Unit 2 Lesson 11: Part-Part-Whole Ratios

1 True or False: Multiplying by a Unit Fraction (Warm up)

Student Task Statement

True or false?

$\frac{1}{5} \cdot 45 = \frac{45}{5}$

$\frac{1}{5} \cdot 20 = \frac{1}{4} \cdot 24$

$42 \cdot \frac{1}{6} = \frac{1}{6} \cdot 42$

$486 \cdot \frac{1}{12} = \frac{480}{12} + \frac{6}{12}$

2 Cubes of Paint

Images for Launch

Student Task Statement

A recipe for maroon paint says, "Mix 5 ml of red paint with 3 ml of blue paint."

1. Use snap cubes to represent the amounts of red and blue paint in the recipe. Then, draw a sketch of your snap-cube representation of the maroon paint.

   a. What amount does each cube represent?

   b. How many milliliters of maroon paint will there be?

2. a. Suppose each cube represents 2 ml. How much of each color paint is there?

   Red: _____ ml   Blue: _____ ml   Maroon: _____ ml

   b. Suppose each cube represents 5 ml. How much of each color paint is there?
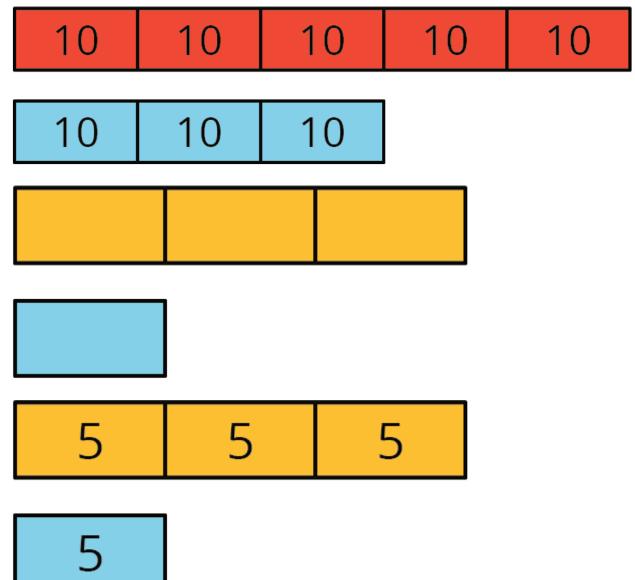
   Red: _____ ml   Blue: _____ ml   Maroon: _____ ml

3. a. Suppose you need 80 ml of maroon paint. How much red and blue paint would you mix? Be prepared to explain your reasoning.

Red: _____ ml   Blue: _____ ml   Maroon: 80 ml

b. If the original recipe is for one batch of maroon paint, how many batches are in 80 ml of maroon paint?

Activity Synthesis

10	10	10	10	10

10	10	10

5	5	5

5

3 Sneakers, Chicken, and Fruit Juice

Student Task Statement

Solve each of the following problems and show your thinking. If you get stuck, consider drawing a **tape diagram** to represent the situation.

1. The ratio of students wearing sneakers to those wearing boots is 5 to 6. If there are 33 students in the class, and all of them are wearing either sneakers or boots, how many of them are wearing sneakers?

2. A recipe for chicken marinade says, "Mix 3 parts oil with 2 parts soy sauce and 1 part orange juice." If you need 42 cups of marinade in all, how much of each ingredient should you use?

3. Elena makes fruit punch by mixing 4 parts cranberry juice to 3 parts apple juice to 2 parts grape juice. If one batch of fruit punch includes 30 cups of apple juice, how large is this batch of fruit punch?

4 Invent Your Own Ratio Problem (Optional)

Student Task Statement

1. Invent another ratio problem that can be solved with a tape diagram and solve it. If you get stuck, consider looking back at the problems you solved in the earlier activity.

2. Create a visual display that includes:

   - The new problem that you wrote, without the solution.

   - Enough work space for someone to show a solution.

3. Trade your display with another group, and solve each other's problem. Include a tape diagram as part of your solution. Be prepared to share the solution with the class.

4. When the solution to the problem you invented is being shared by another group, check their answer for accuracy.