Section: Nutrition Chapter 36 Section 1

Read each question, and write your answer in the space provided.

1. What are nutrients?

2. What is a calorie?

3. Which three nutrients provide most of the energy and building blocks for the body?

Complete each statement by writing the correct term or phrase in the space provided.

4. Carbohydrates are made up of ________________ molecules.

5. Glucose is a ________________ sugar that cells use for energy.

6. Starch and cellulose are ________________ carbohydrates.

7. The body can make only some of the 20 ________________ required to make proteins.

8. ________________ amino acids must be obtained from food.

9. The body uses the lipids in fats to ________________ energy, ________________ organs, and dissolve fat-soluble
Read each question, and write your answer in the space provided.

10. How are vitamins, minerals, and water different from carbohydrates, proteins, and fats?

11. Which vitamins are needed for strong bones and teeth?

12. Which vitamin is needed for the formation of red blood cells?

13. What role does vitamin C have in the body?

14. What are the effects of a deficiency of vitamin K?

15. Which foods provide vitamin D?

Complete each statement by writing the correct term or phrase in the space provided.

16. Naturally occurring inorganic substances that are not made by the body are called ____________________.

17. ____________________ helps regulate water balance and nerve function in the body.

18. A healthy body requires both good ____________________ and regular ____________________.

19. An adult with a ____________________ of 18.5–25.0 is considered ____________________.
Section: Digestion

Complete each statement by writing the correct term or phrase in the space provided.

1. The process of breaking down food into molecules the body can use is called _________________.

2. ________________ digestion involves breaking the chemical bonds in food.

3. Examples of ________________ digestion are chewing food in the mouth and churning food in the stomach.

Study the following major functions of the digestive system. Determine the order in which the functions are carried out. Write the number of each step in the space provided.

4. The small molecules are taken up by the body.
5. The digestive system breaks down the food into molecules small enough for the body to absorb.
6. Food is taken in by the digestive system.
7. The digestive system gets rid of undigested food and waste.

Complete each statement by writing the correct term or phrase in the space provided.

8. Digestion begins in the _________________.

9. Saliva contains ________________, enzymes that start the chemical breakdown of starches.

10. The ________________ is a long tube that connects the mouth to the stomach.

11. Successive rhythmic waves of smooth muscle contractions in the esophagus are called _________________.

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Holt Biology 3 Digestive and Excretory Systems
In the space provided, explain how the terms in each pair are related to each other.
12. gastric juice, pepsin

13. mucous coating, ulcer

Read each question, and write your answer in the space provided.
14. What role does the pancreas play in digestion?

15. What is bile, and where does it come from?

16. What are villi, and what important structures do they contain?

17. What happens to digested sugars and amino acids inside the small intestine?

18. What are two functions of the large intestine?

19. What happens if water absorption in the large intestine gets off balance?
Section: Excretion

Complete each statement by writing the correct term or phrase in the space provided.

1. The process by which the body removes wastes made during metabolic reactions is called ____________________.

2. Removing wastes allows the body to maintain is ____________________
   and ____________________ balance.

In the space provided, write the name of the excretory organ next to the materials excreted by that organ.

3. cellular wastes in urine

4. carbon dioxide in exhaled air

5. water, salts, and nitrogen wastes in sweat

Complete each statement by writing the correct term or phrase in the space provided.

6. The ____________________ filter wastes out of the blood.

7. ____________________ are small tubes inside kidneys that clean the blood.

8. The water, urea, and various salts that are left after reabsorption and secretion in the nephrons together make up ____________________.

9. The tubes that carry urine away from the kidneys to the urinary bladder are called ____________________.

10. The organ that stores urine is called the ____________________.

11. Urine leaves the body through the ____________________.

12. Kidney damage can disrupt the body’s ____________________.

13. When both kidneys fail, kidney ____________________ or a kidney transplant can enable the patient to survive.
Section: Nutrition

Read the passage below. Then answer the questions that follow.

The nutrients in the foods and beverages you consume keep your body working properly. A nutrient is a substance needed by the body for energy, growth, repair, and maintenance. Nutrients in food and beverages include carbohydrates, lipids, and proteins, which provide the body with most of the energy it needs. Vitamins and minerals are nutrients the body needs in order to function properly. Water is essential for life and for maintaining health. Each nutrient plays a different role in keeping your body healthy.

Energy available in food is measured using a unit called a calorie. The greater the number of calories in a quantity of food, the more energy the food contains. Since a calorie represents a very small amount of energy, nutritionists use a unit called the Calorie (with a capital C), which is equal to 1,000 calories. On food labels, the word calorie represents Calories (1,000 calories).

When you take in more Calories than your body needs, your body stores the extra energy as fat, which can result in weight gain. Taking in fewer Calories than your body needs results in weight loss. You can use body mass index, or BMI, to determine a healthy weight range for your body, as shown below.

A BMI between 18.5 and 25.0 is considered healthy for an adult. The best way to maintain a healthy body is to eat a nutritious diet and get regular physical exercise.

SKILL: READING EFFECTIVELY

Read each question, and write your answer in the space provided.

1. What are nutrients?

2. Which nutrients provide the body with most of the energy it needs?
Active Reading continued

3. In addition to the nutrients that provide energy, what other substance does the body need?

4. How are a calorie and a Calorie alike? How do they differ?

In the space provided, write the letter of the term or phrase that best completes the statement.

5. The fewer the number of calories in a quantity of food, the
   a. more energy the food contains.
   b. more heat the food contains.
   c. less energy the food contains.
   d. Both (a) and (b)

6. Eating more calories than your body needs can result in
   a. weight gain.
   b. a low BMI.
   c. weight loss.
   d. Both (b) and (c)

7. An adult with a BMI of 22.5 is probably
   a. fairly overweight.
   b. of normal weight.
   c. grossly obese.
   d. way too thin.

8. Which of the following is required for a healthy body?
   a. regular exercise
   b. sufficient calories
   c. vitamins and minerals
   d. All of the above
Section: Digestion

Read the passage below. Then answer the questions that follow.

Food must be broken down in order to be absorbed into the blood and carried to cells throughout the body. The process of breaking food down into molecules the body can use is called digestion. During digestion, food is broken down both chemically and physically.

Digestion begins in the mouth, where enzymes in saliva begin the chemical breakdown of starches and chewing physically breaks down food. Chewed food then moves down a long tube, called the esophagus, to the stomach. In the stomach, gastric juice begins the chemical digestion of proteins. Churning in the stomach continues the physical breakdown of food. After several hours, food passes from the stomach into the small intestine. The small intestine is a coiled tubular organ that functions mainly in the digestion and absorption of nutrients.

The first part of the small intestine, the duodenum, receives secretions from the pancreas, liver, and gallbladder. Cells that line the small intestine and the pancreas secrete digestive enzymes involved in completing the digestion of starches, proteins, and fats.

Before fats can be digested by pancreatic enzymes, the fats must first be treated with bile, a greenish fluid produced by the liver. Bile breaks up fat globules into tiny droplets. The gallbladder stores bile until it is needed in the small intestine.

Most absorption occurs in the small intestine. The lining of the small intestine is covered with fine, fingerlike projections called villi (singular form villus). In turn, the cells covering each villus have projections on their outer surface called microvilli. The villi and microvilli greatly increase the area available for absorption of nutrients. Structures inside the villi take in nutrients and carry them to the bloodstream. The bloodstream delivers the nutrients to the rest of the body. Undigested food moves to the large intestine, where it is formed into feces that pass out of the body.

SKILL: READING EFFECTIVELY

Read each question, and write your answer in the space provided.

1. What is digestion? How does it benefit the body?
2. Describe two ways food is broken down in the mouth.

3. What are two main functions of the small intestine?

4. Which organs secrete fluids into the small intestine?

5. What is the function of the digestive enzymes secreted by cells lining the small intestine?

6. What are villi? What happens inside the villi?

7. What happens to food that is not digested?

An analogy is a comparison. In the space provided, write the letter of the term or phrase that best completes the analogy.

8. Saliva is to the mouth as __________ is to the stomach.
   a. bile
   b. chewed food
   c. gastric juice
   d. protein
Section: Excretion

Read the passage below. Then answer the questions that follow.

In order to maintain a healthy state, the body must get rid of wastes. Food wastes are eliminated from the body in the form of feces. Other wastes produced as a result of metabolic reactions that occur in the body must also be eliminated. For example, water and carbon dioxide are produced during cellular respiration. During other metabolic reactions, a toxic, nitrogen-containing waste called urea forms. The body must quickly remove these wastes and maintain osmotic balance and pH. Excretion is the process that rids the body of metabolic wastes. The skin, lungs, and kidneys excrete different metabolic wastes.

SKILL: READING EFFECTIVELY

Read each question, and write your answer in the space provided.

1. What is urea?

   ____________________________________________________________

2. What is excretion?

   ____________________________________________________________

3. Which organs function as excretory organs?

   ____________________________________________________________

In the space provided, write the letter of the term or phrase that best completes the statement.

4. Food wastes are eliminated from the body in the form of
   a. urea. ☑
   b. salts.
   c. feces.
   d. carbon dioxide

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Holt Biology 10 Digestive and Excretory Systems
Interpreting Graphics
The figure at right shows the digestive system. In the spaces provided, label the following parts of the digestive system: liver, throat, stomach, gallbladder, mouth, esophagus, small intestine, and large intestine.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 

The table below lists information about digestive secretions. Complete the table by writing the correct term or phrase in the space provided.

<table>
<thead>
<tr>
<th>Digestive Secretion</th>
<th>Organ/Structure Released By</th>
<th>Digestive Tract Area Released Into</th>
<th>Nutrient Secretion Acts On</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. ___________</td>
<td>salivary glands</td>
<td>mouth</td>
<td>10. ___________</td>
</tr>
<tr>
<td>Pepsin</td>
<td>cells in stomach lining</td>
<td>11. ___________</td>
<td>12. ___________</td>
</tr>
<tr>
<td>13. ___________</td>
<td>liver</td>
<td>14. ___________</td>
<td>fat globules</td>
</tr>
<tr>
<td>Lipase</td>
<td>15. ___________</td>
<td>16. ___________</td>
<td>Fats</td>
</tr>
</tbody>
</table>
In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

1. A substance needed by the body for energy, growth, repair, and maintenance is called a(n)
   a. fatty acid.  
   b. simple sugar.  
   c. nutrient.  
   d. calorie.

2. All of the following are nutrients found in food except
   a. plasma.  
   b. carbohydrates.  
   c. proteins.  
   d. vitamins.

3. A diet high in saturated fats can be linked to which of the following?
   a. kidney failure  
   b. anorexia nervosa  
   c. bulimia  
   d. cardiovascular diseases

4. According to the MyPyramid food guidance system, a person should obtain most of their fat from
   a. beef, chicken, and fish.  
   b. vegetable oils, nuts, and fish.  
   c. fats, oils, and sweets.  
   d. milk, yogurt, and cheese.

5. Amylases in saliva begin the breakdown of carbohydrates into
   a. fatty acids.  
   b. polypeptides.  
   c. amino acids.  
   d. simple sugars.

6. In the stomach, single protein strands are cut into smaller amino acid chains by the digestive enzyme called
   a. amylase.  
   b. pepsin.  
   c. lipase.  
   d. gastrin.

7. The products of digestion are absorbed into the bloodstream through the
   a. villi and microvilli of the small intestine.  
   b. rectum of the large intestine.  
   c. stomach and colon.  
   d. liver and gallbladder.

8. Bile, which breaks fat globules into tiny fat droplets, is produced by the
   a. pancreas.  
   b. gallbladder.  
   c. liver.  
   d. duodenum.
Test Prep Pretest continued

9. Which of the following is an example of chemical digestion?
   a. chewing food
   b. peristaltic contractions
   c. breaking bonds
   d. churning food

10. The end result of the filtration, reabsorption, and secretion processes in
    the nephrons is
    a. water.
    b. carbon dioxide.
    c. urine.
    d. urea.

11. Urine leaves the bladder and exits the body through a tube called the
    a. urethra.
    b. ureter.
    c. kidney.
    d. nephron.

Questions 12–14 refer to the figure at right.

12. The blood-filtering unit in the figure is
    a(n)
    a. villus.
    b. nephron.
    c. urethra.
    d. microvillus.

13. The structure labeled A is called the
    a. collecting duct.
    b. glomerulus.
    c. renal tubule.
    d. Bowman’s capsule.

14. The structure labeled C is called the
    a. collecting duct.
    b. glomerulus.
    c. renal tubule.
    d. Bowman’s capsule.

Complete each statement by writing the correct term or phrase in the space
provided.

15. The liver converts excess sugars to _____________ and stores it
    for later.

16. Successive rhythmic waves of contraction of the smooth muscles around the
    esophagus, called _____________ _____________, move the food
    toward the stomach.
17. During digestion, the process of getting rid of undigested molecules and waste occurs in the _____________________________.

18. The wall of the large intestine absorbs mostly ____________________________ and _____________________________.

19. When you exhale, _____________________________ and some water are excreted by the lungs.

20. A procedure for filtering the blood called ____________________________ can prolong the lives of many people with damaged kidneys.

Read each question, and write your answer in the space provided.

21. Describe the connection between heart disease and the MyPyramid food guidance system’s recommendation for fats.
   _____________________________

22. How do the liver and the pancreas differ from other digestive organs?
   _____________________________

23. Describe the similarities and differences between a mineral and a vitamin.
   _____________________________

24. Name two organs other than the kidney that are involved in excretion, and describe what each organ excretes.
   _____________________________

25. Relate the role of water in maintaining a healthy body.
   _____________________________