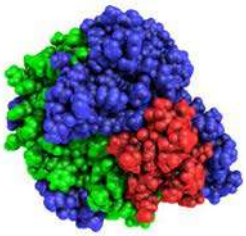
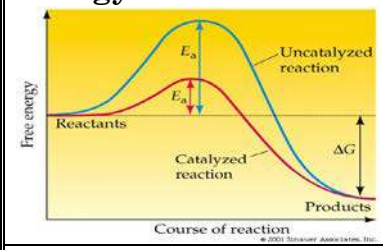
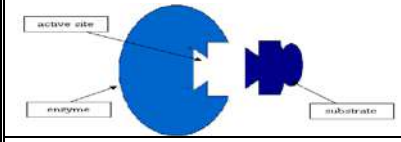
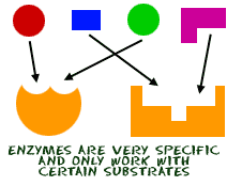
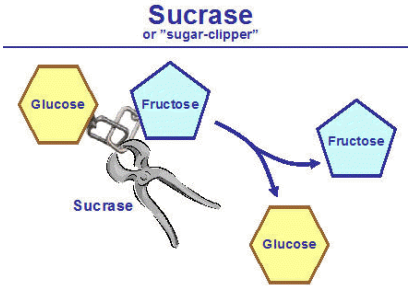
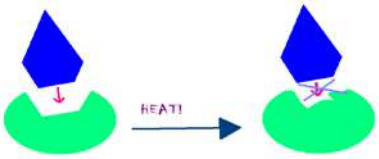
Class Notes **Topic: Enzymes** **Questions/Main Idea:**	Name: _____ Period:_____ Date: _____ **Notes:**
What are **enzymes**? 	• Enzymes are proteins that help molecules react with one another • Their monomers are amino acids. • Enzymes are used by cells to trigger and control **chemical reactions**. • Without enzymes, several reactions in cells would never occur or happen too slowly to be useful. • In digestive enzymes, often end in "-ase"
What is a **chemical reaction**?	• It is the process of changing one set of chemicals (reactants) into another set of chemicals (products) by rearranging the atoms. • Reactants' bonds are broken and new ones are formed in the products.
What is a **catalyst**? 	• It is a substance that speeds up the rate of a chemical reaction. • It lowers the **activation energy**. • It participates in the reaction but doesn't change itself; therefore it can be used over and over.
What is **activation energy**? 	• It is the amount of energy needed to start a chemical reaction. • Catalysts speed up chemical reactions by lowering their activation energy. • Enzymes are catalysts because they lower the activation energy by holding molecules together to either help them bind (synthesize) or help them break apart (decompose).
What is a **substrate**?	• Enzymes bind to or break molecules called **substrates**. • These substrates are the reactants that are catalyzed by the enzyme.
What is the **active site**? 	• Each substrate and enzyme has a specific shape, therefore enzymes bind to substrates based on shape. • The site on the enzyme where the substrates bind is called the **active site**.
What is the Lock and Key Hypothesis? 	• Enzymes bind to the substrates based on their complementary shape. • The fit is so exact that the active site and substrates are compared to a lock and key. • Most digestive enzymes are named for the foods (molecules) they help react—lact**ase** helps break down lact**ose** (milk sugar)

What are other examples of enzymes and what they break down? 	• **Lactase** breaks down lactose into glucose and galactose • **Sucrase** (the "sugar-clipper"): breaks down sucrose (common table sugar) into glucose and fructose • **Amalyse** breaks down starch in your mouth and stomach • **Lipase** breaks down ats • **Pepsin** breaks down proteins
How are enzymes affected by the reaction?	Enzymes are **NOT** changed by the reactions they catalyze, therefore they are reusable!
How can enzymes be affected? 	• Enzymes each work best at a specific **temperature** and **pH**. • Temperatures outside the correct range can cause enzymes to break down or change shape. • This break down is called **denaturation**.
Why are enzymes considered the body's "workers"? 	• Nearly every reaction in your body is helped by an enzyme! • Remember—enzymes are proteins!
Summary:	