

Multiplying and Dividing Fractions – Using Number Lines

STRAND: Computation and Estimation

STRAND CONCEPT: Practical Applications – Rational Numbers and Proportional Reasoning

SOL 6.5b, 7.2

Remediation Plan Summary

Students use number lines to answer practical problems involving whole numbers and fractions.

Common Misconceptions

- When multiplying fractions, some students will apply the wrong procedure and cross multiply instead of multiplying the numerators together and the denominators together.
- Some students apply their understanding of whole numbers to multiplying and dividing fractions and believe the answer should be larger than the two factors as well as the quotient gets smaller when dividing by a fraction.
- Some students confuse division with multiplication when using models or real world examples.

Materials Introductory Activity handout, number lines, A City Block handout

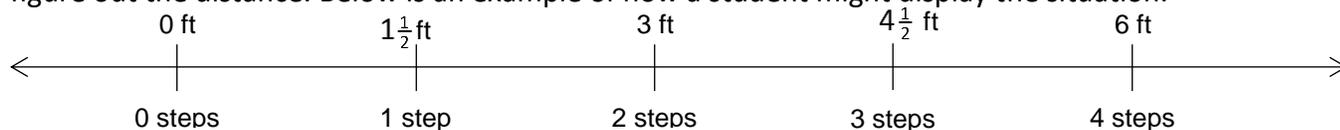
Introductory Activity

Hand each student the introductory activity handout and have students work independently. When students are finished, have them compare their answers with another student. Have a whole class discussion. Make sure to ask the following questions: “*What strategy did you use with the number line to find the answer?*”, “*What operation(s) could you use with each question to solve it without the number line?*”

Plan for Instruction

1. Either hand each student an open number line or have them write one on paper or a white board.
2. Pose the question, “If each step you take is equivalent to $1\frac{1}{2}$ feet, how far would you go in 4 steps?”

Have students discuss the problem with a partner and encourage them to use the number line to figure out the distance. Below is an example of how a student might display the situation.



3. Conduct a whole class discussion and have students discuss/present the way they solved the problem. Make sure to talk about the different operations that students could use to figure the distance.
4. Next pose the question, “What if you only took $\frac{1}{2}$ of a step, how far would you go? Again encourage students to use the number line and discuss their answer with a partner. Discuss whole class.
5. Hand students the City Block handout and have students complete each problem either by themselves or with a partner.
6. Once students complete the handout, have a class discussion on how they used the number line to help them answer the question and what operation would be associated with each problem.

Pulling It All Together (Reflection).

Explain how using a number line could help you determine the product of 5 and $\frac{1}{4}$?

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Fraction Operations on a Number Line Introductory Activity

Model the following situations on a number line.

1. Malika walked for 3 hours. If she walked 5 miles per hour, how many miles did she walk in 3 hours?



2. Sonja had 6 yards of ribbon to make bows. If each bow takes 2 yards of ribbon, how many bows can she make?



3. Jamie wants to make 4 wooden shelves that are 2 feet long? How much wood will he need to buy?



A City Block

Directions: For each situation, model each on the number line, then determine an operation and or work the problems, and state your answer.

The distance of one city block is $\frac{1}{2}$ mile. Use this information for each situations.			
Situation	Number line	Work	Answer
1. If Jose walked 3 blocks , how many miles did he travel?			
2. If Karen walked $1\frac{1}{2}$ blocks , how many miles did she travel?			
3. If Scott stopped after walking $\frac{1}{2}$ of a block , how many miles did he travel?			
4. Eric and David are $4\frac{1}{2}$ blocks away from each other. How many miles are they apart?			
5. If Jenn walked $1\frac{1}{4}$ miles , how many blocks did she travel?			
6. If April walked $\frac{3}{4}$ of a mile , how many blocks did she travel?			

7. Compare the six problems. How are they similar? How are they different?