Name _____ Date _____

The Digestive System: What Happens to a Sandwich

Directions: Read the passage and study the table. Then answer each question.

A Sandwich's Trip

Your body cannot use a turkey and cheese sandwich just as it is. Digestion breaks food into pieces small enough for your body to absorb, or take into the blood. It happens in two ways. Mechanical digestion breaks food into smaller pieces without changing what it is made of. Chemical digestion breaks food down into new, simpler substances.

Both kinds start in the mouth. Your teeth tear and grind the sandwich. Saliva wets each bite, and an enzyme in saliva, called amylase, starts breaking the bread's starch into sugar. An enzyme is a substance, usually a protein, that speeds up a chemical change.

When you swallow, muscles in the esophagus squeeze the food down to the stomach. The stomach's thick, muscular walls churn the food. They mix it with acid and juices that start breaking down the protein in the turkey and cheese.

Next comes the small intestine. Juices made by the pancreas, and bile made by the liver, flow into it and help finish breaking down starch, protein and fat. Then the lining of the small intestine absorbs most of the nutrients. The large intestine absorbs much of the water that is left, and the rest leaves the body as waste.

A class tested amylase. They put the same amount of starch mixed in water into six test tubes, all kept in a water bath at 37°C, about body temperature. They added amylase to three tubes and plain water to the other three. Every minute, they tested a drop from each tube with iodine, which turns blue-black when starch is present. After 10 minutes, they also tested each tube for sugar.

Starch and sugar tests on six tubes kept at 37°C

Tube	What was added	Minutes until the iodine test showed no starch	Sugar test after 10 minutes
1	Amylase	4	Sugar found
2	Amylase	6	Sugar found
3	Amylase	5	Sugar found
4	Plain water	Starch still there after 10 minutes	No sugar found
5	Plain water	Starch still there after 10 minutes	No sugar found
6	Plain water	Starch still there after 10 minutes	No sugar found

1. Match each organ to the job it does in the passage.

Write the letter of the matching answer on each line.

1. _____ Mouth
2. _____ Esophagus
3. _____ Stomach
4. _____ Small intestine
5. _____ Large intestine

Choices for question 1

A. Making bile that helps break down fat
B. Grinding food with teeth while saliva starts breaking down starch
C. Churning food with acid and juices that start breaking down protein
D. Absorbing most of the nutrients from digested food
E. Squeezing swallowed food down to the stomach
F. Absorbing much of the leftover water

2. As the passage uses the word, what does it mean for the body to absorb nutrients?

A. To grind them into smaller pieces
B. To take them into the blood
C. To mix them with acid
D. To get rid of them as waste

3. Which example from the passage is mechanical digestion?

A. The small intestine absorbing nutrients
B. Teeth tearing and grinding the sandwich
C. Stomach juices breaking down the protein in the turkey
D. Amylase breaking the bread's starch into sugar

4. Which list shows the order in which the sandwich moves through the digestive system?

A. Mouth, esophagus, stomach, large intestine, small intestine
B. Mouth, esophagus, stomach, small intestine, large intestine
C. Mouth, stomach, esophagus, small intestine, large intestine
D. Mouth, esophagus, liver, stomach, small intestine

5. Mashed potatoes are mostly starch. Based on the passage, where does chemical digestion of the mashed potatoes begin?

A. In the small intestine, because the mouth only grinds food
B. In the mouth, where amylase in saliva starts breaking starch into sugar
C. In the stomach, where acid breaks starch into sugar
D. In the large intestine, where water is absorbed

6. In the starch test, what did the class change on purpose?

A. The temperature of the water bath
B. The amount of starch in each tube
C. Whether amylase or plain water was added to the tube
D. The number of minutes until the starch was gone

7. Why did the class add plain water to three of the tubes?

A. To show what happens to starch without amylase, so any change in the amylase tubes could be traced to amylase

B. Because plain water also contains amylase

C. To make the starch break down faster

D. To keep the amylase tubes from getting too warm

8. In tube 2, the iodine test stopped turning blue-black at 6 minutes. What does that tell you about tube 2?

A. The starch in tube 2 had been broken down.

B. The iodine in tube 2 had stopped working.

C. Tube 2 had run out of amylase.

D. Tube 2 started with more starch than the other tubes.

9. What was the mean number of minutes for the iodine test to show no starch in the three amylase tubes?

_____ minutes

10. Which claim does the evidence from the starch test support?

A. In this test, amylase broke starch down into sugar, and plain water did not.

B. In this test, plain water broke down the starch, only more slowly than amylase did.

C. In this test, amylase turned sugar into starch.

D. Amylase breaks down every kind of food, including protein and fat.