



Refine Ideas About Rate Concepts

Apply It

► Complete problems 1–5.

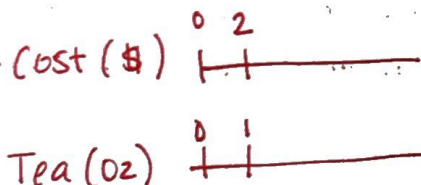
- 1 Apply** Malcolm makes chicken rice soup with his grandmother. Their family recipe calls for 5 cups of chicken broth per cup of brown rice. How many cups of brown rice are needed for 20 cups of chicken broth? Explain how you know.

$$\begin{array}{r} 5 \text{ c chicken broth} \\ 1 \text{ c Rice} \end{array} = \begin{array}{r} 20 \text{ c} \\ \end{array}$$

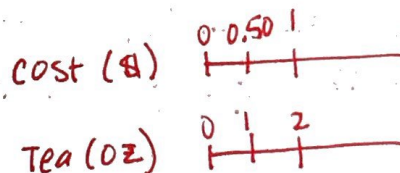
(Handwritten arrows show scaling: 5 to 20 is x4, 1 to 4 is x4)

You will need 4 cups of brown rice. If you increase the chicken broth 4 times you have to increase the rice by the same amount.

- 2 Analyze** At a tea shop, a package of vanilla tea weighs 1 ounce and costs \$2. Cinnamon tea is priced at 2 ounces per dollar. Use rates to show which tea is more expensive per ounce. Include a model in your response.



Vanilla Tea



Cinnamon Tea

Vanilla Tea costs \$2 per ounce and Cinnamon Tea costs \$0.50 per ounce. The Vanilla tea is more expensive.

- 3 Critique** A school laser printer prints 72 pages in 6 minutes. Alanna's home printer prints twice as many pages in twice as many minutes. Alanna says her printer's rate in pages per minute is two times the rate of the school printer. Do you agree or disagree? Explain.

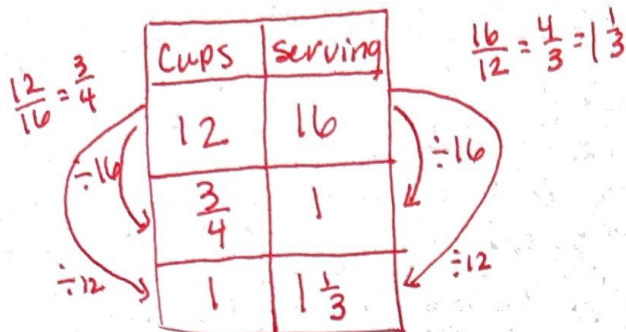
$$\begin{array}{r} 72 \text{ pg} \\ 6 \text{ min} \end{array} \xrightarrow{\times 2} \begin{array}{r} 144 \text{ pg} \\ 12 \text{ min} \end{array}$$

(Handwritten arrows show scaling: 72 to 144 is x2, 6 to 12 is x2)

Disagree. Scaling up by two makes an equivalent rate. The two printers print at the same speed.

- 4 A box holds 12 cups of cereal. This amount is equivalent to 16 servings.

PART A Use a model to show the number of cups of cereal per serving and the number of servings per cup of cereal.



PART B Explain how your model shows each rate.

The table shows the equivalent ratios of:

$\frac{3}{4}$ cup per serving, and

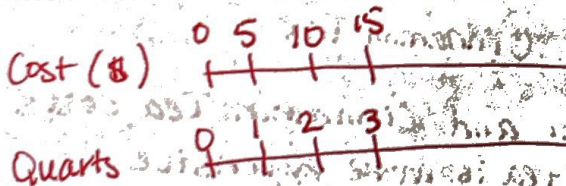
$1\frac{1}{3}$ serving per cup

PART C If you want to know how many cups of the cereal are in a box that holds 24 servings, which rate would you use? Explain.

$\frac{3}{4}$ c per serving.

You can easily multiply the one serving by 24 and also multiply the $\frac{3}{4}$ c by 24 to get the number of cup in the box.

- 5 **Math Journal** A farm stand sells 3 quarts of peaches for \$15. Use a model to write a rate for this situation. What does this rate tell you?



\$5 for 1 quart of peaches

The rate tells you how much you will pay per quart

✓ End of Lesson Checklist

☐ **INTERACTIVE GLOSSARY** Find the entry for *rate*. Rewrite the definition in your own words.