

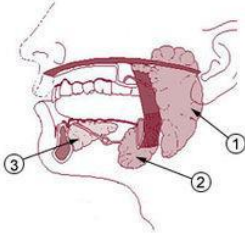
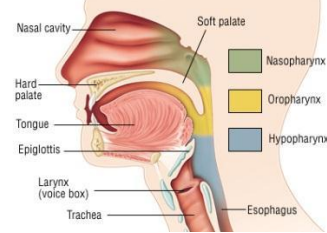
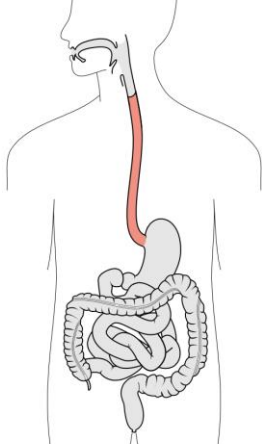
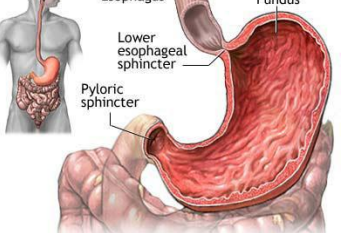
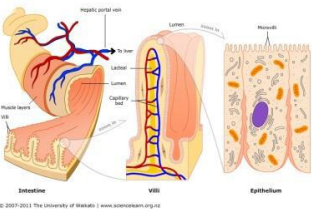
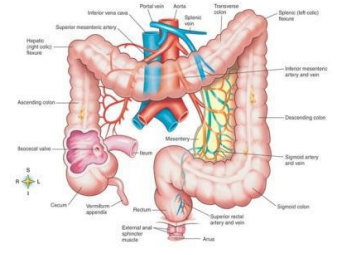
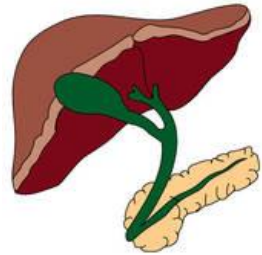
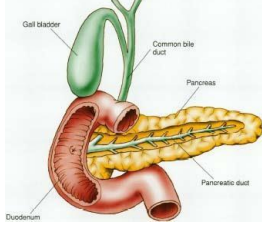
NAME _____

3.2: Review Sheet

3.2.a. What are the functions of the digestive system?

The digestive system breaks down the food we eat and allows for the absorption of nutrients and the reabsorption of water. It breaks down _____ like proteins and carbohydrates into _____ like amino acids and glucose. The reaction that breaks down molecules and releases energy is called _____. Waste products are also eliminated in the form of feces (poop!)

3.2.b. How does the structure of each organ in the digestive system relate to its function? 3.2.c. How does the digestive system assist in maintaining water balance in the body?

Name of organ(s)	Name of organ	Name of organ	Name of organ
 <p>A type of exocrine glands that secrete materials to lubricate and break down food. The enzyme amylase can be found here. A bolus of food is created here.</p>	 <p>A tube that connects both the digestive and respiratory systems. It is the common passage for both food and air. A bolus of food moves through here.</p>	 <p>A tube approximately 10-12 inches in length. Muscular contractions called peristalsis move food and water down (even if you are standing on your head!)</p>	 <p>A sac-like structure that functions both as a mechanical and chemical digestive organ. Protein digestion is the only macromolecule digested here. Pepsinogen is activated by HCl and converted into pepsin.</p>
Name of organ(s)	Name of organ	Name of organ	Name of organ
 <p>Narrow tube approximately 21 feet in length. Responsible for 90% of all nutrient absorption due to the villi and microvilli that increase the surface area.</p>	 <p>Wider tube that reabsorbs water, contains colonies of digestive bacteria, and produces/stores feces.</p>	 <p>Bile is produced and stored here. Bile emulsifies large fats into small ones.</p>	 <p>An organ with both digestive and endocrine functions. Distributes trypsin, amylase and lipase to the duodenum for digestion of nutrients.</p>

3.2.d. How do enzymes assist the process of digestion? 3.2.e. How do factors such as temperature, pH and concentration of enzyme of substrate affect the rate of enzyme-catalyzed reactions?

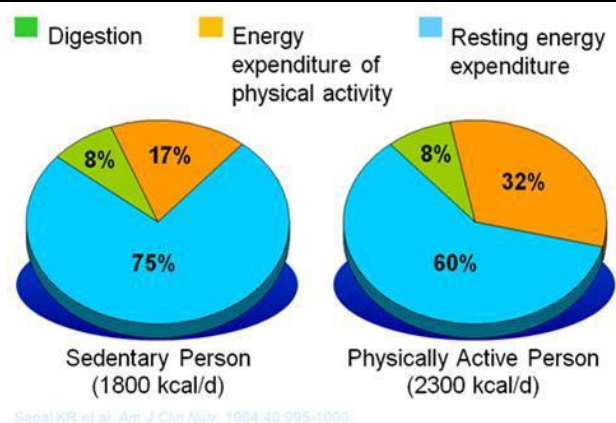
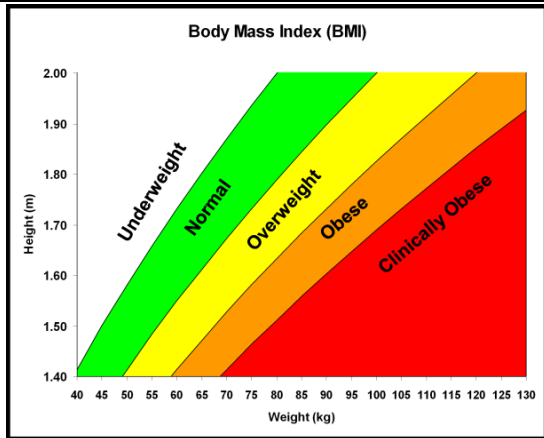
Enzymes are proteins that help speed up or initiate many of the chemical reactions involved in digestion. All enzymes have an optimal range of temperature and pH values. Most human digestive enzymes work best at 37°C and at a neutral pH. An exception to the pH norm would be stomach enzymes where the pH would be closer to 1-2 (very acidic).

- _____ - carbs → short di, tri-saccharides
- _____ - di, tri-saccharide → 2 glucose
- _____ - di, tri-saccharide → 1 glucose, 1 fructose
- _____ - di, tri-saccharide → 1 glucose, 1 galactose
- _____ - protein → short polypeptides
- _____ - short polypeptides → dipeptides
- _____ - dipeptides → amino acids
- _____ - lipid → small lipids
- _____ - small lipids → glycerol + fatty acid

- What are 2 inactive forms of enzymes and how are they activated?

3.2.f What are BMI and BMR? 3.2.g How can BMI and BMR help assess healthy diet and weight?

Body Mass Index (BMI)	Basal Metabolic Rate (BMR)
<ul style="list-style-type: none"> • Ratio of _____ to _____ • Used to assess whether a person is at a healthy weight. 	<ul style="list-style-type: none"> • Differs from BMI because it takes into account _____ • Used to compare caloric intake and expenditure.



3.2.h What are the health risks associated with being overweight or underweight? 3.2.i. What body systems are affected when a person is overweight or underweight?

Underweight (BMI of 19 women, 20 men)	Overweight (BMI 25 or more)
<ul style="list-style-type: none"> • Anemia & nutrient deficiencies - _____ • Bone loss & osteoporosis - _____ • No period (women) - _____ • Increased infection/disease - _____ • Delayed wound healing - _____ 	<ul style="list-style-type: none"> • Cancers - _____ • Depression - _____ • Type II Diabetes - _____ • Sleep apnea - _____ • Asthma - _____ • Arthritis - _____ • Heart attack/stroke - _____

3.2.j. What is ATP? 3.2 k. How is energy released from ATP and used to do work in the body? 3.2.l. How does the air you breathe and the food you eat relate directly to the production of energy in the form of ATP?

ATP is adenosine triphosphate, the energy molecule used by our bodies for transportation, muscle contraction and reactions that build up larger molecules (called _____)

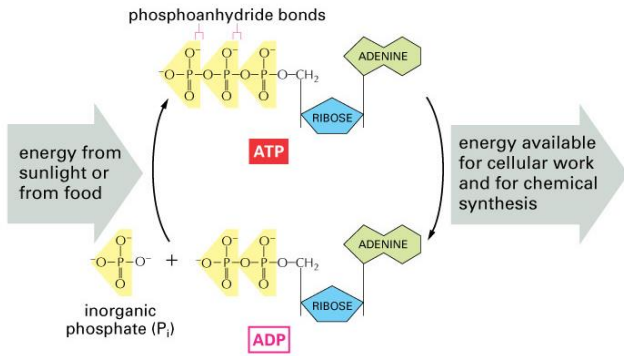
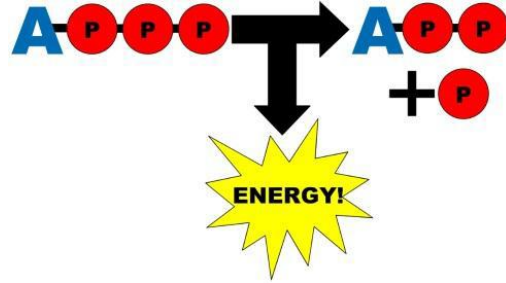


Figure 3-32 Essential Cell Biology, 2/e. (© 2004 Garland Science)



Energy is stored in the _____ between the _____ molecules. When ATP gives off energy _____ is formed.