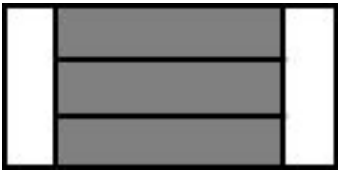

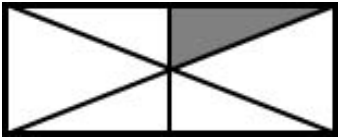



## Probe 1a: FRACTION REPRESENTATIONS

Directions: Decide whether the diagram models the fraction.

Circle yes or no:	Explain your thinking
<p>A) Is <math>\frac{3}{5}</math> of the whole shaded? <b>Yes</b> <b>No</b></p> 	
<p>B) Is <math>\frac{1}{4}</math> of the whole shaded? <b>Yes</b> <b>No</b></p> 	
<p>C) Is <math>\frac{1}{6}</math> of the whole shaded? <b>Yes</b> <b>No</b></p> 	
<p>D) Is <math>\frac{1}{4}</math> of the whole shaded? <b>Yes</b> <b>No</b></p> 	

# Resource for Analysis of Probe 1a: “Fraction Representations”

## Understandings and Successful Approaches

Correct Answers: A) No B) Yes C) No D) No

Students who choose each of these correct answers and have explanations that support their choices show understanding of the following important ideas including:

- Shapes can be further partitioned to assist in interpreting the value of a shaded region.
- A shaded region within an unequally partitioned whole can be named if the area of the shaded region can be compared to the whole.

## Potential Common Misunderstandings/Misconceptions to Look For



A mixture of correct and incorrect choices may reveal a misunderstanding related to the area model representations of fractions.

### 1. “Focus on Number not Size” Misconception

Answer Pattern: A) No, B) Yes; C) No; D) No

Students with this misconception consistently associate the number of pieces shaded with the numerator and the total number of pieces for the entire figure with the denominator but **do not** consider the size of the pieces

In this example, the student counts the number of shaded parts and total number of parts to determine the fraction shaded, without considering the size of the parts.



Circle yes or no:	Explain your thinking
A) Is $\frac{3}{5}$ of the whole shaded? <input checked="" type="radio"/> Yes <input type="radio"/> No 	Yes Because that are 5 boxes and the number under the line is how many boxes that are and the top number is what is shaded
B) Is $\frac{1}{4}$ of the whole shaded? <input type="radio"/> Yes <input checked="" type="radio"/> No 	No because that are only 3 boxes the bottom number says its 4.

### 2. “Difficulty Determining Fractions when Shapes are Not Equally Partitioned”

Answer Pattern: A) No, B) No; C) No; D) No

Students with this difficulty pay too much attention to the given number of shaded parts and the relative size of those parts, but they may not create equal sized parts.

In this example, the student notices the unequal size parts in A) and correctly answers No. In B, he/she notices the unequal sized parts but does not recognize that the unshaded  $\frac{1}{2}$  could be further partitioned to create two pieces equal in size to the shaded piece.

Circle yes or no:	Explain your thinking
A) Is $\frac{3}{5}$ of the whole shaded? <input type="radio"/> Yes <input checked="" type="radio"/> No 	It's uneven parts two are too small
B) Is $\frac{1}{4}$ of the whole shaded? <input type="radio"/> Yes <input checked="" type="radio"/> No 	It is uneven and it is not