

Dividing Fractions

6682

Introduction

In this activity, students make use of a visual representation for dividing fractions. They also discover the numerical algorithm used to divide fractions.

Grades 6-8

NCTM Number and Operations Standards

- Compute fluently and make reasonable estimates
- Develop and analyze algorithms for computing with fractions, decimals, and integers and develop fluency in their use

Files/Materials Needed

Fraction1.act, Fraction2.act, Fraction3.act

PART 1 USE A MODEL TO FIND A QUOTIENT INVOLVING FRACTIONS

1

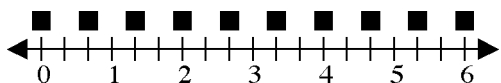
- Launch TI-Navigator™ on the computer and start the session.
- Have each student log into NavNet on their calculator.

2

- Load the *Fraction1.act* activity settings file. Students will see a number line in Activity Center.
- Tell students that you have 6 feet of ribbon and you are going to cut the ribbon into $\frac{2}{3}$ -foot lengths. The question is: How many $\frac{2}{3}$ -foot ribbons can be made from the 6 feet of ribbon?

3

- Start the activity and instruct students to place marks at $\frac{2}{3}$ intervals, starting with a mark at 0. You may want to call on specific students to place the marks on the diagram so as to minimize any confusion. After students place marks, the screen should look like the one shown below.
- Students should recognize that the space between

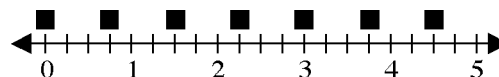


each mark represents $\frac{2}{3}$ and that there are 9 full $\frac{2}{3}$'s in the number 6.

- Use **Quick Poll** (*with Open Response*) to ask students how many $\frac{2}{3}$'s there are in 6. Follow up by asking them what operation was used to answer this question: addition, subtraction, multiplication, or division.

4

- Load the *Fraction2.act* activity settings file.
- This time, tell students that they will be answering a very similar problem except that this time they need to find how many $\frac{3}{4}$ -foot ribbons can be cut from 5 feet of ribbon. Start the activity and instruct students to place marks at $\frac{3}{4}$ intervals, similar to before. After students place marks, the screen should look like the one shown below.



- Use **Quick Poll** (*with Open Response*) to ask students how many $\frac{3}{4}$'s there are in the number 5. Instruct students to write their answer as a fraction by enclosing it in quotation marks (found by pressing **[2nd][TEXT]**). Most students will see that there are 6 full $\frac{3}{4}$'s in the number 5. They will have more difficulty

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realizing that there is an additional $\frac{2}{3}$ of $\frac{3}{4}$ giving a final answer of $6\frac{2}{3}$. Use the diagram in Activity Center to show why this is true.

5

- Load the ***Fraction3.act*** activity settings file. This time, tell students that they will be finding how many times the number $\frac{1}{2}$ goes into $\frac{7}{2}$.
- Run the activity as before and use **Quick Poll** to see if students obtained an answer of 7.

PART 2 DEVELOP THE ALGORITHM FOR DIVIDING FRACTIONS

6

- Write the results of each division problem from Part 1 on the board:

$$6 \div \frac{2}{3} = 9 \quad 5 \div \frac{3}{4} = 6\frac{2}{3} \quad \frac{7}{2} \div \frac{1}{2} = 7$$

- Tell students to log out of NavNet and use trial and error with the fraction feature of their calculators to find a way to obtain the above answers using the number pairs on the left side of each equal sign without using the division key.
- If a student thinks they have it, use **Screen Capture** to display the result for the rest of the class. Try not to provide too much input here; it's important that students discover the division algorithm for themselves.

