

# 6 Chemistry in Biology

## 3 Water and Solutions

TEKS 11(A)

### MAIN IDEA

Write the Main Idea for this lesson.

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### REVIEW VOCABULARY

physical property

Recall the definition of the Review Vocabulary term.

physical property

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### NEW VOCABULARY

Write the correct vocabulary term in the left column for each definition below.

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substance that releases hydroxide ions when dissolved in water

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substance that releases hydrogen ions when dissolved in water

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substance in which another substance is dissolved

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mixture that can react with an acid or a base to keep the pH within a particular range

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measure of concentration of hydrogen ions in a solution

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substance that is dissolved in a solvent

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weak interaction involving a hydrogen atom and a fluorine, oxygen, or nitrogen atom

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molecule that has oppositely charged regions

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mixture that has a uniform composition throughout

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combination of two or more substances in which each substance retains its individual characteristics and properties

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### ACADEMIC VOCABULARY

suspend

Define *suspend* to show its scientific meaning.

suspend

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### 3 Water and Solutions (continued)

Student Edition, pp. 161–165

Reading Essentials

pp. 62–64

**Analyze** polarity by writing *attract* or *repel* to complete the diagram.

$+$	$-$	_____	$+$	$-$
$+$	$-$	_____	$-$	$+$
$-$	$+$	_____	$+$	$-$

**Analyze** reasons for water's polarity and the effect of polarity.

Polarity of Water	
Reasons for polarity:	Effects of polarity:

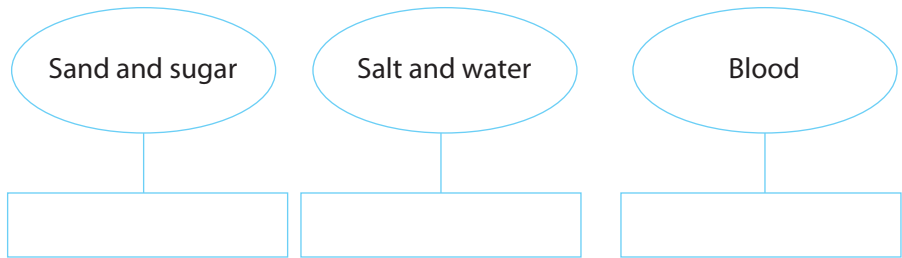
**Model** the hydrogen bonds that form between water molecules. Choose a way to represent the hydrogen bonds, then label at least one hydrogen bond.

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### 3 Water and Solutions (continued)

**Identify** each of the following mixtures as either homogeneous or heterogeneous.

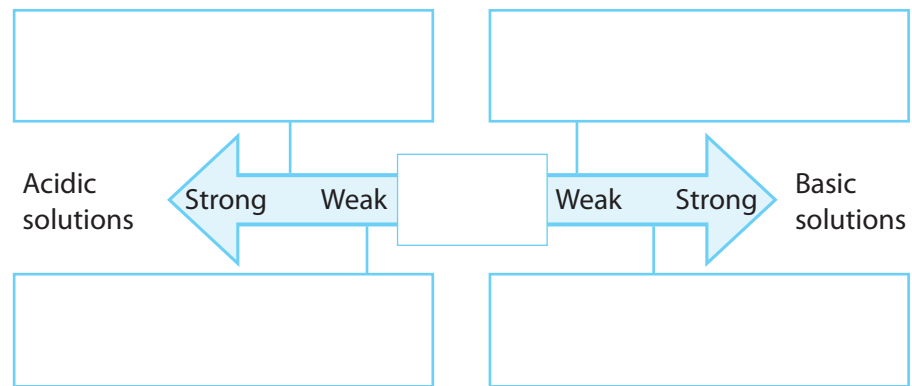


**For any homogeneous mixture above, identify the solvent and the solute.**

Solvent: \_\_\_\_\_ Solute: \_\_\_\_\_

**Construct** a model of acidic solutions and basic solutions by placing each of the items below in the correct sequence on the scale.

- releases some hydrogen ions
- releases many hydrogen ions
- water
- releases some hydroxide ions
- releases many hydroxide ions



**GET IT?** Distinguish between solutions and suspensions.

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### 3 Water and Solutions (continued)

#### REVIEW IT!

1. **MAIN IDEA Describe** one way in which water helps maintain homeostasis in an organism.

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2. **Relate** the structure of water to its ability to act as a solvent.

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3. **Draw** a pH scale and label water ( $\text{H}_2\text{O}$ ), hydrochloric acid ( $\text{HCl}$ ), and sodium hydroxide ( $\text{NaOH}$ ) in their general areas on the scale.

4. **Compare and contrast** solutions and suspensions. Give examples of each.

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5. **Explain** how baking soda ( $\text{NaHCO}_3$ ) is basic. Describe the effect of baking soda on the  $\text{H}^+$  ion concentration of stomach contents with pH 4.

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6. **Predict** If you add hydrochloric acid ( $\text{HCl}$ ) to water, what effect would this have on the  $\text{H}^+$  ion concentration? On the pH?

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