Name:_____ Date: _____ Period: 1 2 3 4 5 6

Digestive System Processes

A. MECHANICAL DIGESTION:
Large hunks of food are torn, ripped, shredded into smaller chunks. They are mashed (to increase surface area) and squished into a liquid. These are physical changes.

Draw a slice of pizza in front of the mouth. Draw an arrow from this box to the two areas of the digestive system where MECHANICAL DIGESTION occurs.

B. CHEMICAL DIGESTION
Large molecules like starch, protein and lipids are broken down into their building blocks or monomers. These are chemical changes and they involve enzymes. Chemical digestion occurs in the mouth, the stomach and the small intestine.

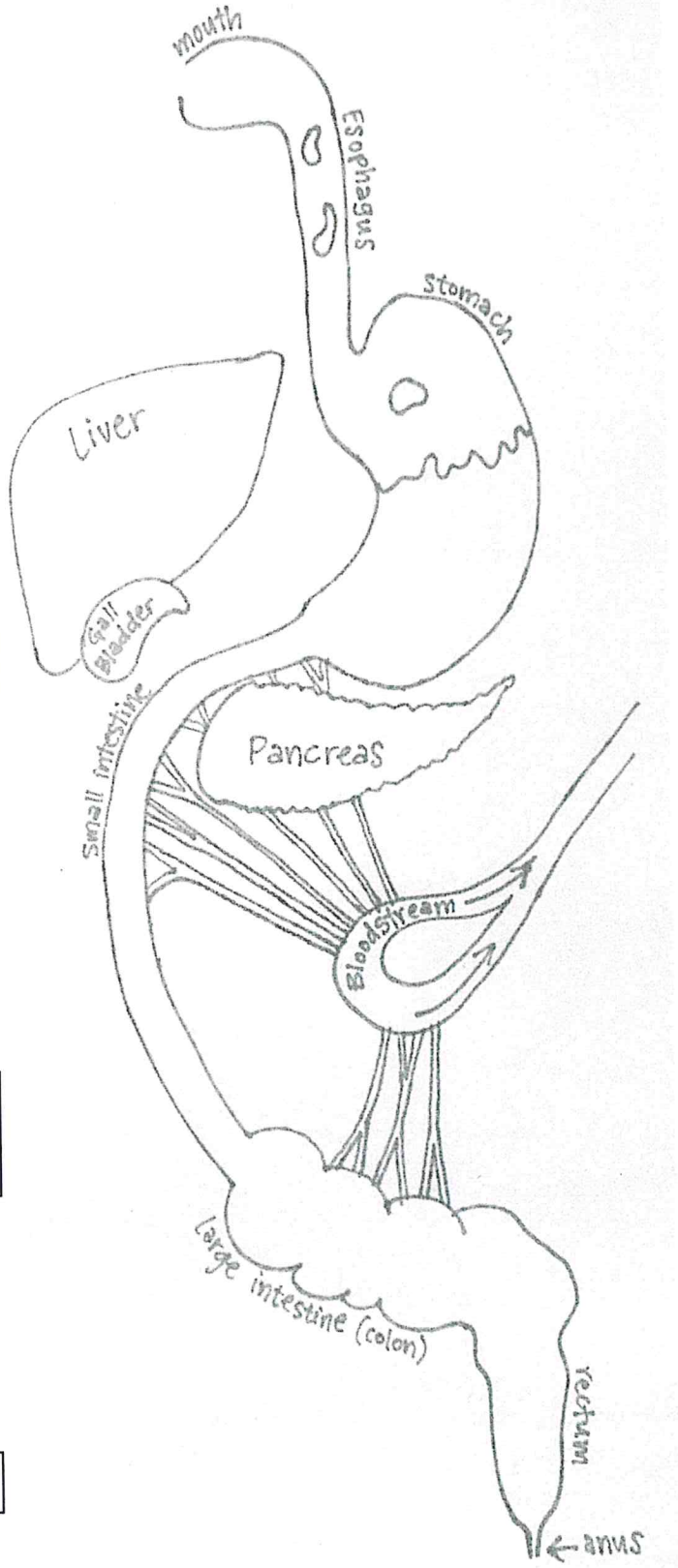
Draw an arrow from this box to the three areas of the digestive system where CHEMICAL DIGESTION occurs.

C. ABSORPTION
Simple building blocks are taken out of the middle of the digestive tube and put into body cells. Monomers cross into the cells that line the digestive tract. Next they leave those cells and enter the bloodstream, so sugars, amino acids, fatty acids and nucleic acids can be delivered to every single cell in your body. Water is absorbed in the same way, although later in the digestive tract.

Draw an arrow from this box to the area of the small intestine where ABSORPTION OF NUTRIENTS occurs.

D. EXCRETION
Some of the food and water just doesn't ever enter the body cells. This waste gets stored in the rectum until it is a socially acceptable time... and then... This waste leaves the digestive tract through the anus.

Draw an arrow and label "FECES".



Accessory Organs

A. SALIVARY GLANDS
This fluid moistens food. Amylase begins the chemical digestion of starch into glucose. Saliva kills some bacteria.

Draw a head around the mouth and 3 salivary glands around the mouth. Write "SALIVA" on the cheek. Then draw an arrow from the salivary glands to the word "SALIVA" to the mouth.

B. TEETH AND TONGUE
Perform mechanical digestion (in order to increase surface area for the salivary amylase to work on) and help to coordinate the swallowing of food. The soft ball of food is officially called a "bolus".

Draw a slice of pizza in front of the mouth. Then, label the swallowed ball of food "BOLUS".

C. GLANDS IN THE WALL OF THE STOMACH
Cells in the stomach wall make hydrochloric acid to denature protein molecules, pepsin (an enzyme that begins protein digestion), and mucus (to protect the stomach from digesting itself). The partially digested, acidic liquid goop is called "chyme".

Write the words "ACID", "PEPSIN", and "MUCUS" in the stomach. Then label the liquid contents "CHYME".

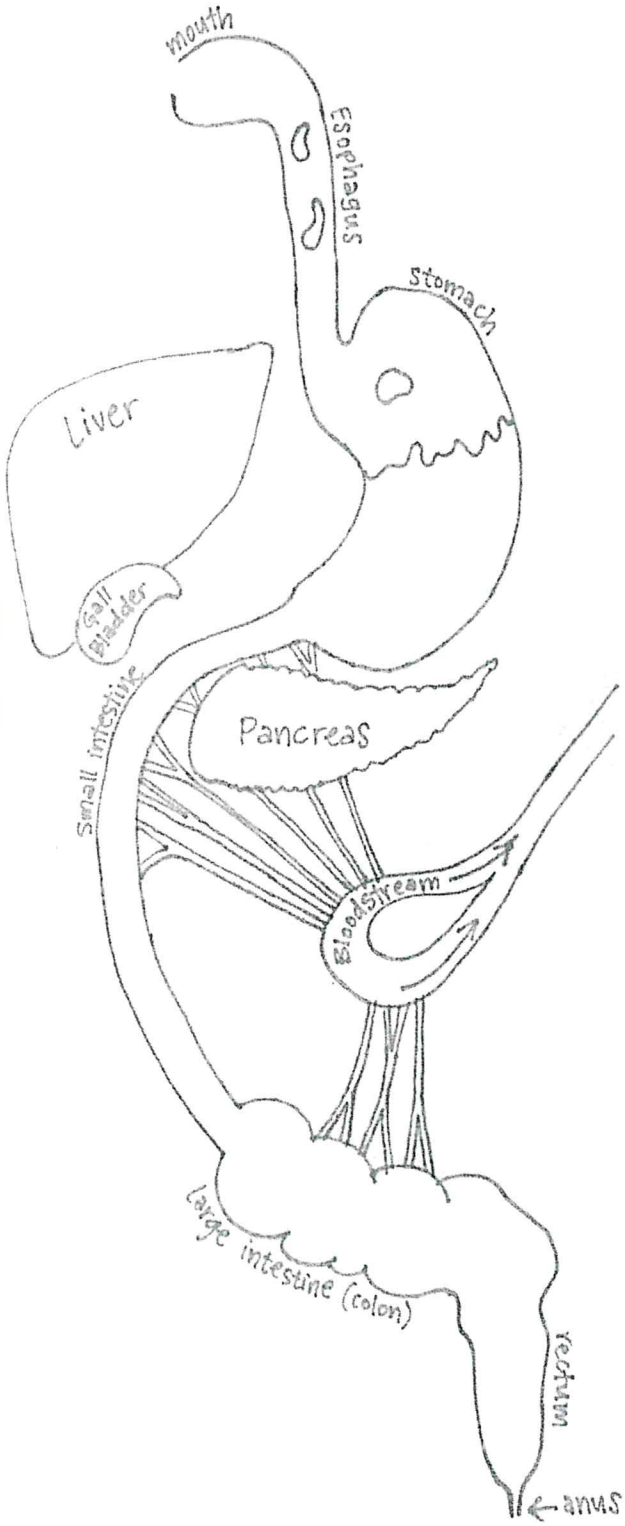
D. LIVER
Has MANY functions, but the digestion function is to make bile. Bile breaks big globs of fat into small droplets. This is called "emulsification", and it increases the surface area for digestion of lipids.

E. GALLBLADDER
Stores the bile from the liver, and squishes it into the small intestine when a high-fat meal comes through.

Write the word "BILE" on the liver, then draw an arrow from bile to the gallbladder and then to the small intestine.

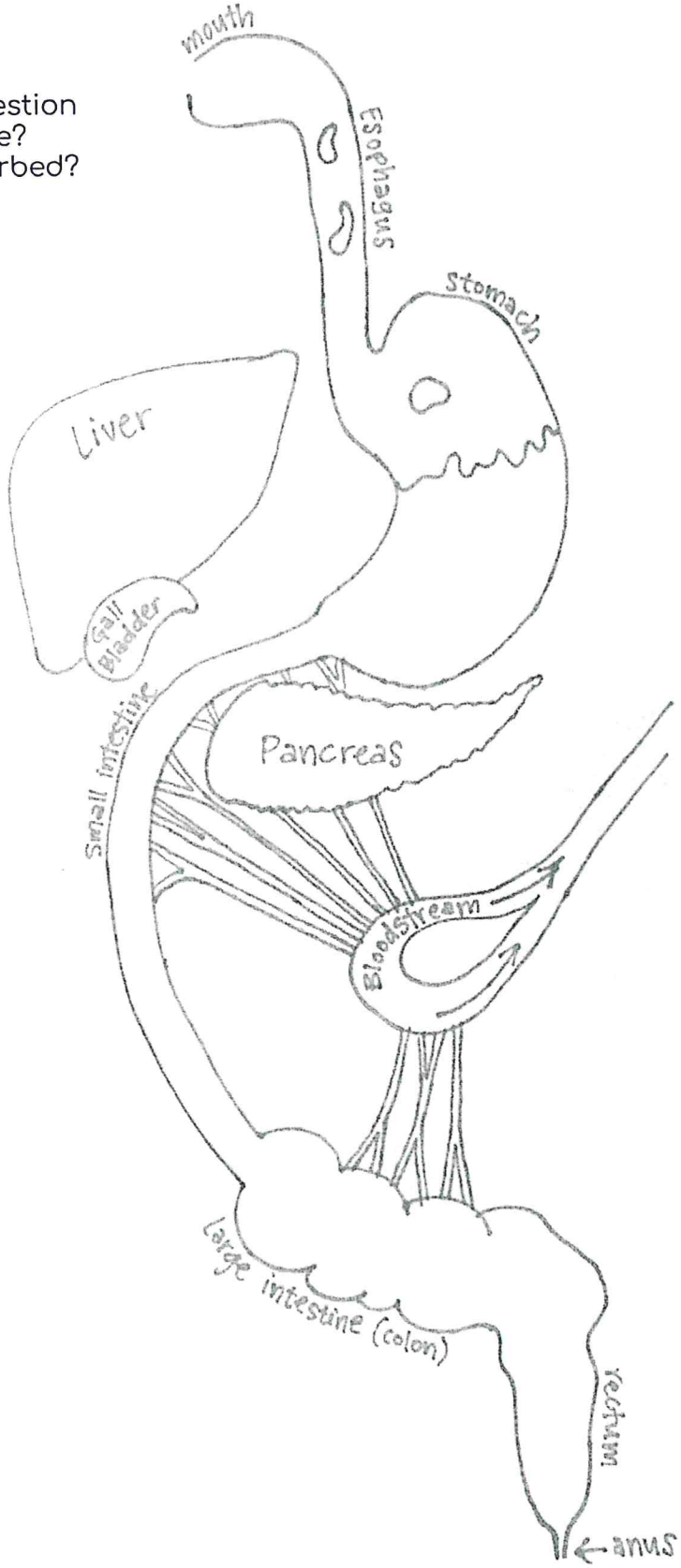
F. PANCREAS
Makes sodium bicarbonate (a base) to neutralize chyme as it enters the small intestine. It makes and releases a lot of enzymes which finish chemical digestion, too.

Write "BASE, "AMYLASE", "PROTEASE", and "LIPASE" in the pancreas and draw arrows to show these being released into the small intestine.



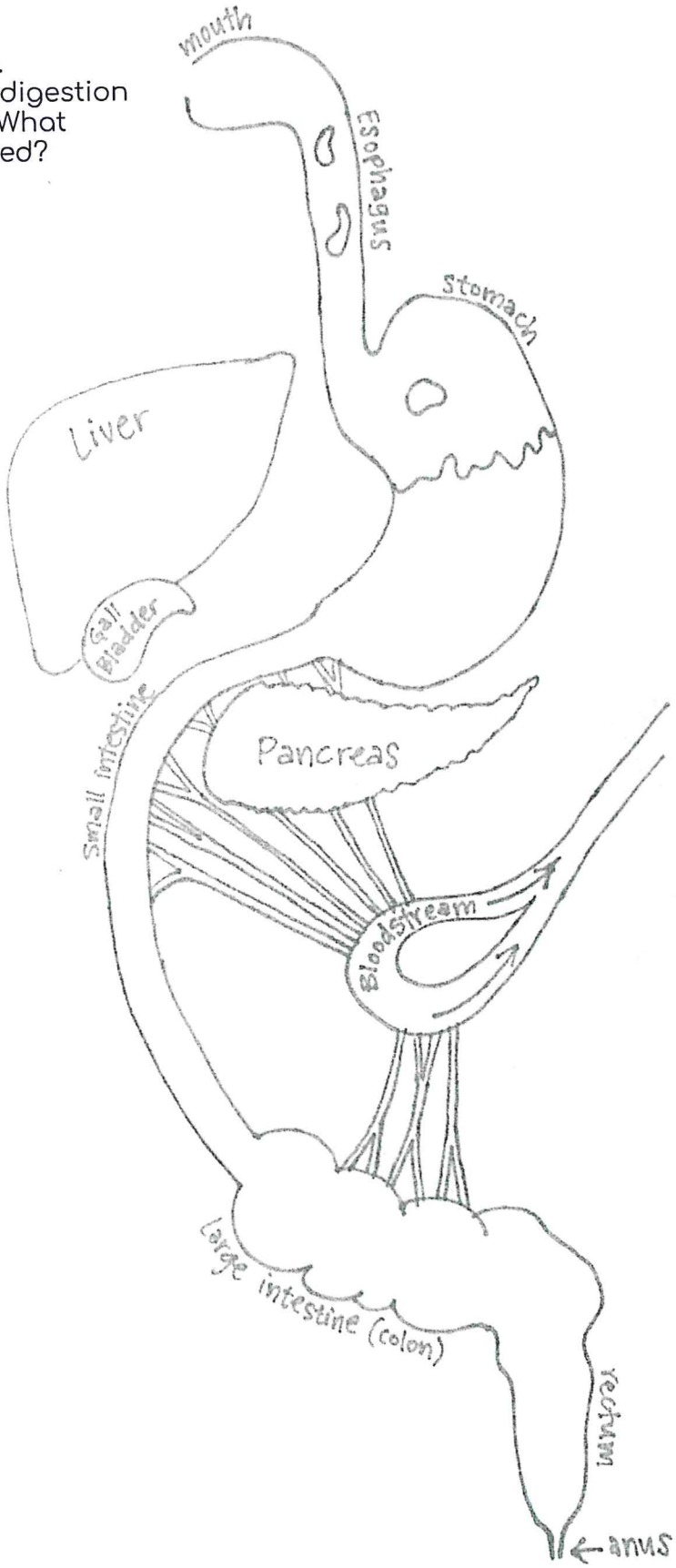
Carbohydrate Digestion

1. Draw a carbohydrate (starch) rich food and label what it is.
2. Label the food "CARBOHYDRATE" and "STARCH".
3. Label "SALIVARY AMYLASE" in the mouth.
4. Label "AMYLASE" going from the pancreas to the small intestine.
5. Label "SIMPLE SUGARS" going into the bloodstream from the small intestine.
6. Now summarize, below, the chemical digestion and absorption of carbohydrates. (Where? What enzymes? What nutrients are absorbed? Where?)



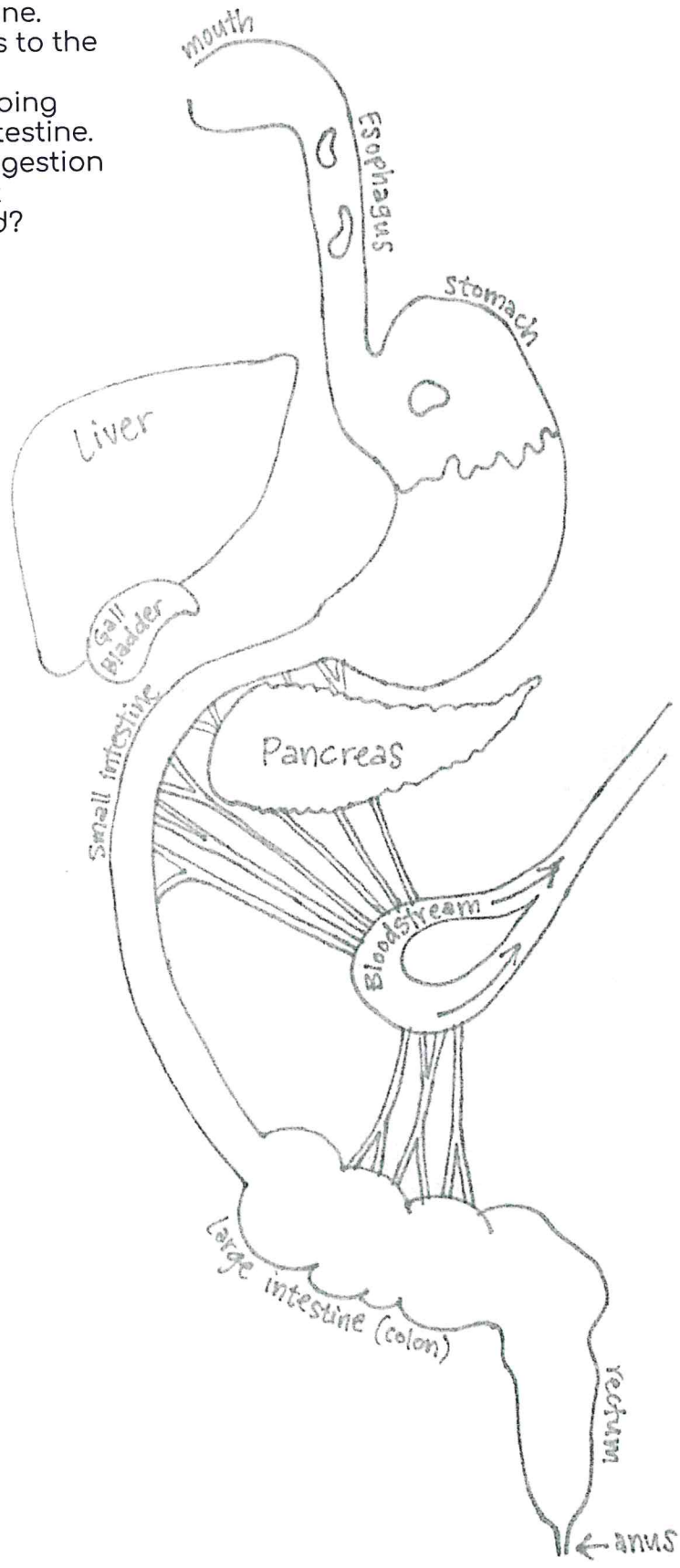
Protein Digestion

1. Label the drumstick "PROTEIN".
2. Label "ACID" and "PEPSIN" in the stomach.
3. Label "PROTEASE" going from the pancreas to the small intestine.
4. Label "AMINO ACID" going into the bloodstream from the small intestine.
5. Now, summarize, below, the chemical digestion and absorption of proteins. (Where? What enzymes? What nutrients are absorbed? Where?)



Lipid Digestion

1. Draw a lipid rich food and label what it is.
2. Label the food "LIPID".
3. Show "BILE" from the liver, stored in the gallbladder, going into the small intestine.
4. Label "LIPASE" going from the pancreas to the small intestine.
5. Label "GLYCEROL" and "FATTY ACIDS" going into the bloodstream from the small intestine.
6. Now, summarize, below, the chemical digestion and absorption of lipids. (Where? What enzymes? What nutrients are absorbed? Where?)



Fiber!

1. Draw a food that contains lots of fiber and label what it is.
2. Label the food "FIBER".
3. Do nothing else, except show fiber, undisturbed, exiting the rectum through the anus.
4. Now, summarize, below, what happens to dietary fiber. Why does this happen?