

Packet 6: Rational Numbers: Multiplication and Division 2

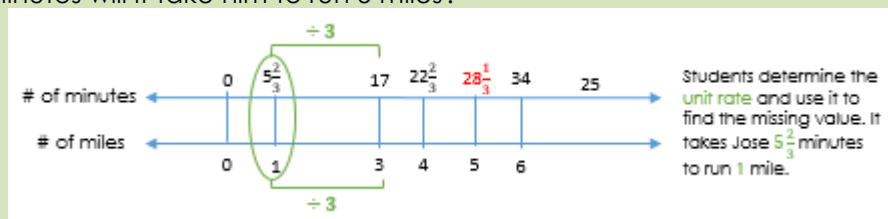
Dear Parents/Guardians,

Packet 6 ties up the work with rational numbers. It opens up with a review of order of operations, extending the arithmetic to include integers (see video link). Students will explore problems involving ratios of fractions or decimals using different representations and then learn strategies to simplify complex fractions. Finally, students will apply their rules from Packet 5 to multiply and divide non-integer numbers.

Double Number Lines

Double number lines are useful for comparing the relationship between two variables. Students use double number lines to solve proportional reasoning problems.

Example: Jose can run 3 miles in 17 minutes. At this rate, how many minutes will it take him to run 5 miles?



At that rate, Jose would run 5 miles in $28\frac{1}{3}$ minutes.

Using Tables to Compute Rates

Students will look for relationships with ratios of fractions. They will use multiplication or division to find the missing component of each ratio within a table. (Note the given values are in black.)

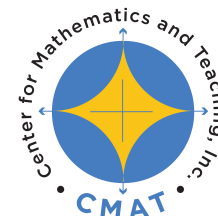
Number of tsp of cayenne	$\frac{1}{3}$	3 of the $\frac{1}{3}$'s is 1 $\frac{1}{3} \times 3 = 1$	2 of the $\frac{1}{3}$'s is $\frac{2}{3}$ $\frac{1}{3} \times 2 = \frac{2}{3}$
Number of tsp of salt	$2\frac{1}{2}$ $2\frac{1}{2} = \frac{5}{2}$	$\frac{5}{2} \times 3 = \frac{15}{2}$ or $7\frac{1}{2}$	$\frac{5}{2} \times 2 = \frac{10}{2}$ or 5

Strategies for Simplifying Complex Fractions

A complex fraction is a fraction whose numerator and/or denominator is a fraction. $\frac{\frac{1}{4}}{\frac{5}{8}}$ is a complex fraction.

Students will explore two strategies for simplifying complex fractions.

Strategy 1		Multiply by a form of the "big one" to create a denominator equal to 1.	
Write the complex fraction as a division problem. Simplify by multiplying by the reciprocal.		Multiply by a form of the "big one" to create a denominator equal to 1.	
$\frac{\frac{1}{4}}{\frac{5}{8}}$	$\frac{1}{4} \div \frac{5}{8} = \frac{1}{4} \times \frac{8}{5} = \frac{8}{20}$	$\frac{\frac{1}{4}}{\frac{5}{8}}$	$\frac{1}{4} \times \frac{8}{5} \times \frac{8}{5} = \frac{8}{20} = \frac{8}{20}$



Mathlinks7

By the end of the packet, your student should know...

How to use the convention for order of operations to evaluate expressions Lesson 6.1

How to compute unit rates associated with ratios of fractions Lesson 6.2

How to multiply and divide rational numbers Lesson 6.3

Additional Resources

Resource Guide (RG)
Part 1, Pages 40-41, 45-51

<http://www.mathtv.com/#>
Click on Basic Math; Whole Numbers; Exponents and Order of Operations
Click on Algebra; Simplifying Expressions; with numbers only