Chapter 38

Digestive and Excretory Systems

Section 38–1 Food and Nutrition  (pages 971–977)
This section identifies the nutrients your body needs and explains why water is such an important nutrient.

Food and Energy  (page 971)
1. Cells convert the chemical energy in glucose and other molecules into ________________.
2. The energy stored in food is measured in units called ________________.
3. Is the following sentence true or false? The energy needs of an average-sized teenager are about 3000 Calories. ________________
4. Is the following sentence true or false? Your body can extract energy from almost any type of food. ________________
5. Besides supplying fuel, what are other important functions of food? ________________

Nutrients  (pages 972–975)
7. Substances in food that supply the energy and raw materials your body uses for growth, repair, and maintenance are called ________________.
8. List the six nutrients that the body needs.
   a. ________________  c. ________________  e. ________________
   b. ________________  d. ________________  f. ________________
9. Circle the letter of each sentence that is true about water as a nutrient.
   a. Water is the most important of all nutrients.
   b. Every cell in the human body needs water.
   c. Many of the body’s processes take place in water.
   d. Water makes up the bulk of bodily fluids including blood.
10. How is water lost from the body? ________________
11. If enough water is not taken in to replace what is lost, ________________ can result.
12. Complete the concept map.

Carbohydrates

include

found in

found in

Sugar cane

Honey

Vegetables

Potatoes

13. Why do you need fiber in your diet?

14. Circle the letter of each choice that is a function of fat.
   a. Protecting body organs
   b. Insulating the body
   c. Storing energy
   d. Transporting oxygen

15. List four increased health risks associated with a diet high in fat.
   a. ________________________________
   b. ________________________________
   c. ________________________________
   d. ________________________________

16. Circle the letter of each choice that is a function of protein.
   a. Supplying raw materials for growth and repair
   b. Making up enzymes
   c. Helping the body absorb certain vitamins
   d. Producing cell membranes

17. The eight amino acids that the body is unable to produce are called ________________ amino acids.

Match each vitamin with its function.

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. A</td>
<td>a. Preventing cellular damage</td>
</tr>
<tr>
<td>19. D</td>
<td>b. Promoting bone growth</td>
</tr>
<tr>
<td>20. E</td>
<td>c. Repairing tissues and healing wounds</td>
</tr>
<tr>
<td>21. C</td>
<td>d. Promoting growth of skin cells</td>
</tr>
</tbody>
</table>
Chapter 38, Digestive and Excretory Systems (continued)

Match each mineral with a food that supplies it.

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.</td>
<td>calcium</td>
</tr>
<tr>
<td>23.</td>
<td>zinc</td>
</tr>
<tr>
<td>24.</td>
<td>chlorine</td>
</tr>
<tr>
<td>25.</td>
<td>iron</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Table salt</td>
</tr>
<tr>
<td>b. Dairy products</td>
</tr>
<tr>
<td>c. Eggs</td>
</tr>
<tr>
<td>d. Seafood</td>
</tr>
</tbody>
</table>

Balancing the Diet (pages 976–977)

26. Label the missing food groups in the Food Guide Pyramid.

Section 38–2 The Process of Digestion (pages 978–984)

This section describes the organs of the digestive system and explains their functions.

The Mouth (pages 978–979)

1. What is the function of the organs of the digestive system? ________________

2. The physical breakdown of large pieces of food into smaller pieces is referred to as ________________ digestion.

3. The breakdown of large food molecules into smaller molecules that can be absorbed into the bloodstream is called ________________ digestion.
4. Label the drawing of the digestive system with the following structures: mouth, esophagus, stomach, liver, small intestine, and large intestine.

5. What is the role of teeth in digestion?

The Esophagus (page 980)

Match each term with its definition.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ 6. bolus</td>
<td>a. Contractions of smooth muscle that aid in swallowing</td>
</tr>
<tr>
<td>____ 7. esophagus</td>
<td>b. Clump of chewed food</td>
</tr>
<tr>
<td>____ 8. peristalsis</td>
<td>c. Food tube connecting the mouth and stomach</td>
</tr>
</tbody>
</table>

9. Is the following sentence true or false? The pyloric valve prevents the contents of the stomach from moving back up into the esophagus. ____________

The Stomach (pages 980–981)

10. Circle the letter of each sentence that is true about the stomach.

   a. It produces hydrochloric acid.
   b. It produces trypsin.
   c. It helps in the mechanical digestion of food.
   d. It produces amylase.
Chapter 38, Digestive and Excretory Systems (continued)

11. Is the following sentence true or false? Pepsin cannot work under the acidic conditions present in the stomach. ________________

12. A hole in the stomach wall is known as a(an) ________________.

13. A mixture of stomach fluids and food is referred to as ________________.

The Pancreas and Liver (pages 981–982)

14. Where does most chemical digestion take place? ________________

15. Circle the letter of each sentence that is true about the pancreas.
   a. It produces amylase.
   b. It produces sodium bicarbonate.
   c. Its enzymes help break down lipids and nucleic acids.
   d. It produces lactase.

16. What role does the liver play in digestion? ________________

17. Bile is stored in a small pouchlike organ called the ________________.

The Small Intestine (page 983)

18. Name the two parts of the small intestine where nutrients are absorbed.
   a. ________________ b. ________________

19. Projections that cover the folds of the small intestine are called ________________.

20. Is the following sentence true or false? Molecules of undigested fat and some fatty acids are absorbed by lymph vessels called lacteals. ________________

The Large Intestine (page 984)

21. What is the primary job of the large intestine? ________________

22. Is the following sentence true or false? The appendix plays an important role in human digestion. ________________

23. When something happens that interferes with the removal of water by the large intestine, a condition known as ________________ results.
Section 38–3 The Excretory System (pages 985–989)

This section identifies the organs of the excretory system. It also explains how the kidneys maintain homeostasis.

Excretion (page 985)
1. The process by which metabolic wastes are eliminated is called ____________.

2. List the three organs that make up the excretory system.
   a. ___________________ b. ___________________ c. ___________________

The Kidneys (pages 985–988)
3. Circle the letter of each sentence that is true about the kidneys.
   a. They are the main organs of the excretory system.
   b. They are located on either side of the spinal column.
   c. They remove excess water and waste products from the urine.
   d. They receive blood through the renal vein.

Match each term with its definition.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. ureter</td>
<td>a. Saclike organ where urine is stored</td>
</tr>
<tr>
<td>5. urinary bladder</td>
<td>b. Functional unit of the kidney</td>
</tr>
<tr>
<td>6. renal medulla</td>
<td>c. Outer part of the kidney</td>
</tr>
<tr>
<td>7. renal cortex</td>
<td>d. Tube that carries urine from the kidney to the urinary bladder</td>
</tr>
<tr>
<td>8. nephron</td>
<td>e. Inner part of the kidney</td>
</tr>
</tbody>
</table>

9. Is the following sentence true or false? Nephrons are located in the renal medulla. __________

10. What ends up in the collecting duct? ______________________________

11. List the three processes involved in blood purification.
   a. ___________________ b. ___________________ c. ___________________
Chapter 38, Digestive and Excretory Systems (continued)

12. The small network of capillaries in the upper end of the nephron is referred to as the _____________.
13. The glomerulus is enclosed by a cup-shaped structure called _________________.
14. Complete the Venn diagram.

Filtration  
Reabsorption  

Processes that take place in the nephron

15. The materials that are filtered from the blood are collectively called the _________________.
16. List six materials that are filtered from blood.
   a. ________________  c. ________________  e. ________________
   b. ________________  d. ________________  f. ________________
17. Which substances are removed from the filtrate and reabsorbed by the capillaries? ________________

18. What happens during the process of secretion? ________________

19. Circle the letter of each sentence that is true about urine.
   a. It is the material that remains after reabsorption.
   b. It contains only urea and water.
   c. It is concentrated in the loop of Henle.
   d. It is released from the body through the urethra.

Control of Kidney Function (page 988)
20. List three ways that the kidneys help maintain homeostasis.
   a. ________________
   b. ________________
   c. ________________
21. How are the activities of the kidneys controlled? ________________
22. Is the following sentence true or false? As the amount of water in the blood increases, the rate of water reabsorption in the kidneys increases. __________

Homeostasis by Machine  (pages 988–989)
23. Is the following sentence true or false? Humans cannot survive with only one kidney. __________
24. The removal of wastes from blood using a machine is called __________.

WordWise
Test your knowledge of vocabulary terms from Chapter 38 by completing this crossword puzzle.

Clues down:
1. Muscular contractions of the esophagus
2. Inorganic nutrient needed in small amounts
3. Lipid
4. Main organ of excretion
6. Tube that carries fluid from kidney to bladder
7. Mixture of stomach fluids and food
10. Gland that produces bile

Clues across:
5. Organic molecule that helps regulate body processes
8. Large muscular sac important in digestion
9. Enzyme in saliva that helps digest starch
11. Projection from the wall of the small intestine
12. Tube through which urine is released from the body