

Ordering Rational Numbers & Misconceptions

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Presented By

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Ordering Rational Numbers

Reminder:

- **Basic Measuring Unit (BMU):** A quantity that represents 1.
- **(For Linear or Area models)** $\frac{a}{b}$ means the following...
 - Choose an appropriate BMU.
 - Cut/break/separate the BMU into b equal size pieces. Each piece is size $\frac{1}{b}$.
 - There are a pieces of size $\frac{1}{b}$ available.

PART I:

Compare each pair of quantities. Insert $<$, $>$, or $=$ in the blank, then explain the strategy you used.

#	Quantities	Answer & Strategy Explanation
1	Mike ran $\frac{8}{5}$ miles. Jake ran $\frac{3}{4}$ miles.	Answer: $\frac{8}{5}$ miles _____ $\frac{3}{4}$ miles Strategy:
2	$\frac{2}{3}$ cup of flour. $\frac{3}{4}$ cup of flour.	Answer: $\frac{2}{3}$ cup _____ $\frac{3}{4}$ cup Strategy:
3	Plant A is $\frac{7}{8}$ ft. tall. Plant B is $\frac{7}{12}$ ft. tall.	Answer: $\frac{7}{8}$ ft. _____ $\frac{7}{12}$ ft. Strategy:
4	Kathy and Nikki make the same salary. Kathy spent $\frac{2}{5}$ of her salary on bills. Nikki spent $\frac{3}{5}$ of her salary on bills.	Answer: $\frac{2}{5}$ of the salary _____ $\frac{3}{5}$ of the salary Strategy:

In #4, you showed that $\frac{3}{5}$ is greater than $\frac{2}{5}$. Can you think of a real-world situation in which $\frac{3}{5}$ could be less than $\frac{2}{5}$?

PART II:

Compare each pair of rational numbers, and then carefully describe the strategy you used.

	I	<, >, or =	II	Strategy
a.	$\frac{345}{347}$		$\frac{125}{127}$	
b.	$\frac{4}{7}$		$\frac{5}{12}$	
c.	$\frac{17}{46}$		$\frac{17}{45}$	
d.	$\frac{3}{8}$		$\frac{5}{8}$	
e.	$\frac{4}{10}$		$\frac{7}{16}$	

1. Choose a problem above and rework it using a strategy different from the one you first used.

2. For which of the five problems, if any, would it be useful to use diagrams or fraction strips to compare? For which problems would diagrams and fraction strips be inappropriate? Explain your reasoning.

Ordering Misconceptions

- 1) Order the following set of rational numbers from smallest to largest and justify each of the strategies that you use. Do not use the common denominator strategy more than once.

$$\frac{1}{3}, \frac{7}{9}, \frac{2}{5}, \frac{5}{8}, \frac{1}{4}$$

- 2) Try to use the “Distance to 1” strategy to determine which symbol ($<$, $>$, or $=$) belongs in the box. Does the Distance to 1 strategy help you to make that decision? Explain why or why not.

a. $\frac{35}{38} \square \frac{41}{44}$

b. $\frac{73}{78} \square \frac{54}{57}$

c. $\frac{89}{97} \square \frac{121}{125}$