Making Sense of Fraction Division

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Try this...

Use the fraction circles provided to solve the following problem:

- Heidi and Ha have 2 5/6 large pizzas leftover from a party. They want to put them in serving size packages that hold 2/3 of a large pizza each. How many servings can they package up?

  - *Heidi says they will end up with 4 1/6 servings.*
  - *Ha disagrees and says that they will end up with 4 1/4 servings.*

- Who is correct? Why? What mistake did the other person make?
- How could we use drawings to help make sense of the problem?

Try this... (Picture)

Use the fraction circles provided to solve the following problem:

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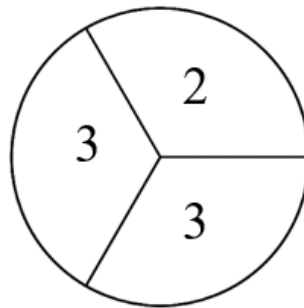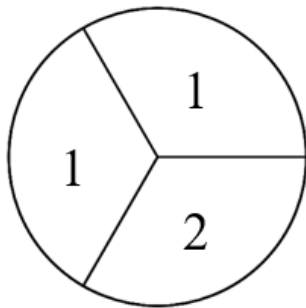
Goals for this session

- Discuss the progression of fraction operations

- Engage in fraction division tasks

- Identify the difference between sharing (partitive) and measurement (quotative) problem types

- Watch a video and discuss how this task might be implemented in a classroom

Progression of Fraction Operations

4ᵗʰ grade

- Add/subtract with like denominators (with and without context)
- Multiplication (whole number × fraction as repeated addition)

5ᵗʰ grade

- Add/subtract with unlike denominators (move from visuals to the standard algorithm)
- Multiply
- Divide
  - Whole number divided by a unit fraction (i.e., 6 divided by 1/3)
  - Unit fraction divided by a whole number (i.e., 1/3 divided by 6)

6ᵗʰ grade

- Divide a fraction by a fraction

Discuss the differences (but do not solve...yet)

- Julio bought 1/2 of a pound of sliced turkey. He made 4 sandwiches with the same amount of turkey on each sandwich. How much of a pound of turkey was on each sandwich?

- Amanda has 3 1/2 yards of fabric. If she uses 2/3 of a yard of fabric for each project, how many projects can she make?

**These tasks were taken from the "*Making Sense of Mathematics For Teaching: 6-8*" book (Nolan, Dixon, Roy, & Andreasen)

Partitive vs. Quotative

- When we know the number of groups: (**sharing/partitive**)
  - Julio bought 1/2 of a pound of sliced turkey. He made 4 sandwiches with the same amount of turkey on each sandwich. How much of a pound of turkey was on each sandwich?

- When we know the amount IN each group: (**measurement/quotitive**)
  - Amanda has 3 1/2 yards of fabric. If she uses 2/3 of a yard of fabric for each project, how many projects can she make?

Use drawings and solve…

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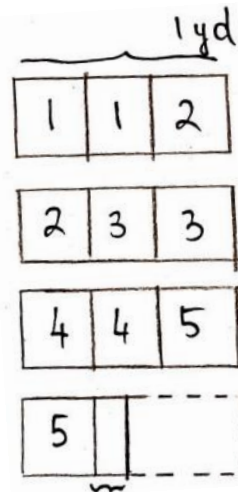
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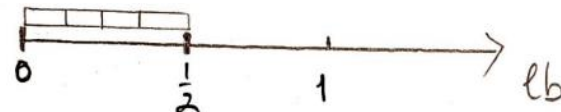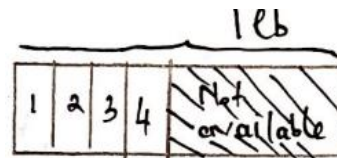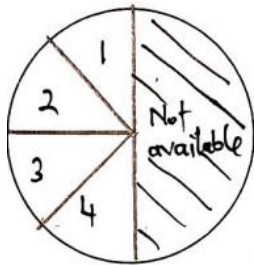
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Solve this

- Douglas ordered 5 small pizzas during the great pizza sale. He ate 1/6 of one pizza and wants to freeze the remaining 4 5/6 pizzas. Douglas decides to freeze the remaining pizza in serving-sized bags. A serving of pizza is 2/3 of a pizza. How many servings can he make if he uses up all the pizza?

- Taken from the "*Making Sense of Mathematics For Teaching: 6-8*" book (Nolan, Dixon, Roy, & Andreasen)

Watch this

- A video from the "*Making Sense of Mathematics For Teaching: 6-8*" book (Nolan, Dixon, Roy, & Andreasen)

- Discuss what you noticed with a neighbor.
- How could you implement this task in your classroom?
- What was your biggest take away from this session?

Connecting to Standard Algorithm

- Why does it make sense to multiply by the reciprocal?

- For example: **4 ÷ 1/3**.

- A student said this, "*There are 3 groups of 1/3 in 1 whole. There are 4 wholes, so in total there are 4 × 3 = 12 groups of 1/3 in 4 wholes.*"

- How about **4/6 ÷ 1/3**?
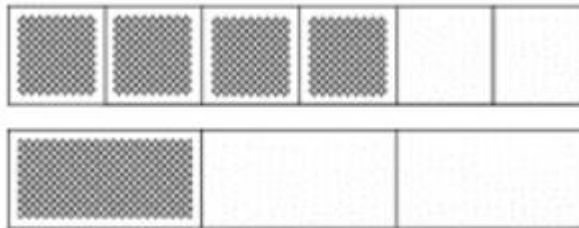
- How about **5/6 ÷ 1/3**?
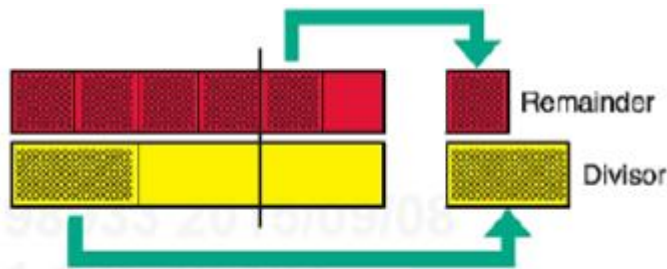
Remainder

Divisor

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Making Sense of Mathematics for Teaching Grades 6-8
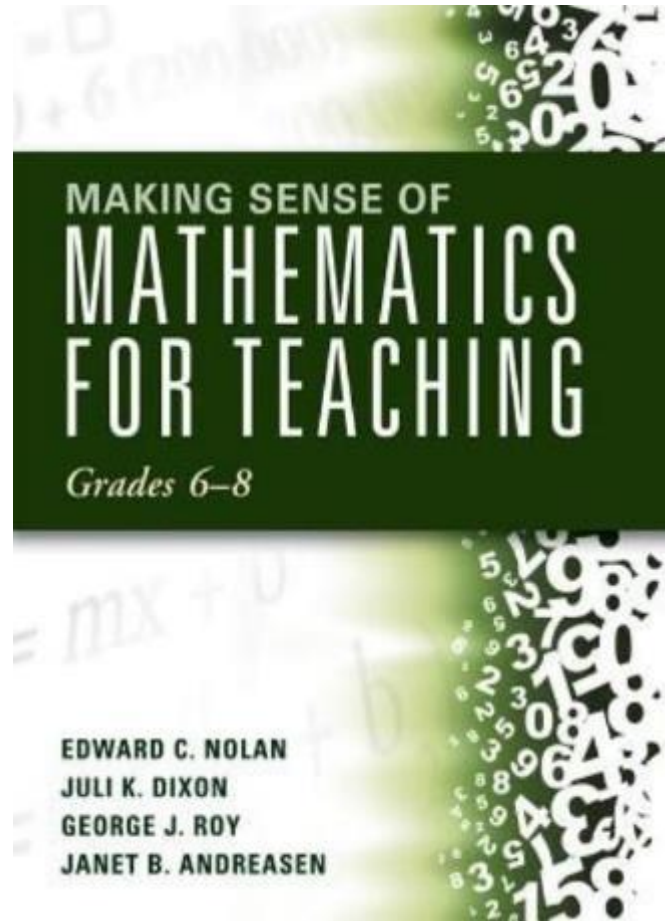
- Nolan, Dixon, Roy, Andreasen. 2016. Making sense of mathematics for teaching: 6-8.

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