



Lemony-er Lemonade

➤ The shaded portion in each glass represents an amount of lemonade. Read each situation and answer the question. **Explain your reasoning.**

- 1 Tammy's glass of lemonade has a weaker tasting lemon flavor than Jen's glass of lemonade. If you add one teaspoon of lemon mix to both Jen's and Tammy's glasses, which glass will contain the lemonade with the stronger lemon flavor?



Tammy's Glass



Jen's Glass

Jen's glass will have a stronger tasting lemon flavor. Initially, Jen's glass had a stronger taste and both glasses have the same volume and you added the same amount of lemon mix.

- 2 Beth's glass of lemonade has a weaker tasting lemon flavor than John's glass of lemonade. If you add two ounces of water to Beth's glass and one teaspoon of lemon mix to John's glass, which glass will contain the lemonade with the stronger lemon flavor?



Beth's Glass



John's Glass

John's glass will be stronger. He started stronger and lemon mix was added to John's glass while water was added to Beth's.

- 3 Jimmy and Jake have glasses of lemonade that taste the same. If you add one teaspoon of lemon mix to each glass, which glass will contain the lemonade with the stronger lemon flavor?



Jimmy's Glass



Jake's Glass

Jake's glass will be stronger. Jake's glass has less volume so the one teaspoon will make more of a difference in the taste.



Qualitative Comparisons

In this activity, you will compare ratios without measuring or counting quantities. When you reason like this, it is called **qualitative reasoning**.

HABITS OF MIND

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

➤ Choose the correct statement to complete each sentence and explain your reasoning.

If you cannot determine the answer, explain why not.

- 1 If Luke plans to use four more tablespoons of orange mix today than what he used yesterday to make the same amount of orange drink, his orange drink today would have:

- ☒ a stronger tasting orange flavor.
- a weaker tasting orange flavor.
- a mix that has the same strength of orange taste as yesterday.

It will be stronger because the ratio of mix to water increased.

- 2 Dave and Sandy each made a pitcher of orange drink. Sandy's pitcher is larger than Dave's pitcher. Sandy used more orange mix than Dave. Dave's orange drink has:

- a stronger tasting orange flavor.
- a weaker tasting orange flavor.
- a mix that has the same strength of orange taste as Sandy's drink.

Can't be determined.

* how much bigger is Sandy's pitcher?

* how much more mix was used?

- 3 If a race car travels more laps in less time than it did yesterday, its speed would be:

- slower.
- exactly the same.

☒ faster.

The ratio of laps to time increased



Comparing Comparisons

In this activity, you will compare ratios by measuring or counting quantities. When you reason like this, it is called **quantitative reasoning**.

HABITS OF MIND

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

The 6th-grade students are making hot chocolate to sell at the Winter Carnival. Each homeroom suggested a different recipe.

HR 6A  2 cups milk  3T cocoa powder	HR 6B  5 cups milk  8T cocoa powder
HR 6C  3 cups milk  4T cocoa powder	HR 6D  4 cups milk  7T cocoa powder

TAKE NOTE...

The "T" in each recipe stands for Tablespoon!

cocoa
milk

$$\begin{aligned}
 6A &= \frac{3}{2} \times \frac{30}{30} = \frac{90}{60} \\
 6B &= \frac{8}{5} \times \frac{12}{12} = \frac{96}{60} \\
 6C &= \frac{4}{3} \times \frac{20}{20} = \frac{80}{60} \\
 6D &= \frac{7}{4} \times \frac{15}{15} = \frac{105}{60}
 \end{aligned}$$

1 Consider the given recipes to answer each question.

- (a) Use reasoning to determine which recipe has the strongest chocolate taste and which recipe has the weakest chocolate taste.

HR 6D has the strongest taste
HR 6C has the weakest taste

- (b) Show how you used ratio reasoning to order the recipes. Identify the ratios that you used as part-to-part or part-to-whole.

I used part to part ratios and scaled them up so they had equal parts milk to make it easier to compare.

- (c) Create a poster to explain your answer and strategies to the class. Prepare to share.