Packet 1: Ratio Representations

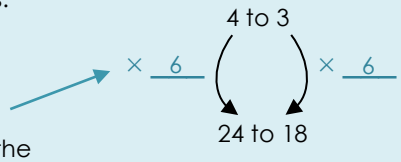
Dear Parents/Guardians,

Proportional Reasoning: Packet 1 introduces ratios, unit rates, and equivalent ratios. Students use different representations such as tape diagrams, double number lines, and tables to solve proportional reasoning problems.

Equivalent Ratios

A ratio is a pair of non-negative numbers, not both zero, in a specific order.
Example: Blakely can swim 4 laps in 3 minutes.
The ratio her laps to minutes is 4 to 3 or 4 : 3.

Two ratios are equivalent if each number in one ratio is obtained by multiplying the corresponding numbers in the other ratio by the same positive number.



4 : 3 and 24 : 18 are equivalent ratios.

Representations of Ratios

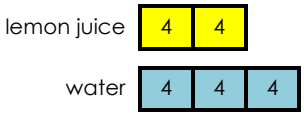
Students solve ratio problems using tables, tape diagrams and double number lines.

Example: A recipe calls for 2 parts lemon juice for every 3 parts of water. How many cups of lemon juice are needed for 12 cups of water?

Tape Diagram

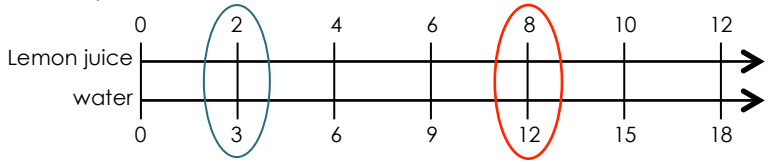
Tape diagrams consist of strings of rectangles that represent the same amount.

For the example, this tape diagram to the right represents 2 parts lemon juice and 3 parts water. Since there are 12 cups of water, each rectangle represents 4 cups (12 ÷ 3 = 4). Therefore, the amount of lemon juice needed is 8 cups, since 4 × 2 = 8.



Double Number Lines

Double number lines allow us to represent and find equivalent ratios in a visual way.



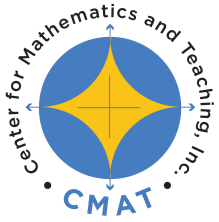
The ratio 2 : 3 is equivalent to 8 : 12. The diagram shows that 8 cups of lemon juice are needed for every 12 cups of water.

Tables

Another way to find equivalent ratios is by creating a table.

	×2	×2	
lemon juice	2	4	8
water	3	6	12
	×2	×2	

In the table above, the values in columns were doubled, then doubled again. Therefore 8 cups of lemon juice are needed for every 12 cups of water.



PROPORTIONAL REASONING PACKET 1

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

- How to define ratio, unit rate, and equivalent ratios Lessons 1.1, 1.2, and 1.3
- Different representations to solve ratio problems Lessons 1.1, 1.2, and 1.3
- When ratios are equivalent Lesson 1.3

Additional Resources

For additional information and strategies, please refer to section 1.5.