LESSON 81
ACTIVITY

Drop In
Molecular Views

Name _____

Date _____ Period _____

Purpose

To explore solution concentration on the particle level.

Materials

- Particle Views handout
- Particle View 2 card
- rulers
- scissors
- container with 1,000 mL red flavored drink mix solution
- 250 mL beakers (2)
- 250 mL Erlenmeyer flask

Part 1: Particle Views

Examine the Particle Views handout and answer the questions.

1. Figure out the concentration of dots per square inch for each particle view.

2. How can you tell just by looking at the pictures which one has the greatest concentration?

3. Cut Particle View 2 in half. Label one piece 2A. Cut the other piece in half again. Label one of these pieces 2B. What is the concentration of dots per square inch for 2A and 2B?

4. Which piece, 2A or 2B, has the same total number of dots as Particle View 3?

5. What portion of Particle View 1 would represent the same number of dots as all of Particle View 4?

6. How many times larger is the dot concentration in Particle View 2 compared to the dot concentration in Particle View 4?

7. Suppose you have a 1.0 M solution of red dye. A particle view of a tiny volume of the solution is shown. The dots represent dye molecules. Draw particle views for 0.50 M, 0.25 M, and 0.10 M solutions of red dye.
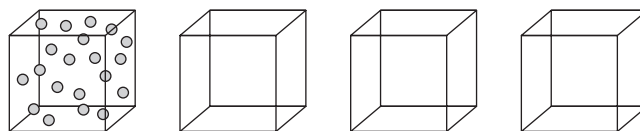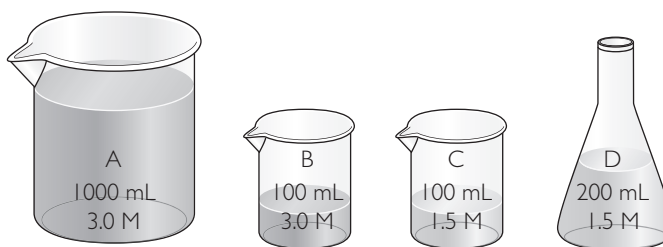

1.0 M red dye   0.50 M red dye   0.25 M red dye   0.10 M red dye

Part 2: Creating Samples

Procedure

1. Work in groups of four. Get 1,000 mL of a 3.0 M solution from your instructor. Use this solution to create samples that match B, C, and D at right.

Analysis

1. Explain how you made solution B, C, and D.

2. Rank the four containers in terms of total number of moles of red dye in solution, from greatest to least.

3. Imagine that you have a tiny sample of equal volume from A, B, C, and D above. What would a particle view of each look like? Complete the boxes.
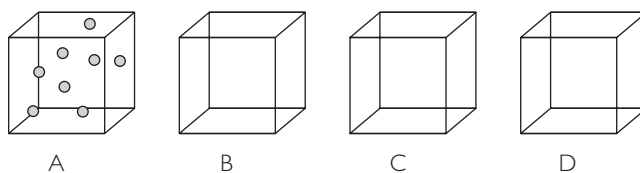
4. How many total moles of red dye molecules are in each of the four solutions? Show your work.

   Container A: Container B:

   Container C: Container D:

5. How many moles of red dye are in a 50 mL sample of a 2.4 M solution?

6. **Making Sense**   Explain how you figure out the total number of moles of particles in a sample with a known molarity.

7. **If You Finish Early**   Figure out how many grams of sugar, $C_{12}H_{22}O_{11}$, are in a 50 mL sample of a 2.4 M sucrose solution.