

Chapter 3

Chapter 3: Water and Life **Guided Reading**

This chapter is a review from your previous chemistry class – these concepts are critical and repeated throughout the year.

1. Why is water considered a polar molecule?

2. For each of the properties of water listed below, briefly **define** the property and then **explain** how water's polar nature and polar covalent bonds contribute to that property. Include an **example** in nature of each property.
 - a. Cohesion

 - b. Adhesion

 - c. Surface tension

 - d. High specific heat

 - e. Heat of vaporization

 - f. Evaporative cooling

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3. What is special about water and density?

4. Define the following terms:

a. Solute

b. Solvent

c. Aqueous solution

d. Hydrophilic

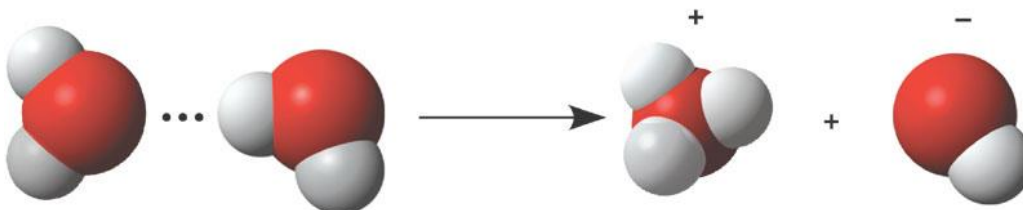
e. Hydrophobic

f. Colloid

g. Hydration shell

h. Molarity

5. Label the diagram below to demonstrate the dissociation of the water molecule.



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6. How does the dissociation of water relate to pH?

7. What defines an acid and a base?

8. Why are “apparently” small changes in pH so important in biology?

9. What is a buffer?

10. Write the equation for the carbonic acid buffer system in human blood. **Explain** how this helps an organism maintain homeostasis.

11. What is ocean acidification and what are the consequences of this?

12. What is acid precipitation and why is it important to living organisms?

13. Test Your Knowledge
 1. _____
 2. _____
 3. _____

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4. _____
5. _____
6. _____
7. _____
8. _____
- 9.

10.