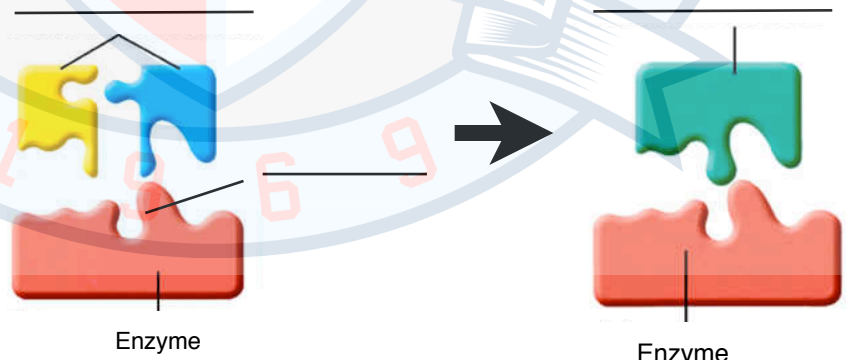


Name: _____ Date: _____ Period: _____

Enzyme Introduction

Wk #: _____

Direction: Use the given pages to answer each question.

Questions	Description, definition, or example
What are enzymes? (pg. 52)	
What is the function of an enzyme in living cells? (pg. 52)	
What is the formula for the chemical reaction between carbon dioxide and water? (pg. 52)	
Why are enzymes necessary in this chemical reaction? (pg. 52)	
Based on your knowledge of pH, what would occur if carbonic acid is not quickly removed from the blood stream?	
The Enzyme-Substrate Complex (pg. 52)	Enzymes provide a site where reactants can be brought together to react. The reactants are known as substrates . The substrates bind to a site on the enzyme called the active site . The result of this are products that are released.
<i>Label the diagram with the bolded words.</i>	 <p>The diagram illustrates the enzyme-substrate complex. On the left, a red enzyme with a white active site is shown. Two substrates, a yellow one and a blue one, are approaching the active site. A black arrow points to the right, showing the products: a green substrate and a red substrate, both with the active site shape, being released from the enzyme. Labels 'Enzyme' are placed below the enzyme in both states.</p>
What are 4 essential roles of enzymes? (pg. 53)	
What are 2 variables that affect the activity of enzymes? (pg 53)	

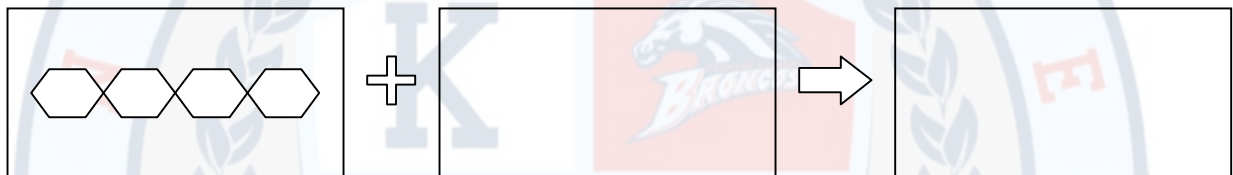
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While the concept of enzymes might be new, you have actually experienced how enzymes (or lack of) work in your body. Enzymes play a crucial role in our digestive systems and without them, we would not be able to digest our food. Below are two important examples of enzymes in our bodies.

Directions: Read and annotate each section. Then answer the questions.

As Americans, food that contains large amounts of starch, or complex carbohydrates, make up a significant portion of our diets. Starchy foods include potatoes, rice, and wheat (bread, pasta, crackers, etc). However our bodies cannot use starch for energy and instead must use the components that make up the starch – glucose (simple sugar). Amylase, the enzyme found in saliva in the mouth and also in the small intestine break down the long chains of glucose that make up starch into individual glucose molecules. Foods that are high in starch will taste slightly sweet after they are chewed because amylase is breaking down the starch.

1. Draw a diagram illustrating what amylase does to starch. Your diagram should include the labels: starch, amylase, enzyme, substrate, product, glucose.



Many folks enjoy downing a frosty-cold glass of milk or polishing off a bowl of creamy ice cream. But for 30 to 50 million Americans, indulging in these dairy delights can trigger gas, bloating, and cramping, because they share the same condition – lactose intolerance.

Lactose is the simple sugar in milk, made of galactose and glucose. The enzyme called lactase is responsible for breaking down lactose into the two simple sugars after you've consumed milk or a food made from it. Some people, however, don't make enough lactase to tackle the lactose they consume.

But lactose intolerance is not an all-or-nothing condition. It's normal for the level of lactase in the intestinal tract to begin declining after the age of three. How steep that decline is varies greatly among individuals, accounting for the diversity of symptoms. The severity of symptoms depends on how low your levels of lactase are. Many people do not experience the symptoms of lactase deficiency until later in life.

2. Draw a diagram illustrating what lactase does in the digestive system. Your diagram should include the labels: lactose, glucose, enzyme, lactase, substrate, product, galactase.



3. Why do individuals without lactase experience digestive problems like nausea, cramps, or gas?

