

Water HW #1 READ The BASICS (no kidding) name: _____

1. Explain why water molecules are polar.
 2. Why do particles at the surface of a liquid behave differently than those in the bulk of the liquid.
 3. What is a surfactant? Explain how it works. Give an example of a surfactant.
 4. Does the specific heat capacity of water vary depending upon the quantity of water? Explain.
 5. How many joules and kJ, are required to vaporize 5.0 grams of water at its boiling point?
 6. How many kJ are required to melt 245 grams of ice at the freezing point of water?
 7. Describe how an ionic compound dissolves in water. (or, what is solvation?)
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Homework #2 READ The BASICS (again) name: _____

1. How many JOULES does it take to vaporize 1001 mL of water at 100°C into a gas without temperature change? Convert that amount of Joules into Kilo-Joules.
2. How many JOULES does it take to melt 1001 grams of ice at 0°C into liquid water at the same temperature? Convert that amount into kilo-Joules.
3. How many JOULES does it take to warm up 1001 grams of water from 20.0°C to 35.0°C?
4. Explain the density difference between $\text{H}_2\text{O}_{(s)}$ + $\text{H}_2\text{O}_{(l)}$. Use the words hydrogen bonds to do it.
5. TABLE G: answer these 6 problems. They require some cross multiplication, ratio math. THINK.
 - A. You want to make a solution of aqueous ammonium chloride. You plan to add exactly 60.0 g to 100 ml of water at 70°C. Your solution is saturated or unsaturated?
 - B. How many grams of ammonia will fit into exactly 100 grams of hot water (90°C)?
 - C. What is the TOTAL MASS of sodium nitrate that will fit into 100 mL of pure water at 10°C?
 - D. You have only 50.0 mL pure water and want to create a saturated solution of potassium iodide. The water is 10°C, how many grams of KI fit?
 - E. To make a saturated solution of KCl, you start with 2000 mL of pure water at 60°C. How many grams of KCl will saturate that solvent?
 - F. Sulfur dioxide is a gas and gases dissolve less well in warm solvents (that's why you burp when you drink soda, the cold soda holds more carbon dioxide than warm soda would. When it's in your belly, where it's warmer than in your refrigerator, the solubility of the gas drops, and the carbon dioxide moves from the soda (the water solvent) into your stomach. At some point, the gas fills your stomach, and you burp it out. Burping can be scientific but remember: it is often bad manners to burp. Plan on drinking your soda at teachable moments, then no one can fault you for being rude in public!
There is no question "F" today. Read your text, read your BASICS again.