

Solution Switches

Track solutes, solvents, concentration, and dilution in water-based mixtures.

7.6.D “describe aqueous solutions in terms of solute and solvent, concentration, and dilution; and”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Circle words that name a solute or solvent, and number each sentence that explains how changing an amount changes concentration.

Water Makes the Mix

- ① An aqueous solution forms when water dissolves another substance. Water is the solvent because it does the dissolving. The substance that dissolves is the solute. For example, when powdered drink mix disappears in water, the water is the solvent and the drink mix is the solute. The particles of solute spread evenly through the water, making one mixture. Aqueous does not mean that every substance can dissolve in water. Sand can be stirred into water, but it settles instead of forming a solution.
- ② Concentration tells how much solute is present in a certain amount of solution. A concentrated solution has a larger amount of solute in the same amount of solution than a dilute solution has. Imagine two cups holding equal amounts of water. If one cup receives more food coloring, it has the higher concentration because more solute particles are mixed into that amount of liquid. Color can sometimes suggest concentration, but scientists describe concentration by comparing the amount of solute with the amount of solution.
- ③ Dilution changes a solution by adding more solvent without adding more solute. Suppose a student adds water to a cup of lemon drink. The amount of lemon-flavor solute stays the same, while the total amount of solution becomes larger. The drink becomes less concentrated, or more dilute. Dilution is different from adding extra solute. Adding more lemon powder to the original cup would make the solution more concentrated. In either change, the liquid remains aqueous as long as water is the solvent and the solute is dissolved.

2 ANSWER WITH EVIDENCE Use the passage

1 In the powdered drink mix example, what is the solvent and what is the solute?

2 Two cups hold equal amounts of water. One cup receives more food coloring. Which cup has the higher concentration, and why?

3 What happens to the concentration when water is added to lemon drink without adding more lemon-flavor solute?

4 How is adding lemon powder to the original cup different from adding water to it?

3 YOUR TURN Your own words

Write a three-sentence description of an aqueous solution you invent. Name its solute and solvent, explain what happens when you add water only, then explain what happens when you add more dissolved solute.

PART 1 • READ AND MARK

Circle words that name a solute or solvent, and number each sentence that explains how changing an amount changes concentration. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	In the powdered drink mix example, what is the solvent and what is the solute?	The solvent is water. The solute is the powdered drink mix.
2	Two cups hold equal amounts of water. One cup receives more food coloring. Which cup has the higher concentration, and why?	The cup with more food coloring has the higher concentration because it has more solute particles in the same amount of liquid.
3	What happens to the concentration when water is added to lemon drink without adding more lemon-flavor solute?	The solution becomes less concentrated, or more dilute, because the same amount of solute is in a larger amount of solution.
4	How is adding lemon powder to the original cup different from adding water to it?	Adding lemon powder adds more solute and makes the solution more concentrated. Adding water adds more solvent and dilutes the solution.

PART 3 • YOUR TURN (SAMPLE ANSWER)

In my saltwater solution, salt is the solute and water is the solvent. Adding only water dilutes the solution because the same amount of salt is spread through more solution. Adding more dissolved salt makes the solution more concentrated.

Accept equivalent explanations that correctly identify water as the solvent in an aqueous solution. For the open response, check that adding only water lowers concentration and adding dissolved solute raises concentration.