesson featured in the Mamadou-Half-Rectangle video began with a few warm-up problems involving representations of fractions as shaded parts of rectangles. Students were asked to label the shaded parts (similar to some of the problems they had worked on the day before):

- 1)  What fraction of the big rectangle is shaded red? _____
- 2)  What fraction of the big rectangle is shaded blue? _____
- 3)  What fraction of the big rectangle is shaded yellow? _____
- 4)  What fraction of the big rectangle is shaded green? _____

Students worked independently on these problems for ten minutes before the teacher called them together for a whole group discussion. The class then went through the problems, discussing their answers and reasoning – they also developed a list on the board:

Working ideas about fractions

- identify the whole
- equal parts
- how many parts of the whole

¹ The 2007 EML instructional materials are based on work by Deborah Ball, Laurie Sleep, and Meghan Shaughnessy

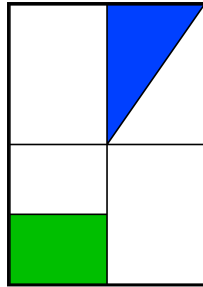
² Students were selected from a pool of candidates comprised of fourth graders from a local public school district. These students were identified by their classroom teachers as being individuals who could benefit from additional work in mathematics, many of whom were recommended for or required to attend summer classes.

³ Students had been using Cuisenaire rods during the summer program and were very familiar with them.



The Blue & Green Rectangle Problem

After completing their work on the warm-up problems, the teacher presented the class with a new problem involving another rectangle with shaded regions; however, unlike in previous problems, this rectangle was divided into both smaller rectangular regions and triangular regions (two different shapes):



On the board:

Working ideas about fractions

- identify the whole
- equal parts
- how many parts of the whole

Students were then asked:

1. What fraction of the big rectangle is shaded blue?
2. What fraction of the big rectangle is shaded green?
3. How much of the big rectangle is shaded altogether?

After a short discussion of the problem, students broke into pairs and small groups to work on the problem for ten minutes.

The Mamadou-Half-Rectangle video shows the beginning of the class discussion about Question 1: What fraction of the big rectangle is shaded blue?

Mamadou shared that he got “one-half” as the answer and then went up to the board to share how he thought about the problem. The video goes on to show the class discussion that ensued, guided by the teacher’s questions and comments.

This episode is notable for the ways in which the teacher uses Mamadou’s seemingly incorrect answer to help the class explore and use concepts of “the whole” and “equal parts.” The teacher also provides scaffolds to help students use their “Working ideas about fractions” list to identify and assign fractional names to the shaded regions – similar to the way they will use more formal mathematical definitions to identify and name fractions and other mathematical objects in later class sessions.

