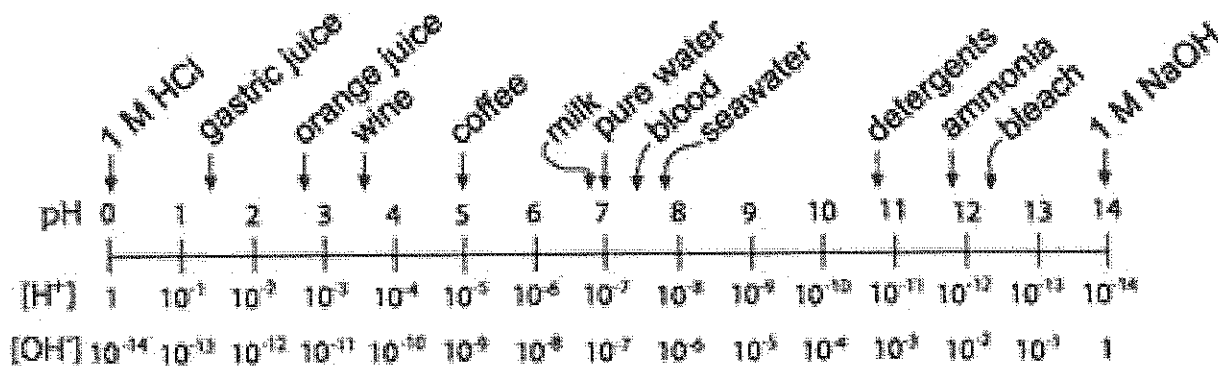


STATION #1 - pH



Use the Scale to answer the following questions.

1. What is the scale called? What ion does the scale measure?
2. What is the pH range for Acids?
3. What is the pH Range of Base?
4. Acidic solutions have more ___a___ ions and less ___b___ ions than base solutions.
5. Which items would be more acidic?
 - a. Gastric juice or wine
 - b. Coffee or milk
 - c. HCL or Orange juice
6. Which items would be more alkaline?
 - a. Detergents or bleach
 - b. NaOH or Seawater
 - c. Ammonia or blood
7. What is the pH of the weakest base?
8. What is the approximate pH of the 2nd strongest acid?
9. Looking back at question #5, how much stronger is the stronger acid?
10. Looking back at question #5, how much stronger is the stronger base?
11. A patient's blood pH increases above the normal range. They are administered a medicine with a medicine that has a pH that is slightly acidic. What is that medicine acting as and why is it administered?

STATION #2 - Solutions

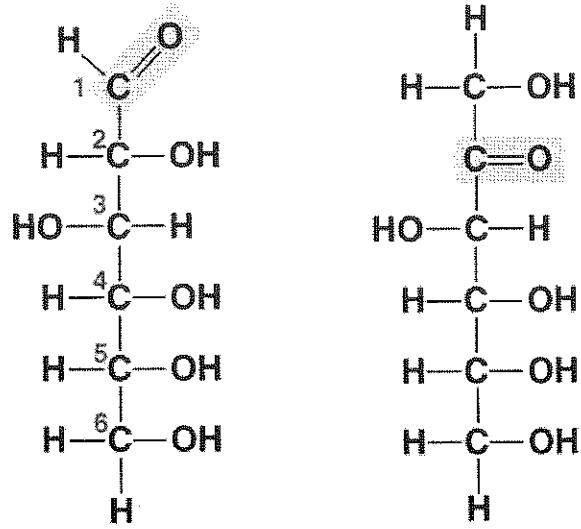
1. Using the substances in front of you create a 100 ml solution with a $\frac{1}{2}$ tablespoon of salt. Write down the directions as you prepare your solution so that someone knowing nothing about solutions would be able to follow and create the solution. BE SURE TO USE THE FOLLOWING WORDS IN YOUR INSTRUCTIONS AND UNDERLINE THEM WHEN USED:
SOLUTION, SOLVENT, SOLUTE, UNIVERSAL, DISSOLVE, HOMOGENOUS MIXTURE.

****This can be written in steps****

2. Do the salt and water bind physically, chemically or both?

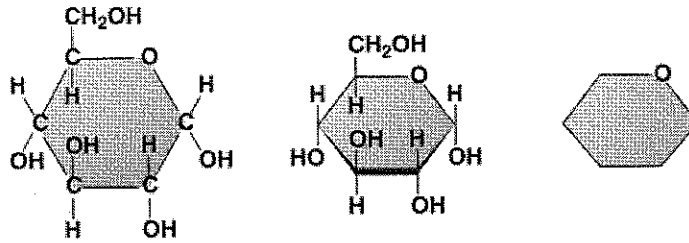
STATION #3 – Organic Compounds

A



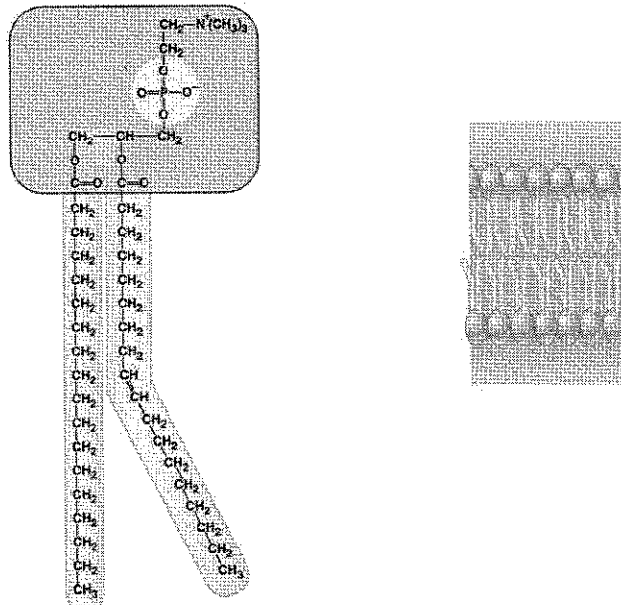
© 2012 Pearson Education, Inc.

B



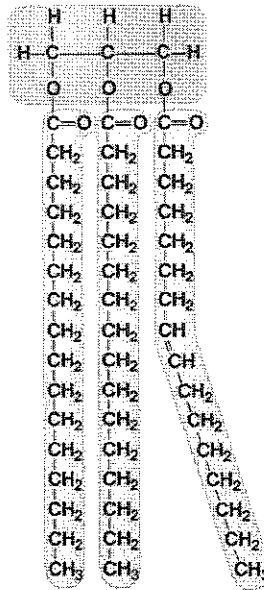
© 2012 Pearson Education, Inc.

C

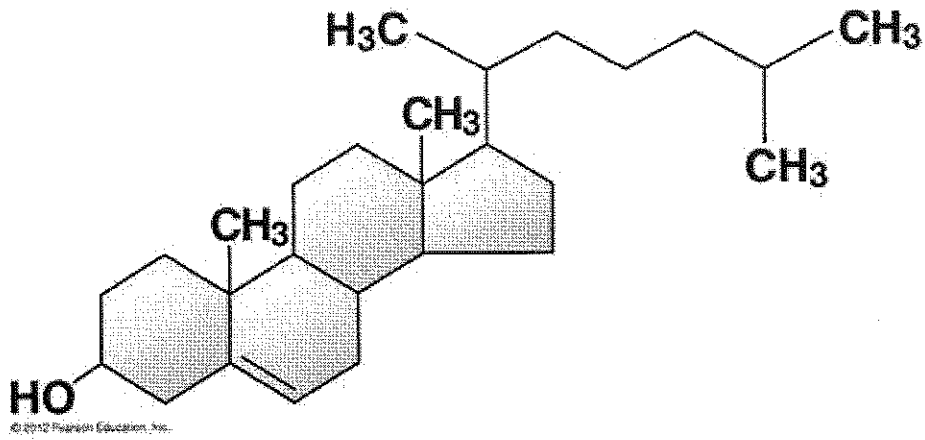


© 2012 Pearson Education, Inc.

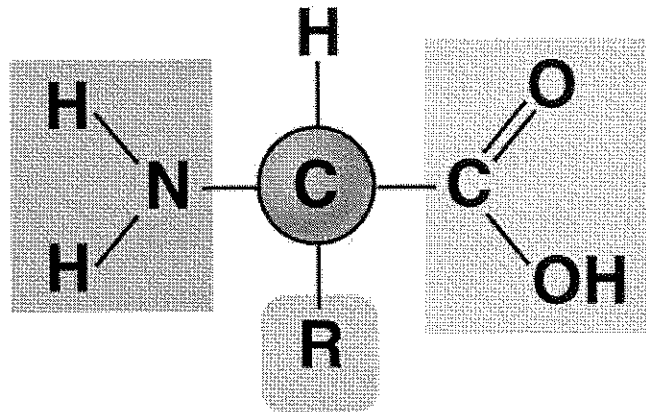
D



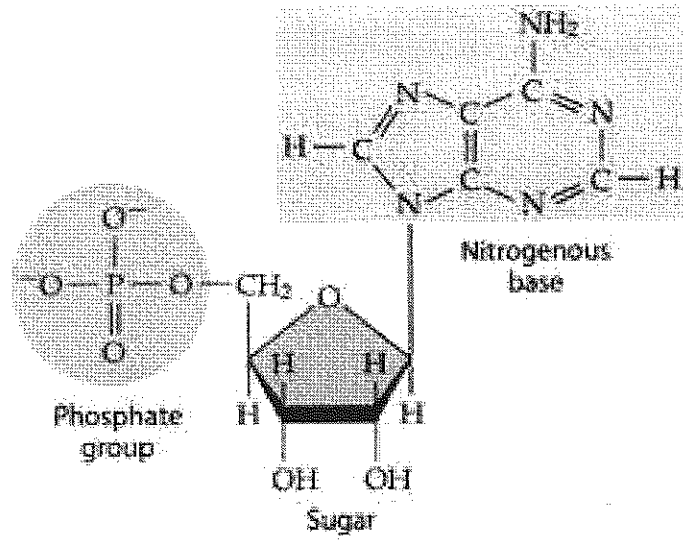
E



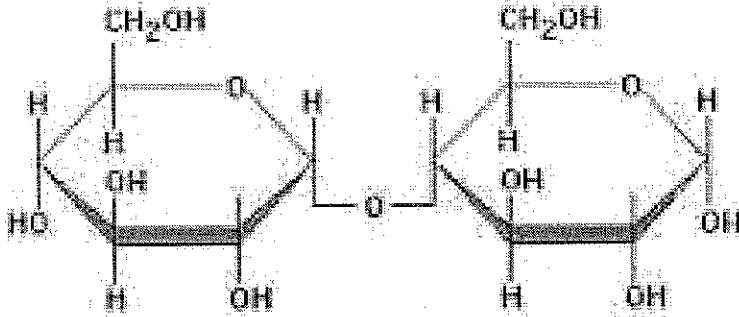
F



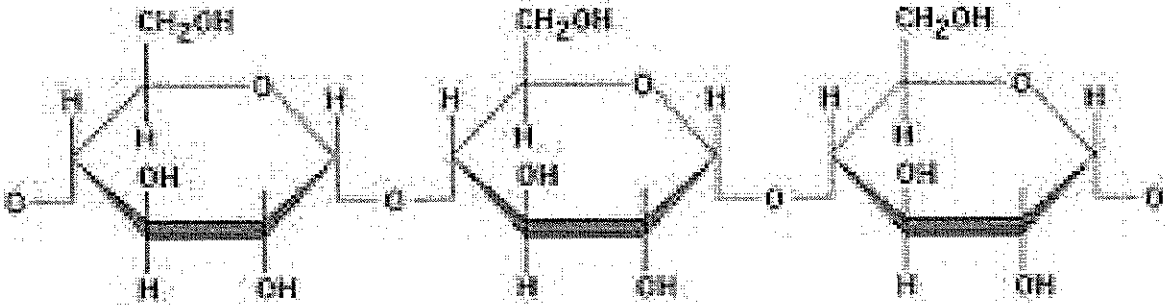
G



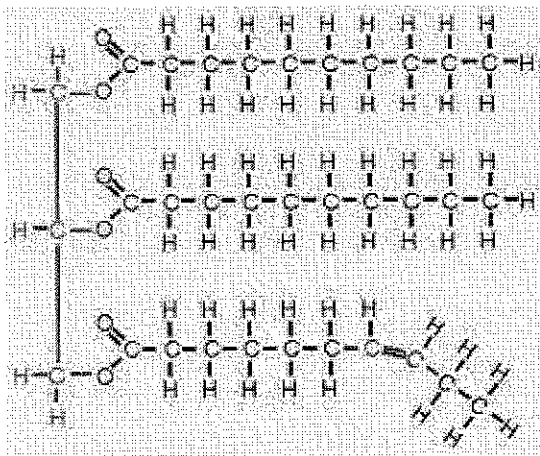
H



I



J



1. Diagrams A-J are types of _____ compounds.
2. Name the four types of the above question.
3. Fill in the following chart on the 10 diagrams.

| Diagram | Type of Macromolecule | Specific monomer or polymer |
|---------|-----------------------|-----------------------------|
| A | | |
| B | | |
| C | | |
| D | | |
| E | | |
| F | | |
| G | | |
| H | | |
| I | | |
| J | | |

Use the following choices for the last column

| | | | | |
|------------|----------------|--------------|----------------|--------------|
| Amino acid | Disaccharide | Nucleotide | Polypeptide | Steroid |
| Dipeptide | Monosaccharide | Phospholipid | Polysaccharide | Triglyceride |

4. Using the model kits build a section of a saturated fatty acid chain using 6 carbons and then show me the model to get it checked off.
5. Alter your model in #5 to show a monounsaturated fatty acid chain.
6. Alter your model in #6 to show a polyunsaturated fatty acid chain.
7. Are lipids soluble in water? What term is used to describe this property?
8. Fill in the chart.

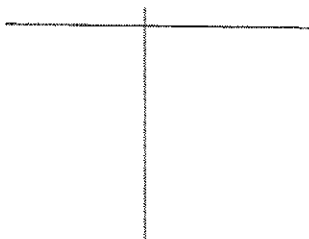
| Organic Compound | Building block / Monomer | Functions (may be more than 1) |
|------------------|--------------------------|--------------------------------|
| Carbohydrates | | |
| Protein | | |
| Lipids | | |
| Nucleic Acids | | |

STATION #4 - Element, Compound, Mixtures

1. Describe each item as an element (E), compound (C), or mixture (M).

- | | | |
|-------------------------|------------------------------|-------------------|
| a. Argon | e. Chalk (CaCO_3) | j. Salad |
| b. Blood | f. Milk | k. Sand and Water |
| c. Butter | g. Oil and water | l. Windex |
| d. Carbon monoxide (CO) | h. Oxygen | |
| | i. Pizza | |

2. Create a T chart showing the difference between an atom and an element be able to come up with a minimum of 5 statements. They can include examples but should not have more than 1 example per column.



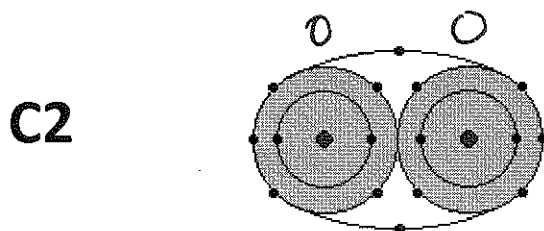
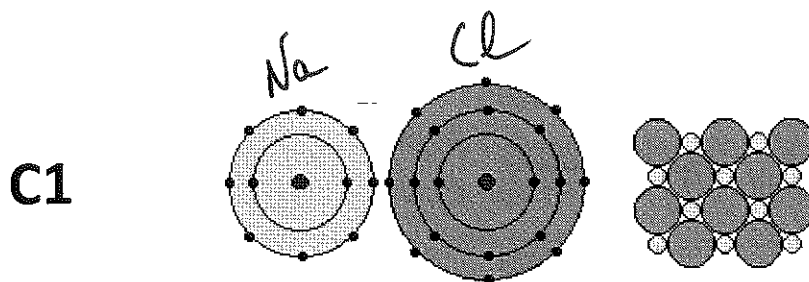
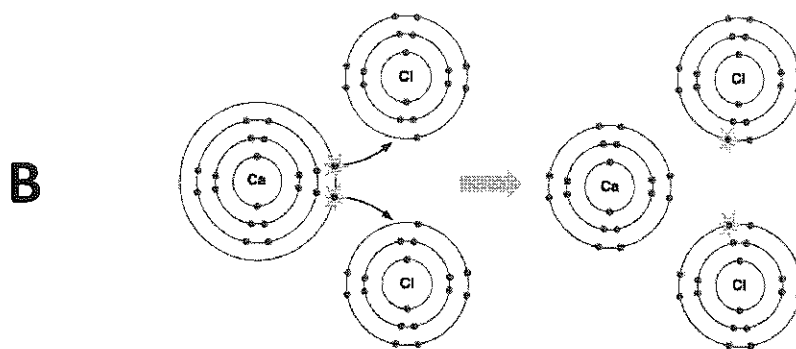
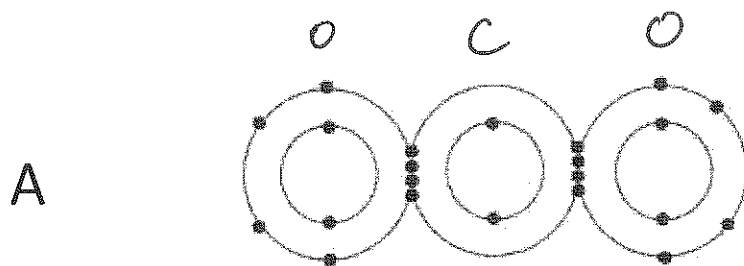
3. Read each of the following descriptions and place E if it represents an element, C if it represents a compound, or M if it represents a mixture.

- A solution is an example.
- Can be broken down by chemical means but not physical
- Can be classified as homogenous or heterogeneous
- Can't be broken down physically or chemically
- Chemically and physically different from the elements that comprise them
- Combination of 2 or more substances in which each retains its individual properties
- Contain unique symbol
- Formed from 2 or more elements
- Formed from ionic and covalent bonds
- Made of specific combination in fixed ratio
- Over 100 known
- Written scientifically in chemical formula

4. Looking back at #1, describe the mixtures (there are 7) as either homogenous or heterogeneous, if they are heterogeneous can you tell if they are a suspension or colloid?

5. What is the difference between a suspension and a colloid?

STATION # 5 PERIODIC TABLE AND BONDING



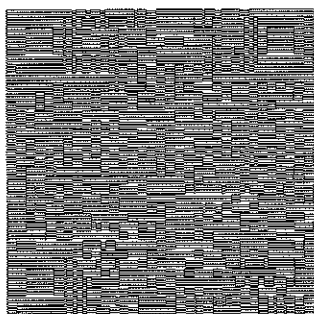
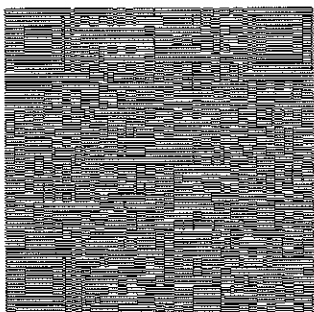
1. What is the name of the molecule in A?
 - a. What are the elements that form A?
 - b. Write the chemical formula and structural formula for A?
 - c. How are they bonded? Ionic or covalent?
2. What is the name of the compound in B?
 - a. What are the elements that form B?
 - b. Write the chemical formula for B?
 - c. How are they bonded? Ionic or covalent?
3. What is the name of the compound in C1?
 - a. What are the elements that form C1?
 - b. Write the chemical formula for C1?
 - c. How are they bonded? Ionic or covalent?

4. What is the name of the molecule in C₂?
- What are the elements that form C₂?
 - Write the chemical formula and structural formula for C₂?
 - How are they bonded? Ionic or covalent?
5. Fill in the following charts

| Element | Symbol | Atomic # | Mass # | # of Protons | # of Neutrons | # of Electrons | Valence Electrons |
|----------|--------|----------|--------|--------------|---------------|----------------|-------------------|
| | | | | | 6 | | 4 |
| Hydrogen | | | | | | | |

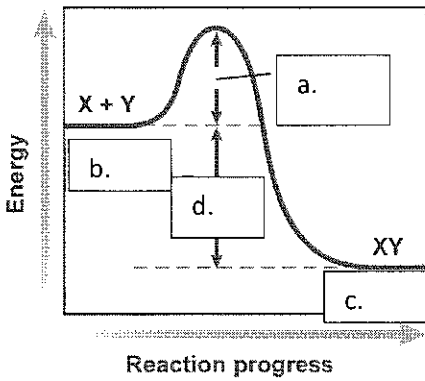
| Isotopes | Atomic # | Mass # | # of Protons | # of Neutrons | # of Electrons | Valence Electrons |
|-----------|----------|--------|--------------|---------------|----------------|-------------------|
| K- _____ | | 42 | | | | |
| F - _____ | | | | 11 | | |

6. What are 3 things radioisotopes are used for?

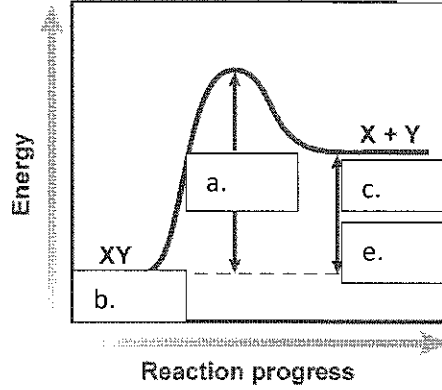


STATION #7 - ENZYMES, CATALYST, AND ACTIVATION ENERGY

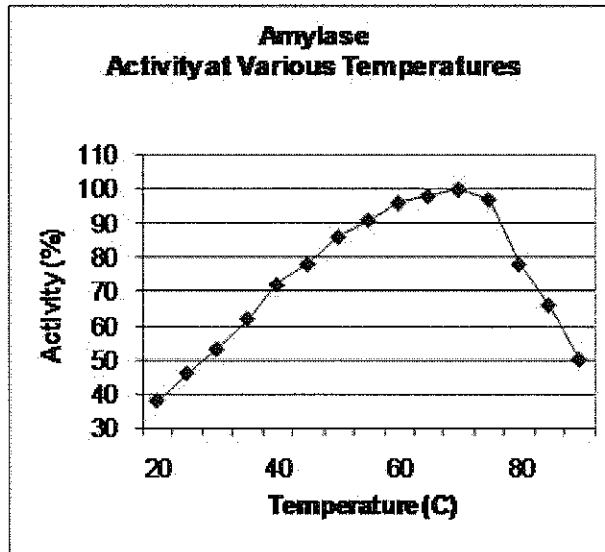
Energy Diagram 1



Energy Diagram 2



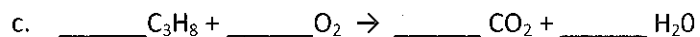
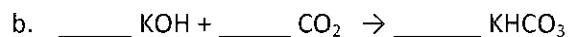
1. In the above diagrams a, b, & c represent the same on both diagrams, what are they?
2. What does d in diagram 1 represent?
3. What does e in diagram 2 represent?
4. All enzymes are _____.
5. What is the function of a catalyst?
6. What is the activation energy of a reaction?



7. What is the optimal temperature of amylase?
8. Describe how an enzyme and substrate work like a lock and key?

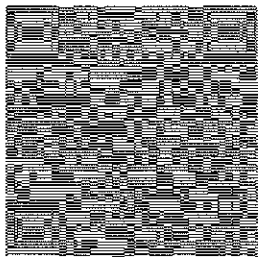
STATION #8 - Chemical Reactions

1. Balance the following Equations



2. Looking at the reaction in 1b, how many atoms are present for each type of atom?

3. What are signs a chemical reaction has taken place? Need help?



4. During our Demonstration day we lit methane bubbles on fire.

a. What were the reactants?

b. What were the products?

c. What sign(s) was there that told you there was a chemical reaction taking place?

d. Was it exothermic or endothermic?

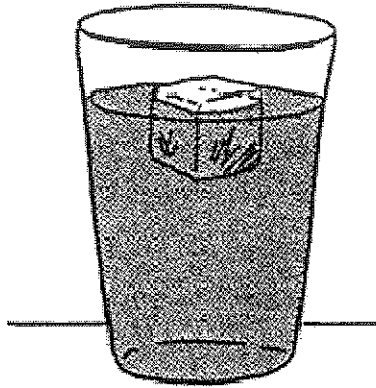
5. What are the substances left of the arrow in #1 referred to as?

6. What are the substances to the right of the arrow in #1 referred to as?

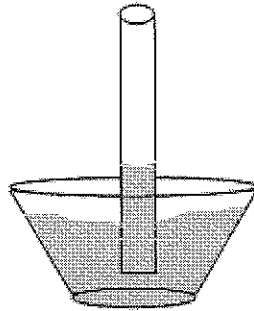
7. If a reaction absorbs energy it is said to be a , but if it releases energy it is said to be b .

STATION #9 - Water

A



B



C

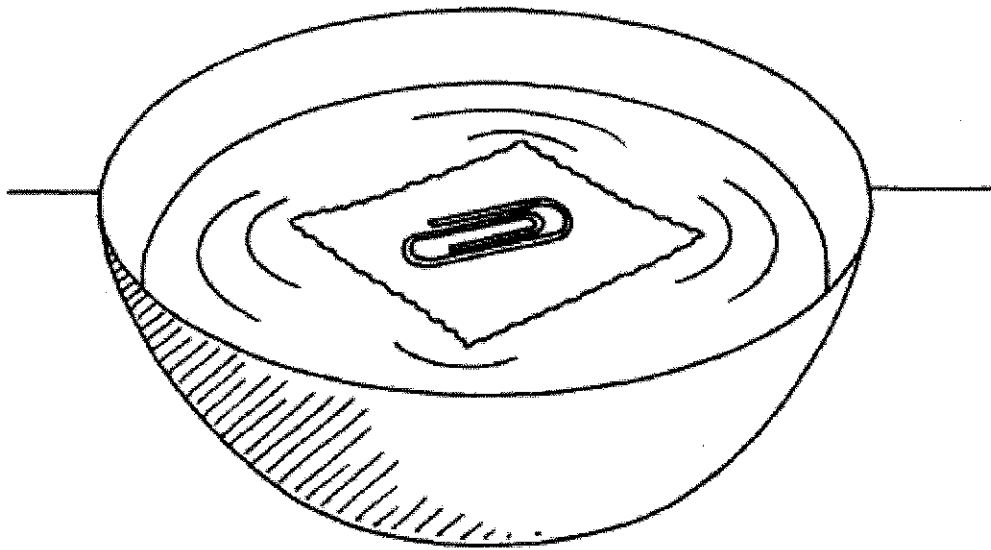


Figure 4.1

1. Looking at figure A answer the following questions.
 - a. Why does the ice float?
 - b. Is the property of cohesion or adhesion responsible?
2. Looking at Figure B answer the following questions.
 - a. What is the action of water moving up the tube?
 - b. Is this a result of cohesion or adhesion?
3. Looking at Figure C answer the following questions.
 - a. What is created by the water that allows the paper clip to float?
 - b. Is this a result of cohesion or adhesion?
4. Draw the structural formula of a water molecule. Be sure to mark the slight charges of each atom.
5. What kind of bonds is formed when water bonds to other water molecules or solid surfaces?