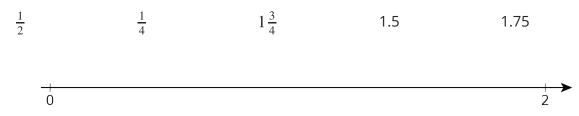
# Lesson 7: Creating Double Number Line Diagrams

Let's draw double number line diagrams like a pro.

## 7.1: Ordering on a Number Line

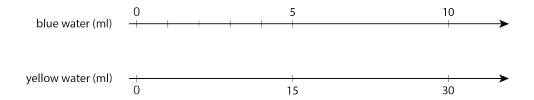
1. Locate and label the following numbers on the number line:



2. Based on where you placed the numbers, locate and label four more fractions or decimals on the number line.

### 7.2: Just a Little Green

The other day, we made green water by mixing 5 ml of blue water with 15 ml of yellow water. We want to make a very small batch of the same shade of green water. We need to know how much yellow water to mix with only 1 ml of blue water.



- 1. On the number line for blue water, label the four tick marks shown.
- 2. On the number line for yellow water, draw and label tick marks to show the amount of yellow water needed for each amount of blue water.
- 3. How much yellow water should be used for 1 ml of blue water? Circle where you can see this on the double number line.
- 4. How much yellow water should be used for 11 ml of blue water?
- 5. How much yellow water should be used for 8 ml of blue water?



6. Why is it useful to know how much yellow water should be used with 1 ml of blue water?

### 7.3: Art Paste on a Double Number Line

A recipe for art paste says "For every 2 pints of water, mix in 8 cups of flour."

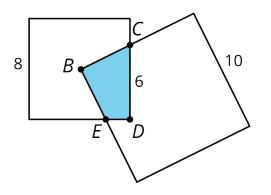
- 1. Follow the instructions to draw a double number line diagram representing the recipe for art paste.
  - a. Use a ruler to draw two parallel lines.
  - b. Label the first line "pints of water." Label the second line "cups of flour."
  - c. Draw at least 6 equally spaced tick marks that line up on both lines.
  - d. Along the water line, label the tick marks with the amount of water in 0, 1, 2, 3, 4, and 5 batches of art paste.
  - e. Along the flour line, label the tick marks with the amount of flour in 0, 1, 2, 3, 4, and 5 batches of art paste.

- 2. Compare your double number line diagram with your partner's. Discuss your thinking. If needed, revise your diagram.
- 3. Next, use your double number line to answer these questions:
  - a. How much flour should be used with 10 pints of water?
  - b. How much water should be used with 24 cups of flour?
  - c. How much flour **per** pint of water does this recipe use?



#### Are you ready for more?

A square with side of 10 units overlaps a square with side of 8 units in such a way that its corner B is placed exactly at the center of the smaller square. As a result of the overlapping, the two sides of the large square intersect the two sides of the small square exactly at points C and E, as shown. The length of CD is 6 units.



What is the area of the overlapping region *CDEB*?

# 7.4: Revisiting Tuna Casserole

The other day, we looked at a recipe for tuna casserole that called for 10 ounces of cream of chicken soup for every 3 cups of elbow-shaped pasta.

1. Draw a double number line diagram that represents the amounts of soup and pasta in different-sized batches of this recipe.

- 2. If you made a large amount of tuna casserole by mixing 40 ounces of soup with 15 cups of pasta, would it taste the same as the original recipe? Explain or show your reasoning.
- 3. The original recipe called for 6 ounces of tuna for every 3 cups of pasta. Add a line to your diagram to represent the amount of tuna in different batches of casserole.
- 4. How many ounces of soup should you mix with 30 ounces of tuna to make a casserole that tastes the same as the original recipe?

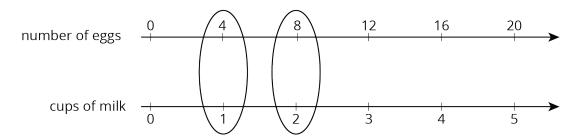


#### Lesson 7 Summary

Here are some guidelines to keep in mind when drawing a double number line diagram:

- The two parallel lines should have labels that describe what the numbers represent.
- The tick marks and numbers should be spaced at equal intervals.
- Numbers that line up vertically make equivalent ratios.

For example, the ratio of the number of eggs to cups of milk in a recipe is 4 : 1. Here is a double number line that represents the situation:



We can also say that this recipe uses "4 eggs per cup of milk" because the word **per** means "for each."