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Module 1

Organize of the Human Body

Objective 7

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–6)

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria

• Directions were followed ____________________________

• Terms were identified correctly __________________________

Basic Skills

Reading

Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Assignment Sheet 1

Across
1. Of or pertaining to tears
5. The scientific study of the functions of an organism that describes how the organs work independently and in relation to the whole organism
7. A living person, animal, or plant
8. Resulting in death
10. A part of the body, such as the heart, a bone, a gland, a cell, or a limb
11. A special structure within the body that is arranged in an organized manner to perform a specific function
12. The processes that lead to chemical reaction in the body

Down
2. The scientific study of the structure of an organism that describes the size, shape, construction, and relative positions of the organs in the body
3. An organ that must function properly in order for the life of the organism to continue
4. A substance containing amino acid that originates in an organ or gland, moves through the blood to another part of the body, and stimulates activity in that region by chemical reaction
6. Any of the various structures within the body that produce specific chemicals to help with the functions of the body
9. A group of organs and related structures that work together to perform a common function
Module 1  Organization of the Human Body

Objective 8

Assignment Sheet 2—Construct a Model of an Organ of the Human Body

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria

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<tr>
<td>• Model reflects research findings related to size, shape, color, and structure</td>
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</tr>
<tr>
<td>• Presentation is clear and concise and includes how the organ works in relation to the whole human body</td>
<td>_____</td>
</tr>
<tr>
<td>• Teamwork demonstrated throughout completion of assignment</td>
<td>_____</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Writing  Mathematics  Science  Oral Communication  Interpersonal  Technology

Directions

Part 1

Research an organ of the human body using resources available on the Internet or provided by your instructor. Work with another student and write your findings below. This information will help you in constructing your model and preparing your presentation about the selected organ.

Size  _________________________

Shape  _________________________

Color  _________________________

Structure  _________________________

Body Region  _________________________

Explain functions of the organ.

______________________________________________________________

______________________________________________________________

Describe how the organ works in relation to the whole human body.

______________________________________________________________

______________________________________________________________
### Assignment Sheet 2

<table>
<thead>
<tr>
<th>Directions</th>
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<tbody>
<tr>
<td><strong>Make a rough sketch below of the organ, noting any structural features that should be included on the model.</strong></td>
<td></td>
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<table>
<thead>
<tr>
<th>Directions</th>
<th>Part 3</th>
</tr>
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<tbody>
<tr>
<td><strong>Construct</strong> a life-size model of the body organ selected using the findings collected through your research.</td>
<td></td>
</tr>
<tr>
<td><strong>Present</strong> findings about the organ to class members using your model as a visual aid. Point out the exact location of the organ in the human body and explain the relationship of the organ to other organs and body systems.</td>
<td></td>
</tr>
</tbody>
</table>
Module 1  Organization of the Human Body

Objective 9

Assignment Sheet 3—Analyze a Cosmetology Scenario

Name _________________________________________________________

Date ____________________________________________  Score _________________

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<td>Analysis demonstrates comprehensive knowledge of the information presented in Information Sheet and student presentations (Assignment Sheet 2)</td>
<td>______</td>
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<tr>
<td>Answer clear and concise</td>
<td>______</td>
</tr>
<tr>
<td>Handwriting is neat and legible</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

- Reading
- Writing
- Science
- Interpersonal
- Critical Thinking

Directions

Read the following scenario, then answer the questions that follow.

Mr. Price comes into the salon for the first time in three months. You observe discolorations on the face, neck and hands, major weight loss, and a change in his behavior indicating stress. He states that his metabolism has been out of sorts and he has lost 40 pounds over the last three months and that he has been "stressed out."

1. Which body system may be involved in the changes to Mr. Price's body? ____________________________________________________________________________________

2. Is it possible for you to provide cosmetology services for Mr. Price in his present condition? ____________________________________________________________________________________

3. What recommendation would you make to Mr. Price? ____________________________________________________________________________________
Module 1  
Organization of the Human Body

Objective 10

Assignment Sheet 4—Complete Module 1 Review

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Directions were followed _______

• Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet _______

Basic Skills

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 4  1. Which of the following is NOT a function of the digestive system?
   a. receives food substances
   b. breaks down and absorbs food substances
   c. circulates digested nutrients to other parts of the body
   d. excretes waste products

Objective 5  2. The skin, hair, nails, and duct glands are part of what organ system?
   a. endocrine system
   b. special sense system
   c. specialized sensation system
   d. integumentary system

Objective 5  3. The reproductive system includes which of the following?
   a. sex organs and ducts to the outside
   b. sex organs and the alimentary canal
   c. ducted and ductless glands
   d. glands and the urinary system

Objective 1  4. Physiology is the scientific study of the ______ of an organism.
   a. functions
   b. structure
   c. purpose
   d. offspring
<table>
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<tr>
<th>Objective 2</th>
<th>5. Which of the following is NOT one of the general regions of the body?</th>
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<tr>
<td></td>
<td>a. head</td>
</tr>
<tr>
<td></td>
<td>b. trunk</td>
</tr>
<tr>
<td></td>
<td>c. limbs</td>
</tr>
<tr>
<td></td>
<td>d. external peripherals</td>
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<tr>
<th>Objective 4</th>
<th>6. Which of the organ systems protects the organism from injury, disease, and infection and aids in the regulation of temperature, the excretion of wastes, and the reception of sensations?</th>
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<tr>
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<td>a. endocrine system</td>
</tr>
<tr>
<td></td>
<td>b. immune system</td>
</tr>
<tr>
<td></td>
<td>c. urinary system</td>
</tr>
<tr>
<td></td>
<td>d. integumentary system</td>
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<th>Objective 4</th>
<th>7. Which of the following is NOT an activity of the nervous system?</th>
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<tr>
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<td>a. receives messages</td>
</tr>
<tr>
<td></td>
<td>b. receives sensations</td>
</tr>
<tr>
<td></td>
<td>c. interprets messages</td>
</tr>
<tr>
<td></td>
<td>d. conducts messages</td>
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<th>8. The kidneys, ureter, bladder, and urethra are part of which organ system?</th>
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<tr>
<td></td>
<td>a. urinary system</td>
</tr>
<tr>
<td></td>
<td>b. reproductive system</td>
</tr>
<tr>
<td></td>
<td>c. digestive system</td>
</tr>
<tr>
<td></td>
<td>d. endocrine system</td>
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<th>Objective 1</th>
<th>9. Anatomy is the scientific study of the _______ of an organism.</th>
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<td>a. functions</td>
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<td></td>
<td>b. structure</td>
</tr>
<tr>
<td></td>
<td>c. purpose</td>
</tr>
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<td>d. offspring</td>
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<th>Objective 4</th>
<th>10. Which of the major organ systems provides for body movement and support?</th>
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<td>a. skeletal system</td>
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<tr>
<td></td>
<td>b. muscular system</td>
</tr>
<tr>
<td></td>
<td>c. integumentary system</td>
</tr>
<tr>
<td></td>
<td>d. reproductive system</td>
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<td>Objective 4</td>
<td>11. Which organ system serves to regulate various body functions through glands that secrete hormones directly into the blood to slow down or increase the activity of the cells?</td>
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<td>-------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</table>
|             | a. endocrine system  
|             | b. gland system  
|             | c. secretion system  
|             | d. hormone system |
| Objective 5 | 12. Which of the following is NOT part of the skeletal system? |
|             | a. joints  
|             | b. cartilage  
|             | c. skeletal muscles  
|             | d. connective tissue |
| Objective 5 | 13. What type of glands are found in the endocrine system? |
|             | a. salivary  
|             | b. ducted  
|             | c. ductless  
|             | d. sabaceous |
| Objective 4 | 14. What is the term for the organ system that functions in receiving special sensations such as sight, smell, hearing, and taste? |
|             | a. special sensations system  
|             | b. special senses system  
|             | c. circulatory system  
|             | d. specialized nervous system |
| Objective 4 | 15. Which of the following phrases best describes the function of the respiratory system? |
|             | a. takes in oxygen from the air and gives off carbon dioxide, which is produced by cell metabolism  
|             | b. takes in carbon dioxide from the air and gives off oxygen that is produced by cell metabolism  
|             | c. transports materials throughout the body by carrying oxygen and nutrients in the blood to all the cells of the body and carrying away the waste products of the cells  
|             | d. transports materials throughout the body by carrying carbon dioxide and nutrients in the blood to all the cells of the body and carrying away the waste products of the cells |
| Objective 5 | 16. Which of the following is NOT part of the respiratory system? |
|             | a. nose  
|             | b. pharynx  
|             | c. trachea  
<p>|             | d. esophagus |</p>
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<th>Question</th>
<th>Answer</th>
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<td>Objective 5</td>
<td>17. Which of the following is NOT an organ or structure in the muscular system?</td>
<td>a. smooth muscles, b. cardiac muscles, c. skeletal muscles, d. digestive muscles</td>
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<tr>
<td>Objective 5</td>
<td>18. The heart, blood vessels, blood, and lymphatic tissues are part of which organ system?</td>
<td>a. reproductive system, b. circulatory system, c. integumentary system, d. muscular system</td>
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<tr>
<td>Objective 3</td>
<td>19. Which of the following is the correct sequence of body structures from simplest to most complex?</td>
<td>a. cell, tissue, organ, organ system, organism, b. tissue, cell, organ, organ system, organism, c. cell, organ, organ system, tissue, organism, d. cell, tissue, organ system, organ, organism</td>
</tr>
<tr>
<td>Objective 6</td>
<td>20. Which of the following is NOT a physiological characteristic affected by hormones?</td>
<td>a. rate of metabolism and metabolism of specific substances such as carbohydrates and calcium, b. growth and development processes, c. secretion of other hormones, d. development of basic instincts</td>
</tr>
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</table>
Module 2

Assignment Sheet 1—Complete the Crossword
Puzzle of Terms (Objectives 1–10)

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria Rating
• Directions were followed
• Terms were identified correctly

Basic Skills
Reading  Science

Directions
Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
1. The set of electron orbits in an atom that have the same energy level
6. A state of matter in which the substance will take on the shape of a container but will not expand to fill a container with greater volume than the substance
8. To improve the ease of movement between two objects by applying a substance that reduces friction
11. The state of the body in which conditions remain relatively stable despite changes in the environment
12. A structure consisting of two or more atoms
16. An atom or group of atoms with either a positive or a negative electrical charge
19. That portion of the universe that has shape and substance
20. A class of chemicals that have a positive ion other than hydrogen and a negative ion that is not a hydroxyl
22. A substance that releases a hydrogen ion when dissolved
23. A device that is used to separate the components of a solution or liquid mixture by spinning the substance
24. A process in which one or more chemicals that are exposed to other chemicals or sources of energy such as heat change their chemical composition to produce other chemicals and often other forms of energy
25. A substance that affects the rate of change in a chemical reaction without being changed chemically
26. The capacity to do work
28. The mechanism by which atoms link to one another to form molecules involving the loss of, gaining of, or sharing of electrons in the outer shell
29. The ratio of the components of a solution or mixture
30. A compound that contains carbon and hydrogen
Assignment Sheet 1

Down
1. A state of matter in which the substance has a definite shape that is maintained unless acted upon by a force that is capable of changing that shape
2. The structure in the center of an atom consisting of protons and neutrons and about which electrons orbit
3. An ion consisting of one hydrogen atom and one oxygen atom
4. A substance that releases a hydroxide ion when dissolved
5. The study of chemistry as it relates to life
7. A positively charged particle that is a fundamental component of the nucleus of atoms
9. A substance that consists of atoms of two or more different elements bonded together as molecules
10. A substance that consists of one or more components dissolved in a liquid
13. The study of extremely small life
14. A substance that consists of two or more combined components that do not interact chemically
15. The physical and chemical processes by which an organism supplies its cells and tissues with oxygen and removes carbon dioxide
17. A state of matter in which the substance will take on the shape of any container in which it is placed and will expand to fill the container
18. The number of protons, or positive charges, in the nucleus of an atom of a particular element
21. A negatively charged elementary particle of an atom
27. An elementary particle that is a fundamental component of the nucleus of atoms; it has no electric charge
**Module 2**  

**Objective 26**  

**Assignment Sheet 2—Complete the Crossword Puzzle of Terms (Objectives 11–18)**

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**Evaluation Criteria**

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<tr>
<td>Terms were identified correctly</td>
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**Basic Skills**

*Reading*  

*Science*

**Directions**

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Assignment Sheet 2

Across
1. A thickening of the outer surface of the nucle- us protoplasm that regulates the movement of materials into and out of the nucleus
6. The complex mass of proteins and other organic and inorganic materials that is capable of exhibiting the characteristics of life
7. A single hair-like projection on a sperm cell
8. The protoplasm found outside the nucleus of a cell
9. Hair-like projections of the cells that form the mucous lining of the respiratory system and other passageways

Down
1. A dense spherical structure within the nucleus that is involved in protein synthesis and that forms ribosomal RNA
2. One of the several strands of DNA that contains the genetic code that determines inherited traits
3. The protoplasm found in the nucleus of a cell
4. The characteristic of a material to allow other substances to pass through it
5. Allows some molecules to enter the cell while preventing entry by other molecules
Assignment Sheet 3—Construct a Model of a Typical Cell

Name _________________________________________________________
Date _________________________________  Score _________________

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<tr>
<td>Model reflects research findings related to size, shape, and structure</td>
<td>______</td>
</tr>
<tr>
<td>Presentation is clear and concise and includes the functions of each part of the cell, and the functions of specialized structures found in cells</td>
<td>______</td>
</tr>
<tr>
<td>Teamwork demonstrated throughout completion of assignment</td>
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Basic Skills

Directions Part 1

Research cells of the human body using resources available on the Internet or provided by your instructor. Work with teammates to collect the following information to help you in constructing your model and preparing your group presentation about the selected cell.

Size _________________
Shape _________________
Major parts of a cell ______________________________________________

Explain the functions of each part of a cell.

________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

Module 2  Biochemistry and Microbiology
Assignment Sheet 3

Explain the functions of specialized structures found in cells.

Directions

Part 2

Construct a 3-D model of a typical cell showing the major parts of the cell using the findings collected through your research.

Directions

Part 3

Present findings to class members using your model as a visual aid. Point out each part of a cell and explain their functions and the functions of the specialized structures found in cells.
Assignment Sheet 4—Complete the Crossword Puzzle of Terms (Objectives 19–24)

Name _________________________________________________________
Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>• Terms were identified correctly</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Across
1. The conditions that tend to promote the spread of a disease, such as when the bite of an arthropod allows pathogens to enter a person's bloodstream
5. A unicellular organism that is adapted for life in water and forms cysts that pass from host to host
6. A widely distributed unicellular organism that may or may not cause disease
10. A characteristic of some organisms in which the outer tissue of parts of the body are hardened to the point that they support attached softer tissues
11. A unicellular or multicellular organism that reproduces by means of spores and that may be pathogenic or nonpathogenic
12. Consisting of one cell
14. The organism that provides the resources required to sustain a parasitic relationship

Down
2. An invertebrate organism with six or more jointed legs and an exoskeleton
3. A multicellular organism that in its parasitic form can be pathogenic to humans
4. An organism that does not have an internal skeleton and, specifically, a spinal column
7. A condition of being highly sensitive to foreign substances that enter the body often because the person's immune system does not respond to the antigen of the substance
8. The dormant form of a bacterium or the reproductive form of a fungus
9. A subcellular organism that reproduces as a parasite within other organisms and, consequently, is pathogenic
13. A capsule that forms around microorganisms before they enter dormant periods
Module 2

Biochemistry and Microbiology

Objective 29

Assignment Sheet 5—Develop a Presentation on Bacteria, Viruses, Fungi, or Parasites

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Presentation reflects research findings as to how bacteria, viruses, fungi, or parasites affect the human body _________

• Presentation is clear and concise and includes:
  — classes of microorganisms and bacteria, or
  — characteristics of viruses, or
  — characteristics of fungi, or
  — common parasites that afflict humans
  — examples of when a cosmetologist may come into contact with bacteria, viruses, fungi, or parasites
  — explanation of how a cosmetologist should deal with the microorganism

Basic Skills

Reading  Writing  Science  Oral Communication  Interpersonal  Technology

Directions

Part 1

Divide the class into teams to complete research and develop a presentation on bacteria, viruses, fungi, or parasites. All topics should be covered by at least one team.

Research bacteria, viruses, fungi, or parasites using resources available on the Internet or provided by your instructor. Work with your team and write your findings below. This information will help you in constructing your outline and preparing your presentation about bacteria, viruses, fungi, or parasites.

Classes of microorganisms

Shape and characteristics of bacteria or

Characteristics of viruses or

Characteristics of fungi or

Common parasites that afflict humans

MAVCC—A Cosmetologist's Introduction to Anatomy and Physiology
Assignment Sheet 5

Directions
Part 2

Explain the effects of bacteria, viruses, fungi, or parasites on the human body.

Describe when a cosmetologist may come into contact with bacteria, viruses, fungi, or parasites and how the cosmetologist should deal with the organisms.

Using PowerPoint® software, develop a presentation using the findings collected through your research on bacteria, viruses, fungi, or parasites. Where access to PowerPoint® is not possible, use flip charts, posters or other means of media to develop the presentation. Practice the presentation with the team. Give your PowerPoint® presentation and provide explanation of the subject matter and answer any questions from your classmates or instructor.
Module 2  
Biochemistry and Microbiology

Objective 30

Assignment Sheet 6—Analyze Cosmetology Scenarios

Name_______________________________________________________

Date_______________________________  Score__________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>Analysis demonstrates the ability to apply knowledge</td>
<td>______</td>
</tr>
<tr>
<td>of the information presented in the Information Sheet</td>
<td></td>
</tr>
<tr>
<td>to a given situation</td>
<td>______</td>
</tr>
<tr>
<td>Answers clear and concise</td>
<td>______</td>
</tr>
<tr>
<td>Handwriting is neat and legible</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  
Writing  
Science  
Interpersonal  
Critical Thinking

Directions

Read each scenario and answer the questions that follow.

Scenario 1

Ms. Lane comes to the salon for services and expresses that she has just returned from a two-week trip to Africa. She articulates that she has some remaining symptoms of an allergy to arthropod venom bites that she received while in Africa. She states she has been to a doctor in the states and that the bites are not malaria-causing or contagious and that arthropods are not present on her body.

1. What are some examples of arthropods? _______________________

2. What should you do? _______________________________________

__________________________________________________________________

__________________________________________________________________

__________________________________________________________________

__________________________________________________________________

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__________________________________________________________________

__________________________________________________________________
**Scenario 2**

Ms. Lin comes into the salon for an artificial nail replacement. She states that she has experienced some pain in the nail since her last visit and that the nail is tender to the touch. In your examination you find that the artificial nail is loose and moisture has collected under the nail. You observe a gray greenish tint to the nail plate.

1. In your professional opinion, what is the green color on the nail plate?

2. What should you do?

**Scenario 3**

Mr. Lewis brings Lequisha, his five year old daughter, into the salon and explains that her scalp appears dry and has been itching. He states that he has shampooed her hair numerous times and applied conditioner, even rubbing it into her scalp to try to correct the dryness that appears in small white flakes. He asks for any help you can give him. During your inspection, you realize that this is not a simple case of dry scalp. You observe small white nodules attached to the hair shaft and small white organisms crawling on the scalp.

1. In your professional opinion, what is causing the nodules and the itch Lequisha is experiencing?

2. What should you do?
Module 2  Biochemistry and Microbiology

Assignment Sheet 7—Complete Module 2 Review

Name__________________________________________________________

Date_______________________________  Score______________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
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<tbody>
<tr>
<td>• Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>• Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Science

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 13

1. In the illustration below, which of the following is NOT a correct match to the part indicated?
   
   a. nucleus  
   b. cell membrane  
   c. mitochondrion  
   d. cytoplasm

   ![Cell Structure Diagram]
<table>
<thead>
<tr>
<th>Objective 21</th>
<th>2. The tough outer cell wall gives a bacterium its ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. support</td>
</tr>
<tr>
<td></td>
<td>b. strength</td>
</tr>
<tr>
<td></td>
<td>c. shape</td>
</tr>
<tr>
<td></td>
<td>d. name</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 22</th>
<th>3. Which of the following statements is NOT true with regard to characteristics of viruses?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Viruses can only reproduce when they are within the living cells of a host organism.</td>
</tr>
<tr>
<td></td>
<td>b. A virus will use the nucleic acid and enzymes of an infected cell to produce other viruses,</td>
</tr>
<tr>
<td></td>
<td>often multiplying to the point that the cell ruptures and dies.</td>
</tr>
<tr>
<td></td>
<td>c. Some viruses can become dormant so that they present no signs of infection and then become</td>
</tr>
<tr>
<td></td>
<td>active again after a period of time, even years later.</td>
</tr>
<tr>
<td></td>
<td>d. Viruses cannot be transmitted from a pregnant woman to her fetus.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>4. ______ is a state of matter in which the substance will take on the shape of a container</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>but will not expand to fill a container with greater volume than the substance.</td>
</tr>
<tr>
<td></td>
<td>a. Energy</td>
</tr>
<tr>
<td></td>
<td>b. A solid</td>
</tr>
<tr>
<td></td>
<td>c. A liquid</td>
</tr>
<tr>
<td></td>
<td>d. A gas</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>5. Which of the following is NOT a correct statement about the role of chemistry in human health?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. The body consists of various chemicals.</td>
</tr>
<tr>
<td></td>
<td>b. Most body activities involve chemical reactions.</td>
</tr>
<tr>
<td></td>
<td>c. For a person to remain healthy, the chemicals within the body must remain properly</td>
</tr>
<tr>
<td></td>
<td>balanced.</td>
</tr>
<tr>
<td></td>
<td>d. The body’s defense systems prevent chemicals outside the body from entering.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4</th>
<th>6. An atom is the smallest division of ______ that exhibits all of its properties and</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>characteristics.</td>
</tr>
<tr>
<td></td>
<td>a. a molecule</td>
</tr>
<tr>
<td></td>
<td>b. an element</td>
</tr>
<tr>
<td></td>
<td>c. a nucleus</td>
</tr>
<tr>
<td></td>
<td>d. a substance</td>
</tr>
</tbody>
</table>
Objective 7
7. A substance that consists of atoms of two or more elements bonded together as molecules is a ______.
   a. mixture
   b. solution
   c. compound
   d. catalyst

Objective 7
8. A ______ is a substance that consists of one or more components dissolved in a liquid.
   a. mixture
   b. compound
   c. solution
   d. element

Objective 8
9. _____ serves as the primary energy source for the cells.
   a. Oxygen
   b. Glucose
   c. Water
   d. Sodium chloride

Objective 9
10. Substances that form ions when they dissolve are called ______.
    a. electrolytes
    b. analytes
    c. electrolysis
    d. solvents

Objective 9
11. ______ is a class of chemicals that has a positive ion other than hydrogen and a negative ion that is not a hydroxyl.
    a. Base
    b. Acid
    c. Salt
    d. Concentration

Objective 9
12. Which of the following statements is NOT true about electrolytes?
    a. Electrolytes include salts, acids, and bases found throughout the body.
    b. Body functions are most efficient when the concentrations of the electrolytes are within specific ranges.
    c. Electrolytes are lost through sweating and through the elimination of urine and feces.
    d. Electrolytes are stored between the skin and muscle for use when required.
<table>
<thead>
<tr>
<th>Objective</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>13. The _____ provides structure to the cell and supports other parts of the cell.</td>
</tr>
</tbody>
</table>
|           | a. nucleus  
|           | b. centrosome  
|           | c. cytoplasm  
|           | d. cell membrane |
| 19        | 14. _____ is a widely distributed unicellular organism that may or may not cause disease. |
|           | a. Fungus  
|           | b. Virus  
|           | c. Protozoan  
|           | d. Bacterium |
| 20        | 15. What type of bacteria is shown in the illustration below? |
|           | a. bacillum  
|           | b. coccus  
|           | c. spirillum  
|           | d. flagellum |
| 23        | 16. Which of the following phrases is NOT true with regard to fungi? |
|           | a. may be unicellular or multicellular  
|           | b. some are normally found in and on the body  
|           | c. can form cysts and become dormant  
|           | d. can spread to the inside of the body through spores |
| 24        | 17. Mites and lice generally afflict the _____ of a host’s body and present little direct risk to the host. |
|           | a. surface  
|           | b. viscera  
|           | c. organs  
<p>|           | d. bloodstream |</p>
<table>
<thead>
<tr>
<th>Objective</th>
<th>Question</th>
<th>Answers</th>
</tr>
</thead>
</table>
| 2         | 18. Injuries and diseases can change the ______ and can disrupt chemical reactions. | a. chemical balance within the body  
               b. overall chemical composition of the body  
               c. electrical charge of all the ions in the body  
               d. anions into cations |
| 3         | 19. The state of the body in which conditions remain relatively stable despite changes in the environment is called ______. | a. equilibrium  
               b. chemical balance  
               c. homeostasis  
               d. hemostatic |
| 6         | 20. A structure consisting of two or more atoms is a ______. | a. gas  
               b. solid  
               c. liquid  
               d. molecule |
| 7         | 21. To separate the substances in a solution, the ______ of the solution must change so that the ______ balance between the components prevents the liquid from being able to hold the dissolved material. | a. energy, energy  
               b. energy, chemical  
               c. chemistry, energy  
               d. chemistry, chemical |
| 10        | 22. Acids and bases are classed as strong, using a value called pH, with the most-acidic substances having a value toward ______ and the most-basic substances having a value toward ______. | a. 14, 0  
               b. 0, 14  
               c. 1, 10  
               d. 10, 1 |
| 12        | 23. The protoplasm found outside the nucleus of a cell is ______. | a. nucleoplasm  
               b. cytoplasm  
               c. endoplasm  
               d. exoplasm |
<table>
<thead>
<tr>
<th>Objective 16 &amp; 17</th>
<th>24. Which of the following phrases correctly describes a flagellum?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. a single hair-like projection on a sperm cell that helps to propel the sperm cell so that it can reach an ovum</td>
</tr>
<tr>
<td></td>
<td>b. an extension of the cell cytoplasm that lines the intestines and serves to increase the surface area of cells</td>
</tr>
<tr>
<td></td>
<td>c. a single hair-like projection used to signal other cells about the presence of a pathogen</td>
</tr>
<tr>
<td></td>
<td>d. a hair-like projection of the cells that form the mucous lining of the respiratory system and other passageways and helps to propel fluid in one direction over the surface of cells</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 19</th>
<th>25. A unicellular organism that is adapted for life in water and forms cysts that pass from host to host is a ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. bacterium</td>
</tr>
<tr>
<td></td>
<td>b. virus</td>
</tr>
<tr>
<td></td>
<td>c. protozoan</td>
</tr>
<tr>
<td></td>
<td>d. fungus</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Objective 24</th>
<th>26. Parasites such as lice, fleas, mosquitoes, and ticks may be ______ disease.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. victims of</td>
</tr>
<tr>
<td></td>
<td>b. vectors of</td>
</tr>
<tr>
<td></td>
<td>c. immune to</td>
</tr>
<tr>
<td></td>
<td>d. invisible to</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 1</th>
<th>27. ______ is the study of extremely small life.</th>
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<tbody>
<tr>
<td></td>
<td>a. Matter</td>
</tr>
<tr>
<td></td>
<td>b. Energy</td>
</tr>
<tr>
<td></td>
<td>c. Biochemistry</td>
</tr>
<tr>
<td></td>
<td>d. Microbiology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 5</th>
<th>28. The center part of an atom consists of ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. protons and electrons</td>
</tr>
<tr>
<td></td>
<td>b. protons and neutrons</td>
</tr>
<tr>
<td></td>
<td>c. electrons and neutrons</td>
</tr>
<tr>
<td></td>
<td>d. protons and nuclei</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>29. A mixture consists of two or more combined substances that do not interact ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. chemically</td>
</tr>
<tr>
<td></td>
<td>b. easily</td>
</tr>
<tr>
<td></td>
<td>c. electrically</td>
</tr>
<tr>
<td></td>
<td>d. physically</td>
</tr>
</tbody>
</table>
Objective 8  
30. What compound is given off as a waste product of cell respiration?  
   a. carbon dioxide  
   b. carbon monoxide  
   c. oxygen  
   d. nitrogen  

Objective 8  
31. Which of the following is NOT a normal role of water in the body?  
   a. dissolves substances to make them more usable to the body  
   b. provides fluid to lubricate moving parts of the body  
   c. helps to maintain body temperature  
   d. combines with carbon to make carbohydrates  

Objective 11  
32. Which of the following is the correct statement of the cell theory?  
   a. All organisms are made of small, enclosed bodies called cells and of the products of those cells.  
   b. All animals are made of small, enclosed bodies called cells and of the products of those cells.  
   c. Cells can neither be created nor destroyed.  
   d. All organisms started as simple cells and evolved into organisms with many cells.  

Objective 15  
33. A chromosome is _______.  
   a. a thickening of the outer surface of the nucleus protoplasm that regulates the movement of materials into and out of the nucleus  
   b. a dense spherical structure within the nucleus that is involved in protein synthesis and that forms ribosomal RNA  
   c. one of several strands of DNA that contains the genetic code that determines inherited traits  
   d. a bubble-like vesicle used to move substances about the cell  

Objective 22  
34. ______ are nucleic acids within shells of protein.  
   a. Algae  
   b. Viruses  
   c. Fungi  
   d. Rickettsiae
Objective 24
35. Which of the following statements is NOT true with regard to parasitic worms?
   a. Parasitic worms live off nutrients in the host’s body or blood or on the host itself.
   b. Many parasitic worms have several stages of life involving eggs, larvae, and adult stages.
   c. Parasitic worms seldom inhabit specific body sites.
   d. For some species of parasitic worms, the inhabited site varies with the stage of development and may even involve more than one host species.

Objective 2
36. The body _____ special chemicals that regulate body functions.
   a. does not need
   b. uses nerve signals instead of
   c. produces
   d. normally needs medication to produce

Objective 4
37. An element is one of more than _____ primary, simple substances that cannot be broken down by chemical means into any other substance.
   a. 10
   b. 100
   c. 1,000
   d. 10,000

Objective 7
38. What is required to separate the substances in a mixture?
   a. a chemical reaction
   b. a change in ionization
   c. the addition of a third chemical
   d. a mechanical method or energy

Objective 7
39. A _____ is a substance that affects the rate of change in a chemical reaction without being changed chemically.
   a. compound
   b. catalyst
   c. mixture
   d. solution

Objective 9
40. A base is a substance that releases a _____ ion when dissolved.
   a. hydrogen
   b. hydroxide
   c. oxygen
   d. oxide
<table>
<thead>
<tr>
<th>Objective 10</th>
<th>41. Which of the following statements is NOT true about pH in the human body?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Body fluids have a normal pH value with a narrow range above and below that value.</td>
</tr>
<tr>
<td></td>
<td>b. If the pH value of a fluid goes above or below its ideal range, chemical reactions will be affected.</td>
</tr>
<tr>
<td></td>
<td>c. Normal human activities can lead to major shifts in pH.</td>
</tr>
<tr>
<td></td>
<td>d. Most-acidic substances have a pH value toward 14 and most-basic substances have a pH value of 0.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Objective 19</th>
<th>42. A _____ is a multicellular or unicellular organism that reproduces by means of spores and that may be pathogenic or nonpathogenic.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>a. worm</td>
</tr>
<tr>
<td></td>
<td>b. fungus</td>
</tr>
<tr>
<td></td>
<td>c. virus</td>
</tr>
<tr>
<td></td>
<td>d. arthropod</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 21</th>
<th>43. _____ often colonize with each other so that another way of identifying them is by the shape of their colonies.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Cocci and spirilli</td>
</tr>
<tr>
<td></td>
<td>b. Bacilli and spirilli</td>
</tr>
<tr>
<td></td>
<td>c. Cocci and bacilli</td>
</tr>
<tr>
<td></td>
<td>d. Spirilli and flagelli</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4</th>
<th>44. “The smallest division of an element that exhibits all the properties and characteristics of the element” is the definition of which of the following terms?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. matter</td>
</tr>
<tr>
<td></td>
<td>b. proton</td>
</tr>
<tr>
<td></td>
<td>c. neutron</td>
</tr>
<tr>
<td></td>
<td>d. atom</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>45. The separation of a compound into other compounds and elements requires a ______.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>a. mechanical force</td>
</tr>
<tr>
<td></td>
<td>b. positive and a negative ion</td>
</tr>
<tr>
<td></td>
<td>c. chemical reaction</td>
</tr>
<tr>
<td></td>
<td>d. solvent</td>
</tr>
<tr>
<td>Objective 8</td>
<td>46. Which of the following phrases is true about the role of oxygen in the health of the body?</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>a. required for the chemical reaction that releases energy from nutrients</td>
</tr>
<tr>
<td></td>
<td>b. one of the atoms in a water molecule</td>
</tr>
<tr>
<td></td>
<td>c. a key element in compounds of importance to the body other than water</td>
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<tr>
<td></td>
<td>d. all of the above</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>47. An organic compound is one that contains ______.</th>
</tr>
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<tr>
<td></td>
<td>a. hydrogen and oxygen</td>
</tr>
<tr>
<td></td>
<td>b. hydrogen, oxygen, and carbon</td>
</tr>
<tr>
<td></td>
<td>c. carbon and oxygen</td>
</tr>
<tr>
<td></td>
<td>d. carbon and hydrogen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 9</th>
<th>48. An acid is a substance that releases a(n) ______ ion when dissolved.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. hydrogen</td>
</tr>
<tr>
<td></td>
<td>b. hydroxide</td>
</tr>
<tr>
<td></td>
<td>c. oxygen</td>
</tr>
<tr>
<td></td>
<td>d. oxide</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 14</th>
<th>49. The ______ regulates cellular structure and activities, including reproduction of the cell.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. cytoplasm</td>
</tr>
<tr>
<td></td>
<td>b. centrosome</td>
</tr>
<tr>
<td></td>
<td>c. nucleus</td>
</tr>
<tr>
<td></td>
<td>d. cell membrane</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 18</th>
<th>50. Which of the following phrases does NOT describe a cell function?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. to absorb materials to support cell functions and to release energy</td>
</tr>
<tr>
<td></td>
<td>b. to metabolize nutrients and nitrogen</td>
</tr>
<tr>
<td></td>
<td>c. to synthesize protein and to reproduce itself</td>
</tr>
<tr>
<td></td>
<td>d. to excrete waste products and to support functions specific to that kind of cell</td>
</tr>
</tbody>
</table>
Objective 13

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–4)

Name _________________________________________________________

Date _________________________________  Score __________________

Evaluation Criteria Rating

• Directions were followed
  _____

• Terms were identified correctly
  _____

Basic Skills

Reading  Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Assignment Sheet 1

Across
1. To destroy all the pathogens on an object or in a substance
5. An organism that serves as a permanent or temporary home for another organism
7. A special medication that slows or stops the growth of certain microorganisms
9. An invasion of the body by organisms and the reaction of the body to the presence of those organisms and to the toxins that they produce
10. An organism that is capable of producing disease in another organism
11. A chemical used to destroy or reduce the growth of pathogens on a person

Down
1. A condition that occurs in association with a disease and that can be evidence of the presence of the disease
2. The period of time which a host exhibits symptoms of a disease
3. The administration of a medication that increases the body's resistance to a specific pathogen
4. A chemical used to destroy or reduce the growth of pathogens on objects
6. A substance that is harmful to cells
8. A specific illness or disorder characterized by a recognizable set of signs and symptoms and attributable to heredity, infection, diet, or environment
Objective 14

Assignment Sheet 2—Complete the Crossword Puzzle of Terms (Objectives 5–12)

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria  Rating
• Directions were followed
  
• Terms were identified correctly
  
Basic Skills

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Assignment Sheet 2

Across
1. Communicable, such as a disease that may be transmitted by direct or indirect contact
2. Earwax, a secretion of the ceruminous glands in the ear canal
3. Being without symptoms
7. A suspension of diluted or killed microorganisms administered by injection or ingestion in order to stimulate the production of antibodies to promote an active immunity to that pathogen
9. The study of the ways in which the body resists infection
10. A process of heating a food to destroy pathogens in the food
11. The degree to which a person is likely to contract a disease

Down
1. An organism capable of spreading disease
4. Substance expelled from the respiratory tract that may contain mucus, pus, cellular materials, blood, and other materials
5. A separation of tissue
6. The state of being protected from the effects of a pathogen, generally due to having received a vaccination or because of the body’s production of antibodies from a previous exposure to the organism
8. An inflammatory condition of the large intestine characterized by severe diarrhea, bleeding, ulceration of the mucosa of the intestine
Module 3

Objective 15

Assignment Sheet 3—Conduct a Sanitation Inspection of the Salon/Laboratory and Classroom

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria Rating

• Conducted thorough inspection of the salon/laboratory and classroom for cleanliness and sanitary conditions _______
• Participated in an integration activity to grow and evaluate bacteria in Petri dishes _______
• Used team dynamics to compile the report of findings _______
• Clearly and concisely presented observations and findings to class _______
• Teamwork demonstrated throughout completion of assignment _______

Basic Skills

Directions

Part 1

Select a partner and begin inspection of the salon/laboratory and classroom. Inspection should include but not limited to the following:

Yes or No

• Inspect the salon or laboratory area
  — Liquid sanitizer is fresh and mixed to appropriate strength _______
  — Ultra-violet or other sanitizers are in good working condition and clean _______
  — Combs and brushes are free of hair and flakes _______
  — Shampoo bowls are clean _______

 ✔ Check

• Take a swab for bacteria from the doorknobs to the classroom. Place in a Petri dish for bacteria culture growth. _______

• Take a swab for bacteria from the desks. Place in a Petri dish for bacteria culture growth. _______

• Take a swab for bacteria from the books. Place in a Petri dish for bacteria culture growth. _______
Assignment Sheet 3

Directions

Part 2

- Take a swab for bacteria from the shampoo bowl neck area. Place in a Petri dish for bacteria culture growth.
- Place a hair that has just been shampooed in a Petri dish for culture growth.
- Place a hair that needs to be shampooed in a Petri dish for culture growth.
- Place your finger in a Petri dish for culture growth.
- Set the Petri dishes in a secure area.

Work with the science class or health science class to determine the growth in each Petri dish for five days. View bacteria cultures under a microscope. Participate in the class using team dynamics to develop a report of findings on observations and cultures taken. Be sure to take notes and be prepared to report your observations and findings to class.
Module 3

Objective 16

Assignment Sheet 4—Analyze Cosmetology Scenarios

Name _________________________________________________________

Date _________________________________ Score __________________

Evaluation Criteria Rating

• Analysis demonstrates the ability to apply knowledge of the information presented in Information Sheet to a given situation ______

• Answers are clear and concise ______

• Handwriting is neat and legible ______

Basic Skills

Reading  Writing  Science  Interpersonal  Critical Thinking

Directions

Read each scenario and answer the questions that follow.

Scenario 1

As Ms. Leeman enters the salon you notice that she is upset, nervous, and anxious about something. She looks at herself in the mirror more than usual and is fidgety. You greet her and ask how she is doing. She explains that she has just come from the doctor and he told her that she is a “host” for an organism but her resistance is strong and she has nothing to worry about. She is taking the medication the doctor prescribed but she just does not know how this could have happened to her. She begins to cry and asks you what can be done. She says she has no idea how she became a “host”, and what the doctor meant when he told her that her resistance was strong and she has nothing to worry about.

What should you do?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
### Scenario 2
A phone call is received in the salon from a lady that was a client the day before with her teenage son. She informs the receptionist that her son has been diagnosed with meningitis and the doctor asked her to call the salon and let everyone know. She states that James was the stylist that assisted her son.

What should you do?

### Scenario 3
During a haircut, you accidentally nip the client’s ear and blood is present.

1. What should you do?

2. What is required for implements to be sterilized following contact with blood or body fluids?
3. What policy and standard brought about the requirement of using EPA-registered disinfectants in the salon?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Module 3

Infection, Immunology, and Sanitation

Objective 17

Assignment Sheet 5—Complete Module 3 Review

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Directions were followed _______

• Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet _______

Basic Skills

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 1

1. A toxin is ______.
   a. an organism that serves as a temporary home for another organism
   b. an organism that is capable of producing disease in another
   c. a substance that is harmful to cells
   d. a condition that occurs in association with a disease that can be evidence of the presence of the disease

Objective 12

2. Which of the following organisms is a leading cause of post-operative infections?
   a. esherichia coli
   b. bacillus anthracis
   c. streptococcus
   d. staphylococcus aureus

Objective 12

3. ______ is an inflammatory condition of the large intestine characterized by severe diarrhea, bleeding, and ulceration of the mucosa of the intestine.
   a. Staph infection
   b. Strep infection
   c. Colitis
   d. AIDS
Objective 3  4. A special medication that slows or stops the growth of certain microorganisms is ______.
   a. a vaccination
   b. an antibiotic
   c. an antiseptic
   d. a sterilant

Objective 1  5. ______ is the presence and multiplication of an organism that results in harm or disease to a host.
   a. Immunity
   b. Immunology
   c. Infection
   d. Sanitation

Objective 5  6. Which of the following statements is NOT a normal portal of exit from the body for pathogens?
   a. skin lesions
   b. mouth
   c. intact skin
   d. genitourinary openings

Objective 2  7. The harmful effects of an infection on a host may be the direct result of an action taken by the pathogen or the result of ______ produced by the pathogen.
   a. medications
   b. vibrations
   c. leukocytes
   d. toxins

Objective 2  8. The ability of a host to avoid infection and reduce harm caused by an infecting organism is called ______.
   a. virulence
   b. resistance
   c. dehiscence
   d. necrosis

Objective 4  9. A ______ infection is one that has spread throughout a host’s body from an initial site.
   a. localized
   b. systemic
   c. organic
   d. self-limiting
<table>
<thead>
<tr>
<th>Objective 7</th>
<th>10. ______ is the study of the ways in which the body resists infection.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Anatomy</td>
</tr>
<tr>
<td></td>
<td>b. Physiology</td>
</tr>
<tr>
<td></td>
<td>c. Infectionology</td>
</tr>
<tr>
<td></td>
<td>d. Immunology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 9</th>
<th>11. Which of the following phrases is NOT a reason for controlling the growth of microorganisms?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. To prevent the spread of illness</td>
</tr>
<tr>
<td></td>
<td>b. To produce pathogens under controlled circumstances to gain better understanding of them and to develop vaccines and other control measures for them</td>
</tr>
<tr>
<td></td>
<td>c. To prevent the contamination of sterile products during the production process</td>
</tr>
<tr>
<td></td>
<td>d. To aid in faster production processes for carbonated drinks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 10</th>
<th>12. Which of the following is a chemical method used to destroy bacteria on a living organism?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. cold</td>
</tr>
<tr>
<td></td>
<td>b. disinfectant</td>
</tr>
<tr>
<td></td>
<td>c. antiseptic</td>
</tr>
<tr>
<td></td>
<td>d. ultrasonic waves</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>13. A ______ is an organism that is capable of producing disease in another organism.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. virulence</td>
</tr>
<tr>
<td></td>
<td>b. pathogen</td>
</tr>
<tr>
<td></td>
<td>c. toxin</td>
</tr>
<tr>
<td></td>
<td>d. fomite</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4</th>
<th>14. An ______ infection is one that runs a rapid and severe course and then ends abruptly.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. intermittent</td>
</tr>
<tr>
<td></td>
<td>b. elementary</td>
</tr>
<tr>
<td></td>
<td>c. chronic</td>
</tr>
<tr>
<td></td>
<td>d. acute</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4</th>
<th>15. The first-occurring infection within a period of illness is called the ___.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. initial infection</td>
</tr>
<tr>
<td></td>
<td>b. onset infection</td>
</tr>
<tr>
<td></td>
<td>c. primary disease</td>
</tr>
<tr>
<td></td>
<td>d. precursor disease</td>
</tr>
<tr>
<td>Objective 5</td>
<td>16. Which of the following statements is NOT a true statement about the spread of diseases?</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>a. Persons who have recovered from a disease or who are asymptomatic may be carriers and transmit the disease to others.</td>
<td></td>
</tr>
<tr>
<td>b. The aseptic conditions in hospitals prevent diseases from being passed from person to person.</td>
<td></td>
</tr>
<tr>
<td>c. The most common portals of entry for pathogens are breaks in the skin.</td>
<td></td>
</tr>
<tr>
<td>d. Pathogens that live in the soil, on other surfaces, or in contaminated foods can also enter the body through portals of entry.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 6</th>
<th>17. ______ combats pathogens by cleansing the pores and raising the level of acidity on the skin.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cerumen</td>
<td></td>
</tr>
<tr>
<td>b. Sebum</td>
<td></td>
</tr>
<tr>
<td>c. Normal flora</td>
<td></td>
</tr>
<tr>
<td>d. Perspiration</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>18. The body produces memory cells as part of ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. naturally acquired active immunity</td>
<td></td>
</tr>
<tr>
<td>b. artificially acquired active immunity</td>
<td></td>
</tr>
<tr>
<td>c. both A and B</td>
<td></td>
</tr>
<tr>
<td>d. neither A nor B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 11</th>
<th>19. Which of the following phrases is NOT a factor that normally contributes to nosocomial infections?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. a false sense of security</td>
<td></td>
</tr>
<tr>
<td>b. facility staffing</td>
<td></td>
</tr>
<tr>
<td>c. improper hand-washing techniques</td>
<td></td>
</tr>
<tr>
<td>d. aseptic procedures</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>20. A condition, such as fever, chills, and loss of appetite, that occurs in association with a disease is a ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. leukocyte</td>
<td></td>
</tr>
<tr>
<td>b. toxin</td>
<td></td>
</tr>
<tr>
<td>c. symptom</td>
<td></td>
</tr>
<tr>
<td>d. infecting organism</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>21. The ability of an infecting organism to harm a host is referred to as ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. virulence</td>
<td></td>
</tr>
<tr>
<td>b. resistance</td>
<td></td>
</tr>
<tr>
<td>c. dehiscence</td>
<td></td>
</tr>
<tr>
<td>d. necrosis</td>
<td></td>
</tr>
</tbody>
</table>
| Objective 3 | 22. Some infections can be prevented through ______.  
| a. vaccinations  
| b. incubation  
| c. contamination  
| d. eventration |
| Objective 5 | 23. Typically, a disease will spread from an infected host’s portals of ______ to a second host’s portals of ______.  
| a. entry, exit  
| b. exit, entry  
| c. either A or B  
| d. neither A nor B |
| Objective 5 | 24. Which of the following is NOT a normal portal of entry into the body for pathogens?  
| a. breaks in the skin  
| b. nose  
| c. intact skin  
| d. mouth |
| Objective 6 | 25. Tears combat pathogens by ______.  
| a. ridding the eyes of contaminants and helping to seal and lubricate the eyelids to prevent entry of organisms  
| b. containing enzymes that help break down invading pathogens and prevent them from colonizing on the eyelids  
| c. maintaining a slightly acidic environment to prevent microorganisms from becoming established on the eyelids  
| d. providing a coating that prevents pathogens from making direct contact with the eyes |
| Objective 7 | 26. Genetic immunity is based on ______.  
| a. one’s inherited genetic makeup  
| b. the pathogen’s genetic makeup  
| c. the production of antibodies  
| d. vaccinations |
| Objective 7 | 27. When an individual is given a vaccine, her or his body produces antibodies in response to the pathogen. This is a characteristic of ______.  
| a. naturally acquired active immunity  
| b. artificially acquired active immunity  
| c. both A and B  
<p>| d. neither A nor B |</p>
<table>
<thead>
<tr>
<th>Objective 12</th>
<th>28. Which of the following organisms is responsible for AIDS?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. human papilloma virus</td>
</tr>
<tr>
<td></td>
<td>b. human immunodeficiency virus</td>
</tr>
<tr>
<td></td>
<td>c. pseudomonas aeruginosa</td>
</tr>
<tr>
<td></td>
<td>d. mycobacterium species</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>29. ______ diseases can spread from one human host to another through direct or indirect contact.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Communicable</td>
</tr>
<tr>
<td></td>
<td>b. Congenital</td>
</tr>
<tr>
<td></td>
<td>c. Immunological</td>
</tr>
<tr>
<td></td>
<td>d. Aseptic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4</th>
<th>30. An infection that is limited to one organ or site of a host’s body is said to be ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. localized</td>
</tr>
<tr>
<td></td>
<td>b. systemic</td>
</tr>
<tr>
<td></td>
<td>c. organic</td>
</tr>
<tr>
<td></td>
<td>d. self-limiting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>31. When an individual contracts a disease, his or her body naturally produces ______ in response to the pathogen.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. antigens</td>
</tr>
<tr>
<td></td>
<td>b. antibodies</td>
</tr>
<tr>
<td></td>
<td>c. vaccines</td>
</tr>
<tr>
<td></td>
<td>d. serum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>32. A process that destroys pathogens on surfaces is called ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. sanitation</td>
</tr>
<tr>
<td></td>
<td>b. asepsis</td>
</tr>
<tr>
<td></td>
<td>c. pasteurization</td>
</tr>
<tr>
<td></td>
<td>d. sterilization</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 10</th>
<th>33. Which of the following is the most-effective method of controlling all microbial growth through the effects of an autoclave?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. cold</td>
</tr>
<tr>
<td></td>
<td>b. dry heat</td>
</tr>
<tr>
<td></td>
<td>c. moist heat</td>
</tr>
<tr>
<td></td>
<td>d. pressurized steam</td>
</tr>
</tbody>
</table>
### Objective 2

34. The body produces special cells that recognize pathogens and

   a. avoid them  
   b. escort them from the body  
   c. destroy them  
   d. increase their rate of reproduction

### Objectives 2 & 3

35. Which of the following statements is NOT correct with regard to infections?

   a. An infection may result in observable symptoms in a host, or the infection may occur without symptoms.  
   b. Once an infection has occurred, there is no way to improve the body’s ability to fight the infection.  
   c. An infection may be localized or systemic.  
   d. The spread of infection can be reduced by using antiseptic practices, cleaning with disinfectants, and sterilizing instruments and surgical materials.

### Objective 4

36. An infection that lasts for a long period of time—from weeks to several years—is called a(n) ______ infection.

   a. chronic  
   b. acute  
   c. latent  
   d. primary disease

### Objective 4

37. A subsequent infection or complication to an existing condition is called a ______.

   a. recurring illness  
   b. chronic disease  
   c. secondary disease  
   d. postoperative disease

### Objective 8

38. A chemical used to destroy or reduce the growth of pathogens on people is called ______.

   a. an antiseptic  
   b. a disinfectant  
   c. an aseptic  
   d. a dessicant
<table>
<thead>
<tr>
<th>Objective 10</th>
<th>39. Which control method may include gloves to prevent microbes from reaching portals of entry?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. barrier</td>
</tr>
<tr>
<td></td>
<td>b. filtration</td>
</tr>
<tr>
<td></td>
<td>c. sterilization</td>
</tr>
<tr>
<td></td>
<td>d. disinfectant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 6</th>
<th>40. ______ contains enzymes that help break down invading pathogens and prevent them from colonizing in the area.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Saliva</td>
</tr>
<tr>
<td></td>
<td>b. Perspiration</td>
</tr>
<tr>
<td></td>
<td>c. Tears</td>
</tr>
<tr>
<td></td>
<td>d. Mucus</td>
</tr>
</tbody>
</table>
Module 4  

Objective 11

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–10)

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>• Terms were identified correctly</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  
Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Assignment Sheet 1

Across
1. Smooth, involuntary muscle tissue that lines the walls of hollow organs
4. A fibrous connective tissue that connects muscle to bones
8. A structure consisting of two or more tissues that performs a specific function of the body
9. A collection of cells that share a similar structure and are organized to perform a specific function
11. A fibrous connective tissue that joins one bone to another
12. The connective tissue that makes up the inner layer of skin
13. Lined with grooves
14. A covering, especially a loose-fitting one

Down
2. Striated, voluntary muscle tissue attached to bones
3. Muscles that work automatically
5. The covering of the internal organs of the body, also the lining of the vessels, body cavities, glands, and organs
6. Muscles that are consciously controlled by the will of a person
7. A band of connective tissue that covers or binds together body structures within body cavities
10. Striated, involuntary muscle tissue that composes the walls of the heart
Objective 12

Assignment Sheet 2—Develop a Presentation on Basic Tissue of the Human Body

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Presentation reflects research findings related to name, description, function, shape or surface view _______

• Presentations is clear and concise and includes:
  — basic types of tissue
  — functions of basic types of tissue
  — types of connective tissue
  — basic types of nerve tissue
  — factors that determine muscle-tissue classifications
  — factors that relate to the cosmetologist

• Teamwork demonstrated throughout completion of assignment _______

Basic Skills

Reading  Writing  Science  Oral Communication  Interpersonal  Technology

Directions

Part 1

Research basic tissue of the human body using resources available on the Internet or provided by your instructor. Work as part of a team with other students and write your findings below. This information will help you in developing and organizing your team presentation about the selected tissue.

Description ____________________________________________________

Function _______________________________________________________

Shape or surface view _____________________________________________

and one of the following:

  — Type of connective tissue ______________________________________
    ___________________________ and

  — Functions of connective tissue _________________________________
    ___________________________ or
Assignment Sheet 2

Directions
Part 2

Work as a team to develop a PowerPoint® presentation that will explain the findings of the research. Relate the importance of healthy tissue to the human body and to the cosmetologist. Where access to PowerPoint® is not possible, you may use flip charts, posters or other means of media to develop the presentation. Practice your presentation with team members. Give your presentation and provide explanation of the subject matter and answer any questions from your classmates or instructor.
Module 4

Assignment Sheet 3—Complete Module 4 Review

Name _________________________________________________________

Date _________________________________  Score ____________________

Evaluation Criteria Rating

• Directions were followed ________

• Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet ________

Basic Skills

Reading  Science

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 5  1. Neurons are capable of generating ______ impulses that carry information to and from the brain.

   a. mechanical
   b. chemical
   c. electromagnetic
   d. electrochemical

Objective 4  2. Which of the following statements are NOT true?

   a. A tendon is a fibrous connective tissue that joins one bone to another.
   b. A ligament is a fibrous connective tissue that joins one bone to another.
   c. A tendon is a fibrous connective tissue that connects muscle to bones.
   d. A ligament is bone tissue that joins one bone to another.

Objective 2  3. Tissue consisting of cells bound together by connective material and varying in the number of layers and the kinds of cells is ______ tissue.

   a. connective
   b. muscle
   c. epithelial
   d. nerve
<table>
<thead>
<tr>
<th>Objective 4</th>
<th>4. ______ tissue is a type of connective tissue located in the lymph nodes, spleen, tonsils, and thymus, and it forms certain types of white blood cells.</th>
</tr>
</thead>
</table>
|            | a. Lymphatic  
|            | b. Cartilage  
|            | c. Bone  
|            | d. Blood |
| Objective 7 | 5. Neurons are surrounded by specialized cells that form the ______. |
|            | a. Sheath of Schwann, which electrically isolates neurons  
|            | b. Golgi apparati, which support the neurons  
|            | c. interstitial cells that improve the electrical conductivity of the neurons  
|            | d. none of the above |
| Objective 10 | 6. ______ are collections of tissues that are organized in such a way that they are able to perform specific functions. |
|            | a. Organs  
|            | b. Membranes  
|            | c. Organisms  
|            | d. Carbohydrates |
| Objective 7 | 7. Sensory neurons are sometimes referred to as ______ neurons. |
|            | a. efferent  
|            | b. afferent  
|            | c. effector  
|            | d. transmitter |
| Objective 1 | 8. A ______ is a collection of cells that share a similar structure and are organized to perform a specific function. |
|            | a. serous cavity  
|            | b. nerve  
|            | c. neuron  
|            | d. tissue |
| Objective 4 | 9. ______ tissue is a type of connective tissue located under the skin, and it functions to provide padding, insulation, and a place to store fats. |
|            | a. Areolar  
|            | b. Adipose  
|            | c. Bone  
<p>|            | d. Blood |</p>
<table>
<thead>
<tr>
<th>Objective 8</th>
<th>10. ______ tissue is striated, involuntary muscle tissue that composes the walls of the heart.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Cardiac</td>
</tr>
<tr>
<td></td>
<td>b. Skeletal</td>
</tr>
<tr>
<td></td>
<td>c. Cartilage</td>
</tr>
<tr>
<td></td>
<td>d. Visceral</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 9</th>
<th>11. A structure consisting of two or more tissues that performs a specific function for the body is ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. an organ</td>
</tr>
<tr>
<td></td>
<td>b. a membrane</td>
</tr>
<tr>
<td></td>
<td>c. a viscera</td>
</tr>
<tr>
<td></td>
<td>d. an epi-connective junction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>12. Tissue consisting of one or more bundles of impulse-carrying fibers that connect the brain and the spinal cord with other parts of the body is ______ tissue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. connective</td>
</tr>
<tr>
<td></td>
<td>b. muscle</td>
</tr>
<tr>
<td></td>
<td>c. epithelial</td>
</tr>
<tr>
<td></td>
<td>d. nerve</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>13. The ______ is the covering of the internal organs of the body and also the lining of the vessels, body cavities, glands, and organs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. epithelium</td>
</tr>
<tr>
<td></td>
<td>b. connective tissue</td>
</tr>
<tr>
<td></td>
<td>c. squamous membrane</td>
</tr>
<tr>
<td></td>
<td>d. columnar membrane</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4</th>
<th>14. What type of connective tissue is located in the nose, ears, trachea, and eustachian tubes and at bone joints and provides firm-but-not-rigid structure and padding between bones?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. cartilage</td>
</tr>
<tr>
<td></td>
<td>b. elastic</td>
</tr>
<tr>
<td></td>
<td>c. myeloid</td>
</tr>
<tr>
<td></td>
<td>d. lymphatic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 3</th>
<th>15. ____________ tissue conducts electrical signals through the body.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Epithelial</td>
</tr>
<tr>
<td></td>
<td>b. Connective</td>
</tr>
<tr>
<td></td>
<td>c. Nerve</td>
</tr>
<tr>
<td></td>
<td>d. Muscle</td>
</tr>
</tbody>
</table>
### Objective 7

16. Nerve-system impulses cannot cross between neurons unless the space between is filled with special chemicals called ______.

   a. nucleotides  
   b. transmitter fluids  
   c. neurotransmitters  
   d. conductive coagulates

### Objective 8

17. ______ tissue is striated, voluntary muscle tissue attached to bones.

   a. Cardiac  
   b. Skeletal  
   c. Cartilage  
   d. Visceral

### Objective 7

18. The______ of one neuron is separated from a ______ of an adjoining neuron by a space called a ______.

   a. nephron, axon, dendrite  
   b. axon, dendrite, synapse  
   c. dendrite, synapse, nephron  
   d. synapse, nephron, axon

### Objective 4

19. ______ tissue is a type of connective tissue located in tendons, ligaments, deep fascia, dermis, and the kidneys; it provides strong, flexible connections and the formation of scars.

   a. Reticular  
   b. Myeloid  
   c. Fibrous  
   d. Areolar

### Objective 6

20. ______ carry nervous-system impulses to the cell body of a neuron.

   a. Axons  
   b. Nephrons  
   c. Synapses  
   d. Dendrites

### Objective 4

21. Which of the following statements is NOT correct with regard to the connective tissue blood?

   a. Blood tissue transports materials, including oxygen, throughout the body.  
   b. Blood tissue is located throughout the blood system.  
   c. Blood tissue combats foreign organisms and cells.  
   d. Blood tissue forms certain types of white blood cells.
<table>
<thead>
<tr>
<th>Objective 7</th>
<th>22. ______ carry impulses from the central nervous system to effectors that cause responses in the muscles and glands.</th>
</tr>
</thead>
</table>
|             | a. Interneurons  
|             | b. Motor neurons  
|             | c. Sensory neurons  
|             | d. Interferent neurons  |

<table>
<thead>
<tr>
<th>Objective 5</th>
<th>23. Neuroglia are located in the ______.</th>
</tr>
</thead>
</table>
|             | a. central nervous system  
|             | b. muscular system  
|             | c. integumentary system  
|             | d. parasympathetic nervous system  |

<table>
<thead>
<tr>
<th>Objective 3</th>
<th>24. _________________ tissue allows the movement of the movable structures of the body.</th>
</tr>
</thead>
</table>
|             | a. Epithelial  
|             | b. Connective  
|             | c. Nerve  
|             | d. Muscle  |

<table>
<thead>
<tr>
<th>Objective 6</th>
<th>25. ______ carry nervous-system impulses from the cell body of a neuron.</th>
</tr>
</thead>
</table>
|             | a. Axons  
|             | b. Nephrons  
|             | c. Synapses  
|             | d. Dendrites  |

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>26. ______ are located in the central nervous system and support higher-order functions such as thinking and learning.</th>
</tr>
</thead>
</table>
|             | a. Interneurons  
|             | b. Motor neurons  
|             | c. Sensory neurons  
|             | d. Interferent neurons  |

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>27. ______ tissue is smooth, involuntary muscle tissue that lines the walls of hollow organs.</th>
</tr>
</thead>
</table>
|             | a. Cardiac  
|             | b. Skeletal  
|             | c. Cartilage  
|             | d. Visceral  |
### Assignment Sheet 3

**Objective 10**

28. The overall goal of organ-system functions is to ____.
   - a. shut down the body in the event of an emergency
   - b. energize the body in the event of an emergency
   - c. maintain a state of homeostasis in the body
   - d. provide nutrients to the body

Objective 7

29. _______ carry signals from receptors in the skin, skeletal muscles, joints, and organs to the central nervous system.
   - a. Interneurons
   - b. Motor neurons
   - c. Sensory neurons
   - d. Interferent neurons

**Objective 10**

30. The organs have ______ mechanisms that send signals to the central nervous system about the conditions that they monitor.
   - a. reflex
   - b. motorsensory
   - c. feedback
   - d. neurotransmitter

**Objective 3**

31. Providing a protective barrier against extreme temperatures, environmental contaminants, and invasions by microorganisms while allowing secretion and excretion of wastes is the main function of ____________ tissue.
   - a. epithelial
   - b. connective
   - c. nerve
   - d. muscle

**Objective 4**

32. Which of the following statements is NOT true with regard to bone connective tissue?
   - a. Bone tissue produces lymph, which is circulated by the lymphatic system.
   - b. Bone tissue is located in the skeleton.
   - c. Bone tissue forms bones that support the body.
   - d. Bone tissue forms bones that protect organs and tissues.
Objective 3

33. ________________ tissue binds to other tissue structures to support and organize the body, binds to foreign cells to protect the body, and binds to molecules to transport materials through the body.

   a. Epithelial  
   b. Connective  
   c. Nerve  
   d. Muscle

Objective 8

34. Which of the following is NOT a factor that determines muscle-tissue classifications?

   a. Structural composition  
   b. Level of conscious control  
   c. Strength  
   d. Location
Module 5  

**Integumentary System**

**Objective 18**

**Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–7)**

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>• Terms were identified correctly</td>
<td>______</td>
</tr>
</tbody>
</table>

**Basic Skills**

- Reading
- Science

**Directions**

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Across
5. Containing nerve endings and, therefore, can feel sensation
7. The Latin term for “horn”
8. A fibrous, sulfur-containing protein that is the primary component of the epidermis, hair, nails, and enamel of the teeth
10. A small space or a cavity within a tissue
11. The Latin term for “clear”
12. A kind of connective tissue having little tensile strength and consisting of loosely woven fibers and areolas
13. The structures that cover the exposed surfaces of the body

Down
1. Beneath the skin
2. The Latin term for “base layer”
3. The Latin term for “germination”
4. Containing blood or lymph vessels
5. The Latin term for “layer”
6. A protrusion that extends into the epidermal area
9. A protein that absorbs ultraviolet light to give coloration to body structures; also referred to as a pigment
Module 5  

Integumentary System

Objective 19

Assignment Sheet 2—Complete the Crossword Puzzle of Terms (Objectives 8–14)

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Directions were followed

• Terms were identified correctly

Basic Skills

Reading  

Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across

1. Grey hair
2. Hair loss later in life
3. Excessive hair growth
4. Hair loss all over the body
5. Ringworm caused by a vegetable parasite
6. Condition characterized by the lack of pigment and normally affects eyes, skin, and hair
7. Small white flakes appearing on hair or scalp; also known as dandruff
8. Hair loss early in life
9. Bald patches, usually caused by body disorders; hair generally grows back
10. Bundles of involuntary muscle fiber that contract against the follicle when the skin is cold or during certain emotional states, causing the hair shaft to stand upright
11. Any diseased condition of the hair
12. Ingrown hair
13. The gland that is connected to the dermal shaft that surrounds the root of a hair
14. Beaded hair
15. The thin edge of cornified epithelium at the base of a nail
16. Baldness
17. The Latin term meaning “little moon”; the crescent-shaped white area at the base of a nail
18. A tube that extends from the dermis through the epidermis and to the surface of the skin
19. The oily secretion of the sebaceous glands of the skin; composed of keratin, fat, and cellular debris
20. A small structure located in the deep layers of the dermis with a duct that exits through a pore in the epidermis; the gland consists of a coiled tube surrounded by capillaries
21. A horny, translucent cover protecting the tip of each finger and toe and the underlying tissue associated within
22. A formation of specialized cells within the skin that performs a particular function
23. Split end

Down

2. Hair loss later in life
3. Excessive hair growth
4. Hair loss all over the body
5. Ringworm caused by a vegetable parasite
6. Condition characterized by the lack of pigment and normally affects eyes, skin, and hair
7. Head lice
8. Hair loss early in life
9. Bald patches, usually caused by body disorders; hair generally grows back
10. Bundles of involuntary muscle fiber that contract against the follicle when the skin is cold or during certain emotional states, causing the hair shaft to stand upright
11. Any diseased condition of the hair
12. Ingrown hair
13. The gland that is connected to the dermal shaft that surrounds the root of a hair
15. The thin edge of cornified epithelium at the base of a nail
18. A tube that extends from the dermis through the epidermis and to the surface of the skin
19. The oily secretion of the sebaceous glands of the skin; composed of keratin, fat, and cellular debris

MAVCC—A Cosmetologist's Introduction to Anatomy and Physiology
Objective 20

Assignment Sheet 3—Complete the Crossword Puzzle of Terms (Objectives 15 and 16)

Name ____________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating
•  Directions were followed ________
•  Terms were identified correctly ________

Basic Skills

Reading  Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
1.  A growth that extends into the cavity of a mucous membrane or appears on the skin
6.  Blackheads; mass of hardened sebum in a hair follicle
8.  Whitehead; small whitish mass of the epidermis, due to retention of sebum
9.  Congestion appearing primarily on the cheeks and nose, characterized by redness, dilation of blood vessels, and the formation of papules and postules
10.  A suddenly appearing raised patch that is usually redder than the surrounding skin; is often accompanied by severe itching; and is usually caused by an allergic reaction, infection, or stress
12.  Medical term for athlete’s foot or ringworm; a fungal infection of the foot; in advanced stages, deep, itchy, colorless vesicles appear and may be located on one foot or both
13.  Inflammatory condition of the skin
14.  Overactivity of the sebaceous glands; usually produces a shiny appearance on the nose and forehead
17.  An elevation of skin filled with pus
19.  A wart that is caused by a virus and may be contagious; also known as “plantar warts”
20.  A sac that contains any fluid substance other than pus
22.  An inflammation and infection of the dermis and subcutaneous tissue caused by bacteria that enter the skin through a hair follicle; a boil
23.  A painful, pus-producing infection above and below the skin; can infect hair follicles

Down
2.  Skin disease characterized by red patches, covered with white-silver scales; rarely occurs on the face but is found on the scalp, elbows, knees, chest, and lower back
3.  An accumulation of white blood cells, pathogens, dead or damaged cells, and other substances associated with an infection
4.  Thick scar resulting from the excessive growth of fibrous tissue
5.  Fever blister or cold sores found on the lips or nostrils; caused by a virus; disease characterized by red, swollen, raised vesicles
7.  Commonly known as ringworm; highly contagious fungal infection that affects the skin, scalp, or the nails
11.  Crack or break in the skin; found on hands and heels
15.  A blister
16.  An inflammatory lesion on the skin that may contain pus
18.  Inflammatory, painful disease of the skin, acute or chronic in nature; characteristics may include both dry or moist lesions
21.  An infection and inflammation of the sebaceous glands
Module 5

Assignment Sheet 4—Complete the Crossword Puzzle of Terms (Objective 17)

Name _________________________________________________________
Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>Terms were identified correctly</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
3. Caused by improper filing, excessive use of cuticle solvents and nail polish remover, or injury to the finger
5. Split cuticle that may become infected and bleed; caused by accidental injury, by pulling or tearing due to nail biting, or by improperly cutting or clipping the cuticle
6. Forward growth of the cuticle which adheres to the base of the nail
8. Swelling of the nail
9. Fungal infection caused by trapped moisture; green spot under artificial nail or polish on natural nail
11. Inflammation of the nail matrix, accompanied by pus formation
13. Thin nails caused by chronic illness, nerve disorder, or a systemic disturbance
14. Growth of horny epithelium in the nail bed
16. Depressions in the nail; caused by an injury to the matrix, illness, or nutritional disturbance
17. A condition of the nail separating from the nail bed, caused by stress to long nails
18. White spots on the nail; caused by tiny air bubbles in the name or by the presence of incompletely keratinized cells due to an injury to the nail base
19. Wasting away of the nail; caused by injury to the nail matrix or disease
20. Technical term for ingrown nails; may affect finger or toe

Down
1. Ringworm of the nail; caused by vegetable parasite
2. An infection of the fold of skin at the margin of a nail
4. Nervous habit which causes individual to chew the nail; hardened cuticles may result in nail becoming permanently deformed
7. Pertains to enlarged and increased curvature of the nail; often referred to as “claw nails”
10. Overgrowth or thickening of the nail plate; can be caused by internal disturbance, local infection, continued trauma such as ill fitting shoes, or by heredity
12. Condition caused by poor blood circulation or heat disorder
14. Periodic shedding of part or all of nail
15. Wavy ridges on the nail; caused by uneven growth patterns due to interruptions in growth from illness
Module 5

Integumentary System

Objective 22

Assignment Sheet 5—Create a Graphic Organizer

Name _________________________________________________________
Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Organizer reflects a comparison of the major structures</td>
<td>______</td>
</tr>
<tr>
<td>that makes up the integumentary system and characteristics</td>
<td></td>
</tr>
<tr>
<td>of each</td>
<td>______</td>
</tr>
<tr>
<td>• Organizer is clear and concise and includes:</td>
<td>______</td>
</tr>
<tr>
<td>— Function of the skin and</td>
<td>______</td>
</tr>
<tr>
<td>— Function of one auxiliary appendage</td>
<td>______</td>
</tr>
<tr>
<td>• Used the completed graphic organizer to write paper</td>
<td>______</td>
</tr>
<tr>
<td>comparing the major structures that make up the</td>
<td>______</td>
</tr>
<tr>
<td>integumentary system</td>
<td>______</td>
</tr>
<tr>
<td>• Followed teacher's directions pertaining to the style</td>
<td>______</td>
</tr>
<tr>
<td>and length of paper to be written</td>
<td>______</td>
</tr>
<tr>
<td>• Used computer to write the paper</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Writing  Science  Interpersonal  Critical Thinking  Technology

Directions

Part 1

Select the type of Graphic Organizer to use or use the one your teacher provides. Research the Integumentary System of the human body using resources available on the Internet or provided by your instructor. Work individually or as a team to determine your findings.

Make a rough sketch of the graphic organizer you will use. Input your findings concerning the major structures of the skin and one auxiliary appendage and the function of the skin and function of the same auxiliary appendage. This will assist you in organizing your thoughts for the development of the written paper.

In the space where the circles overlay, write information that relates to both the function of the skin and the function of an auxiliary appendage. In the space of the individual circles, write information that is different between the function of the skin and the function of an auxiliary appendage.

Directions

Part 2

Using the information on your graphic organizer, develop a paper comparing the major structures that make up the integumentary system. Follow your teacher’s directions pertaining to length and style, and use a computer, if available, to write your paper.
Assignment Sheet 5

Example: Graphic Organizer
Module 5  Integumentary System

Objective 23

Assignment Sheet 6—Review the Structures, Layers, and Glands of the Skin

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Answers were posed in the form of a question</td>
<td>______</td>
</tr>
<tr>
<td>• Answers indicated knowledge of subject matter</td>
<td>______</td>
</tr>
<tr>
<td>• Teamwork exhibited throughout the activity</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Science  Oral Communication  Interpersonal

Directions

Using the principles of the Jeopardy game show, students should state questions to the answers provided by the instructor or selected game host. Teams of 2 to 5 students should be formed to compete in this activity.

Jeopardy Example: The outer layer of the dermis that lies next to the basal layer of the epidermis and is patterned with papillae and hollows.

Correct team response would be: What is the papillary layer?

The purpose of this activity is to learn more or reinforce knowledge concerning information relating to the integumentary system, including:

— Major structures of the skin
— Layers of the epidermis
— Layers of the dermis
— Functions of glands in the skin

Suggested Game Rules

1. Determine first team by picking numbers.
2. Determine the time given to each team to give an answer.
3. Award 10 points for each correct response.
4. Give each team an opportunity to answer two correctly before moving to the next team. A missed question results in immediate movement to next team.
5. Points are never deducted.
6. First team to 100 wins competition, or if time is limited, the team with the highest points at the end of the designated time period, is declared the winner.
Module 5

Objective 24

Assignment Sheet 7—Analyze Cosmetology Scenarios

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Analysis demonstrates the ability to apply knowledge</td>
<td>______</td>
</tr>
<tr>
<td>of the information presented in the Information Sheet</td>
<td>______</td>
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<tr>
<td>to a given situation</td>
<td>______</td>
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<tr>
<td>• Answers are clear and concise</td>
<td>______</td>
</tr>
<tr>
<td>• Handwriting is neat and legible</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Writing  Science  Oral Communication  Interpersonal  Critical Thinking

Directions

Read each scenario and answer the questions that follow.

Scenario 1

Mr. Eagle, a new client, comes in for a shampoo and haircut. As you prepare Mr. Eagle for the shampoo, you notice several lumps on his scalp. In analyzing the lumps, you find smooth raised areas of various sizes. The skin is closed and no pus is present.

Mr. Eagle makes the following statement, “As you can see, I have several cysts on my scalp, but they are not tender. I have had them for a long time. I could have them removed but I see no reason because they don’t cause me or anyone else any problems. You have nothing to worry about except leaving my hair long enough to cover them.”

1. What type of cysts does Mr. Eagle have on his scalp? _____________

2. What characteristic of the hair is involved with the abnormality?

3. What causes this characteristic? _______________________________

Module 5  Integumentary System
Assignment Sheet 7

Scenario 2

While Mr. Eagle is in the salon, he asks you to look at several of his fingernails. Two of the fingernails have redness, swelling, and pus in the tissue surrounding the nail plate. Three other fingernails appear to have separated from the nail bed.

1. What is the technical term for infection of the fold of skin surrounding the nail? ________________________________________________

2. What is the technical term for the condition of the nail separating from the nail bed? ___________________________________________

3. What is the most common cause of the nail separating from the nail bed? ____________________________________________________

4. What should you do? _______________________________________

Scenario 3

Mr. Sebastian comes in to the salon for a haircut. You notice a pustule on his neck.

1. Define pus. _______________________________________________

2. Define pustule. ____________________________________________

3. What is a common cause of a pustule on the neck of men? ________

________________________________________________________
Assignment Sheet 7

4. What do you do?

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________
Module 5

Integumentary System

Objective 25
Assignment Sheet 8—Complete Module 5 Review

Name_______________________________________________________
Date_______________________________  Score____________________

Evaluation Criteria

<table>
<thead>
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<th>Rating</th>
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<tr>
<td>• Directions were followed</td>
</tr>
<tr>
<td>• Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet</td>
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Basic Skills

Reading  
Science

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 9
1. An oily secretion composed of keratin, fat, and cellular debris is the ______.
   a. nitrogenous waste
   b. cerumen
   c. paronychia
   d. sebum

Objective 15
2. An inflammatory lesion on the skin that may contain pus is called a(n) ______.
   a. ulcer
   b. ungual lesion
   c. cyst
   d. acne fissure

Objective 15
3. An inflammation and infection of the dermis and subcutaneous tissue caused by bacteria that enter the skin through a hair follicle is called a ______.
   a. cyst
   b. furuncle
   c. carbuncle
   d. ulcer
**Assignment Sheet 8**

| Objective 10 | 4. Nails consist of epidermal cells that have been converted to ______.  
|             | a. keratin  
|             | b. melanin  
|             | c. cerumen  
|             | d. lanolin  |
| Objective 7 | 5. The papillary layer is patterned with ______.  
|             | a. papillae and gland ducts  
|             | b. papillae and hollows  
|             | c. arrector pili and gland ducts  
|             | d. arrector pili and hollows  |
| Objective 1 | 6. The ______ is the structures that cover the exposed surfaces of the body.  
|             | a. melanin  
|             | b. keratin  
|             | c. lymph  
|             | d. integument  |
| Objective 5 | 7. Which of the following is NOT a correct statement?  
|             | a. The dermis is vascular.  
|             | b. The dermis is nonsensitive.  
|             | c. The greater part of the thickness of the epidermis is dead cells.  
|             | d. The epidermis consists of stratified squamous epithelial tissue.  |
| Objective 7 | 8. Which of the following is NOT a correct statement?  
|             | a. The reticular layer of the dermis forms a network of interlacing cells and fibers.  
|             | b. The reticular layer is the inner layer of the dermis.  
|             | c. The papillary layer lies next to the basal layer of the epidermis.  
|             | d. The papillary layer contains cementing substances to form the dermal-epidermal junction so that a separate membrane is not required.  |
| Objective 8 | 9. A formation of specialized cells within the skin that performs a particular function is called ______.  
|             | a. an **axilla**  
|             | b. a **papilla**  
|             | c. an **auxiliary appendage**  
|             | d. a **papillary appendage**  |
| Objective 9 | 10. Hair grows from a ______ in the skin.  
  a. follicle  
  b. pore  
  c. lumen  
  d. furuncle |
|------------|----------------------------------------------------------|
| Objective 11 | 11. Which of the following phrases is NOT a function of the sebaceous glands?  
  a. secrete sebum to lubricate and soften hair shafts  
  b. prevent excessive water evaporation and water absorption through the skin  
  c. lessen the amount of heat lost through the skin  
  d. secrete toxins that reduce the populations of pathogens on the skin |
| Objective 5 | 12. Which of the following statements is NOT correct about the hypodermis?  
  a. The hypodermis is also called the subcutaneous layer.  
  b. The hypodermis lies between the dermis and the epidermis.  
  c. The hypodermis consists of areolar tissue and fat.  
  d. The hypodermis exhibits varying amounts of fat content depending on factors such as body location, gender, nutrition, and health. |
| Objective 15 | 13. A growth that extends into the cavity of a mucous membrane is called a ______.  
  a. boil  
  b. polyp  
  c. fissure  
  d. vesicle |
| Objective 6 | 14. ______ is a fibrous, sulfur-containing protein that is the primary component of the epidermis, hair, nails, and enamel of the teeth.  
  a. Stratum corneum  
  b. Stratum lucidum  
  c. Keratin  
  d. Keratohyalin |
| Objective 10 | 15. Nails grow an average of ______ inch per month.  
  a. 1/4  
  b. 1/2  
  c. 1/8  
  d. 1/3 |
Objective 14

16. Hair loss early in life (before middle age) is referred to as alopecia _______.
   a. areata
   b. prematura
   c. selinis
   d. universalis

Objective 13

17. The structure indicated by the letter “W” in the illustration below is a _________.
   a. hair follicle
   b. hair root
   c. papilla
   d. sebaceous gland

Objective 13

18. The structure indicated by the letter “X” in the illustration above is a _________.
   a. follicle
   b. pore
   c. sweat gland
   d. papilla

Objective 13

19. The structure indicated by the letter “Y” in the illustration above is the _________.
   a. stratum granulosum
   b. stratum basale
   c. epidermis
   d. reticular layer
### Objective 17
20. White spots in the nail are called _______.
   a. furrows
   b. pterygium
   c. corrugations
   d. leukonychia

### Objective 15
21. A sac that contains any fluid substance other than pus is called a ____.
   a. boil
   b. vesicle
   c. polyp
   d. cyst

### Objective 5
22. The term vascular means ______.
   a. containing blood or lymph vessels
   b. containing nerve endings
   c. containing molecules of simple carbohydrates
   d. containing pus

### Objective 13
23. The structure indicated by the letter “X” in the illustration below is the ______ area of a nail.
   a. cuticle
   b. subungual
   c. lucidum
   d. lunula

### Objective 6
24. The Latin term for “horn” is ______.
   a. stratum
   b. corneum
   c. lucidum
   d. granulosum
Objective 15  25. An infection of the fold of skin at the margin of a nail is called a _____.
   a. keloid
   b. polyp
   c. milium
   d. comedone

Objective 14  26. __________ refers to any diseased condition of the hair.
   a. Trichosis
   b. Trichoptilosis
   c. Monilethrix
   d. Hypertrichosis

Objective 16  27. __________ is a skin disease characterized by red patches, covered with white-silver scales.
   a. Dermatitis
   b. Psoriasis
   c. Eczema
   d. Tinea

Objective 11  28. Which of the following is NOT a true statement about sweat glands?
   a. Sweat glands consist of a coiled tube surrounded by capillaries.
   b. Sweat glands are located in the deep layers of the dermis with ducts that exit through pores in the epidermis.
   c. Sweat glands help to maintain homeostasis of fluids and electrolytes and body temperature.
   d. Sweat glands excrete hydrogenous wastes.

Objective 9  29. The eyelashes, nasal hairs, and hair on the ears ______.
   a. serve no useful purpose
   b. are not the same structure and composition as hair on the rest of the body
   c. provide some level of protection against dust and foreign matter
   d. do not require sebaceous glands because of the lacrimal glands, mucous membrane, and ceruminous glands

Objective 6  30. The _____ is found only on the palms of the hands and the soles of the feet.
   a. stratum basale
   b. stratum lucidum
   c. stratum granulosum
   d. stratum germinativum
### Objective 4
31. Which of the following phrases is NOT a function of the skin?
   - a. provides a mechanical barrier against microorganisms, sunlight, and chemicals to protect the body
   - b. houses nerve endings that sense pain, temperature, touch, and pressure
   - c. helps to regulate body temperature and to maintain fluid and electrolyte balance
   - d. stores waste materials for later excretion through the urinary tract

### Objective 2
32. The skin and the auxiliary appendages are the two major structures that make up the ______.
   - a. melanin
   - b. keratin
   - c. lymph
   - d. integument

### Objective 5
33. The dermis consists of ______.
   - a. dense, fibrous connective tissue
   - b. stratified squamous epithelial tissue
   - c. stratified squamous connective tissue
   - d. dense, fibrous epithelial tissue

### Objective 14
34. Small white flakes appearing on hair or scalp are called ______.
   - a. canities
   - b. trichoptilosis
   - c. pityriasis
   - d. monilethrix

### Objective 9
35. A hair consists of a part that protrudes from the skin called the ______ —and a subdermal section called the ________.
   - a. root; shaft
   - b. shaft, root
   - c. base, strand
   - d. strand, base

### Objective 15
36. Congestion appearing primarily on the cheeks and nose, characterized by redness, dilation of blood vessels, and the formation of papules and pustules is called ______.
   - a. seborrhea
   - b. rosacea
   - c. paronchia
   - d. hive
<table>
<thead>
<tr>
<th>Objective 12</th>
<th>37. The nerve endings found in the skin sense ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. touch, pressure, heat, cold, and pain</td>
</tr>
<tr>
<td></td>
<td>b. touch, heat, cold, and pain</td>
</tr>
<tr>
<td></td>
<td>c. touch, heat, and pain</td>
</tr>
<tr>
<td></td>
<td>d. touch and pain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 15</th>
<th>38. A thick scar resulting from excessive growth of fibrous tissue is called a ___________.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. keloid</td>
</tr>
<tr>
<td></td>
<td>b. polyp</td>
</tr>
<tr>
<td></td>
<td>c. milium</td>
</tr>
<tr>
<td></td>
<td>d. comedone</td>
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<thead>
<tr>
<th>Objective 6</th>
<th>39. ______ is the Latin term for “layer.”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Stratum</td>
</tr>
<tr>
<td></td>
<td>b. Corneum</td>
</tr>
<tr>
<td></td>
<td>c. Lucidum</td>
</tr>
<tr>
<td></td>
<td>d. Granulosemum</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Objective 3</th>
<th>40. A protein that absorbs ultraviolet light to give coloration to body structures is ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. dermal-epidermal</td>
</tr>
<tr>
<td></td>
<td>b. areola</td>
</tr>
<tr>
<td></td>
<td>c. fascia</td>
</tr>
<tr>
<td></td>
<td>d. melanin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 14</th>
<th>41. Pediculosis capitis is the medical term for ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. beaded hair</td>
</tr>
<tr>
<td></td>
<td>b. ingrown hair</td>
</tr>
<tr>
<td></td>
<td>c. head lice</td>
</tr>
<tr>
<td></td>
<td>d. knotted hair</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Objective 17</th>
<th>42. ___________ refers to split cuticles that may become infected and bleed.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Pterygium</td>
</tr>
<tr>
<td></td>
<td>b. Corrugations</td>
</tr>
<tr>
<td></td>
<td>c. Leukonychia</td>
</tr>
<tr>
<td></td>
<td>d. Agnail</td>
</tr>
</tbody>
</table>
Objective 15  
43. A crack and break in the skin is called a(n) ______.
   a. fissure
   b. keloid
   c. carbuncle
   d. ulcer

Objective 9  
44. A tube that extends from the dermis through the epidermis and to the surface of the skin is a ______.
   a. desmosome
   b. follicle
   c. papilla
   d. basale

Objective 5  
45. The ______ is the thin, nonvascular, nonsensitive outermost layer of the skin.
   a. epidermis
   b. dermis
   c. peridermis
   d. subdermis

Objective 9  
46. Hair is kept soft by ______ that is secreted by two or more ______ glands.
   a. papillum; papillary
   b. sweat; sweat
   c. serum; serous
   d. sebum; sebaceous

Objective 5  
47. The hypodermis consists of ______.
   a. dense, fibrous connective tissue
   b. dense, fibrous epithelial tissue
   c. areolar tissue and fat
   d. areolar tissue and connective tissue

Objective 6  
48. In the stratum corneum, ______.
   a. columnar cells continually undergo mitosis to make new cells and push older cells outward
   b. the skin connects to the cornea of the eye
   c. dead cells have been converted into keratin that flakes off
   d. new cells for hair follicles are produced
Objective 16  
49. __________ is a wart that is caused by a virus and may be contagious; also known as "Plantar Warts."
   a. Verruca
   b. Tinea
   c. Herpes simplex
   d. Psoriasis

Objective 17  
50. __________ is caused by improper filing, excessive use of cuticle solvents and nail polish remover, or injury to finger.
   a. Onychophagy
   b. Onychorrhexis
   c. Onychocryptosis
   d. Onychocyanosis

Objective 9  
51. Hair is found on outer parts of the body except ____________.
   a. the contact areas of the hands and feet
   b. the eyelids
   c. the tongue
   d. the ears

Objective 5  
52. The dermis contains the _________________.
   a. auxiliary appendages
   b. stratum corneum
   c. stratum lucidum
   d. stratum spinosum

Objective 15  
53. ______ is an infection and inflammation of the sebaceous glands.
   a. Sebum
   b. Sebaceosis
   c. Acne
   d. Decubitus

Objective 6  
54. The Latin term for "clear" is ______.
   a. stratum
   b. corneum
   c. lucidum
   d. granulosum

Objective 15  
55. A blister is also called a ______.
   a. furuncle
   b. fissure
   c. polyp
   d. vesicle
<table>
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<tr>
<th>Objective 10</th>
<th>56. Nails grow from _____ cells lying under the _____ at the proximal end of a nail.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. epithelial; cuticle</td>
</tr>
<tr>
<td></td>
<td>b. epithelial; lunula</td>
</tr>
<tr>
<td></td>
<td>c. connective tissue; cuticle</td>
</tr>
<tr>
<td></td>
<td>d. connective tissue; lunula</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 14</th>
<th>57. __________ is an ingrown hair.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Pediculosis capitis</td>
</tr>
<tr>
<td></td>
<td>b. Alopecia areata</td>
</tr>
<tr>
<td></td>
<td>c. Pili incarnati</td>
</tr>
<tr>
<td></td>
<td>d. Trichorrhexis nodosa</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 17</th>
<th>58. __________ is the inflammation of the nail matrix, accompanied by pus formation.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Onychogryposis</td>
</tr>
<tr>
<td></td>
<td>b. Onychophosis</td>
</tr>
<tr>
<td></td>
<td>c. Onychia</td>
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<tr>
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<td>d. Onychophyma</td>
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<tr>
<th>Objective 10</th>
<th>59. The region under a nail is called the _____ area of the nail bed.</th>
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<tbody>
<tr>
<td></td>
<td>a. subdermal</td>
</tr>
<tr>
<td></td>
<td>b. sublingual</td>
</tr>
<tr>
<td></td>
<td>c. subordinal</td>
</tr>
<tr>
<td></td>
<td>d. subungual</td>
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<thead>
<tr>
<th>Objective 15</th>
<th>60. A suddenly appearing raised patch that is usually redder than the surrounding skin; is often accompanied by severe itching; and is usually caused by an allergic reaction, infection, or stress is called a ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. hive</td>
</tr>
<tr>
<td></td>
<td>b. furuncle</td>
</tr>
<tr>
<td></td>
<td>c. carbuncle</td>
</tr>
<tr>
<td></td>
<td>d. ulceration</td>
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</table>

<table>
<thead>
<tr>
<th>Objective 3</th>
<th>61. Skin color is the result of ______ and the amount of ______ near the surface of the skin.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. melanin; lymph</td>
</tr>
<tr>
<td></td>
<td>b. melanin; blood</td>
</tr>
<tr>
<td></td>
<td>c. keratin; lymph</td>
</tr>
<tr>
<td></td>
<td>d. keratin; blood</td>
</tr>
</tbody>
</table>
Objective 13

62. The structure indicated by the letter “X” in the illustration below is ____ of a nail.
   a. the cuticle
   b. the lunula
   c. the subungual area
   d. the lucidium

[Diagram of a nail with an X marking the subungual area]

Objective 16

63. An inflammatory, painful disease of the skin characterized by both dry or moist lesions is called ____________.
   a. dermatitis
   b. psoriasis
   c. eczema
   d. tinea

Objective 14

64. ____________ is the medical term for split ends.
   a. Trichosis
   b. Trichorrhexis nodosa
   c. Trichoptilosis
   d. Monilethrix

Objective 16

65. ________ is commonly known as ringworm, a highly contagious fungal infection that can infect the skin, scalp, or the nails.
   a. Tinea pedis
   b. Psoriasis
   c. Dermatitis
   d. Eczema
Module 6  Skeletal System

Objective 14

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–6)

Name_______________________________________________________
Date_______________________________  Score____________________

Evaluation Criteria                                      Rating
   • Directions were followed     ________
   • Terms were identified correctly  ________

Basic Skills

Reading  Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.
Assignment Sheet 1

Across
2. The bones of the skull, particularly the bones that enclose the brain
4. The ankle bones that form the heel and the proximal or posterior half of the foot
5. Any of the paired, curved, bony, or partly cartilaginous rods that stiffen the walls of the body
8. A shoulder blade
10. All of the bones and cartilage of the body that collectively provide the supporting framework for the muscles and organs

Down
1. The kneecap
3. The wrist bones
6. The flat portion of the hip
7. One of the bony or cartilaginous segments composing the spinal column
8. Any one of numerous small, round, bony masses embedded in certain tendons that may be subjected to compression and tension
9. The collarbone
## Module 6  
**Skeletal System**

### Objective 15

**Assignment Sheet 2—Complete the Crossword Puzzle of Terms (Objectives 7–13)**

| Name _________________________________________________________       |
| Date _________________________________ | Score _____________________ |

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<tr>
<td>• Terms were identified correctly</td>
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#### Basic Skills

- [ ] Reading
- [ ] Science

#### Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

**Across**

1. One of the smallest and most-fragile bones of the face, located at the anterior part of the medial wall of the orbit

4. The second cervical vertebra about which the atlas rotates, allowing the head to be turned, extended, and flexed

6. The portion of the maxilla or the mandible that forms the dental arch

8. The winged compound bone of the base of the skull and anterior to the temporal bone

11. The bony part of the skull that holds the brain

15. One of a pair of large bones that form the upper jaw

16. One of a pair of bony, conical cavities in the skull that accommodate the eyeballs and associated structures

17. Either of a pair of compound bones at the side of the skull that contains various cavities and recesses associated with the ear

18. Either of a pair of bones of the roof of the skull between the frontal bone and the occipital bone

**Down**

2. The large bone that forms the lower jaw

3. The bone forming the nasal cavity

5. One of a pair of bones that forms the prominence of the cheek and part of the orbit; a cheekbone

7. The weight-supporting, solid central portion of a vertebra

9. The cuplike bone at the back of the skull that is marked by a large opening by which the skull articulates with the atlas

10. A light, spongy, cubical bone forming much of the walls of the nasal cavity and part of those of the orbits

12. The first vertebra of the neck

13. The organ of voice that is part of the air passage

14. A single bone that forms the front of the skull
Module 6  Skeletal System

Objective 16

Assignment Sheet 3—Locate and Identify Bones of the Cranium

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• While performing a shampoo:
  — Identify the bones of the cranium as you massage
    the muscle over each bone.  _______

• Teamwork demonstrated throughout completion
  of assignment  _______

Basic Skills

Directions

Part 1

Work in teams of two with the purpose of using peer tutoring to assist each other in locating and identifying the bones of the cranium during a shampoo. Work with your partner to develop keys to help you remember the names and locations of the major bones of the cranium. Write the location of the bone in the space provided below and the key you developed to help you remember. This information will help you in preparing for the identification and location of the bones of the cranium during the shampoos.

Front     Forehead  Key: __Example: frontal — front of head _______

Parietal: ____________________________________________
  Key: _____________________________________________

Occipital: __________________________________________
  Key: _____________________________________________

Temporal: __________________________________________
  Key: _____________________________________________

Sphenoid: __________________________________________
  Key: _____________________________________________

Front     Forehead  Key: __Example: frontal — front of head _______

Parietal: ____________________________________________
  Key: _____________________________________________

Occipital: __________________________________________
  Key: _____________________________________________

Temporal: __________________________________________
  Key: _____________________________________________

Sphenoid: __________________________________________
  Key: _____________________________________________
## Directions

### Part 2

Perform a shampoo on your partner. Use the completed form to assist in identifying the bones of the cranium and the location of each. Each partner should receive a shampoo. As you continue in your training each time you perform a shampoo, visualize the bones of the cranium and the location of each. Review in your mind the name of the bone as you massage the muscle covering the bone.
### Module 6 Skeletal System

#### Objective 17

**Assignment Sheet 4—Locate and Identify Bones of the Face**

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>While performing a facial massage:</td>
<td></td>
</tr>
<tr>
<td>— Identify the bones of the face as you massage the muscle over each bone.</td>
<td>______</td>
</tr>
<tr>
<td>Teamwork demonstrated throughout completion of assignment</td>
<td>______</td>
</tr>
</tbody>
</table>

#### Basic Skills

**Writing**

**Science**

**Oral Communication**

**Interpersonal**

**Employability**

#### Directions

**Part 1**

Work in teams of two with the purpose of using peer tutoring to assist each other in locating and identifying the bones of the face. Work with your partner to develop keys to help you remember the names and locations of the major bones of the face. Write the location of the bone in the space provided below and the key you developed to help you remember. This information will help you in preparing for the identification and location of the bones of the face during the facial massage.

<table>
<thead>
<tr>
<th>Bone</th>
<th>Location</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxilla</td>
<td>2 large ones that form the upper jaw</td>
<td>Maxine above the man-dible</td>
</tr>
<tr>
<td>Mandible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lacrimal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zygomatic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Name _________________________________________________________**

**Date _________________________________  Score _________________**
<table>
<thead>
<tr>
<th>Assignment Sheet 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directions</strong></td>
</tr>
<tr>
<td><strong>Part 2</strong></td>
</tr>
<tr>
<td>Perform a facial massage on your partner. Use the completed form to assist in identifying the bones of the face and the location of each. Each partner should receive a facial massage. As you continue in your training each time you perform a facial massage, visualize the bones of the cranium and the location of each. Review in your mind the name of the bone as you massage the muscle covering the bone.</td>
</tr>
</tbody>
</table>
### Module 6 Skeletal System

#### Objective 18

**Assignment Sheet 5—Analyze Cosmetology Scenarios**

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Analysis demonstrates the ability to apply knowledge of the information presented in the Information Sheet to a given situation</td>
<td>______</td>
</tr>
<tr>
<td>• Answers are clear and concise</td>
<td>______</td>
</tr>
<tr>
<td>• Handwriting is neat and legible</td>
<td>______</td>
</tr>
</tbody>
</table>

#### Basic Skills

- Reading
- Writing
- Science
- Oral Communication
- Interpersonal
- Critical Thinking

#### Directions

Read each scenario and answer the questions that follow.

#### Scenario 1

Ms. Wilson has a difficult time lying in the shampoo bowl. She always complains that the shampoo bowl hurts her neck.

1. Which region of the vertebral column is most likely involved with the complications Ms. Wilson is experiencing?

   __________________________________________________________

2. What should you do?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
## Scenario 2

Dr. Lim comes to the salon for a manicure. She asks that you massage the muscles covering her phalanges, metatarsals, tarsals, tibia, and fibula.

1. What areas of the body is she addressing?

   __________________________________________________________
   __________________________________________________________

2. What should you do?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

## Scenario 3

Mansur comes into the salon for a haircut and shampoo. His arm is in a cast and sling. He states that he had an accident on his motorcycle and fractured the clavicle, chipped the scapula and has a hair line fracture of the humerus.

1. Where are the bones that are involved located?

   Clavicle: ________________________________________________
   Scapula: ________________________________________________
   Humerus: _______________________________________________

2. Would you offer to give Mansur a neck massage? ________________

3. What should you do?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
Ms. Roehrig is an elderly woman and has shrunk in height over the years. She has developed curvature of the spine, which appears as a hump on her back, which makes it almost impossible to give her a shampoo without getting her back and the floor under the shampoo bowl wet.

1. What is the medical term that is given to the disorder Ms. Roehrig appears to have?

2. What part of the body has been affected by this disorder?

3. What should you do?
<table>
<thead>
<tr>
<th>Objective 19</th>
<th>Assignment Sheet 6—Complete Module 6 Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name __________________________</td>
<td>Date ____________________________ Score ____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet</td>
<td>______</td>
</tr>
</tbody>
</table>

### Basic Skills

**Reading**

**Science**

### Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

#### Objective 7
1. The ______ is one of the smallest and most-fragile bones of the face.
   - a. lacrimal bone
   - b. maxilla
   - c. mandible
   - d. zygomatic process

#### Objective 9
2. Which of the following phrases is NOT a characteristic of the hyoid bone?
   - a. is a segmented, O-shaped bone in the neck between the mandible and the lower part of the larynx
   - b. is the only bone in the body that does not articulate with another bone
   - c. is suspended ligaments on processes from the temporal bone in the cranium
   - d. provides an attachment for the tongue

#### Objective 10
3. The ______ is the weight-supporting, solid central portion of a vertebra.
   - a. axis
   - b. atlas
   - c. vertebral body
   - d. intervertebral disc
<table>
<thead>
<tr>
<th>Objective 12</th>
<th>4. Which of the following is NOT a section of the sternum?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. manubrium</td>
</tr>
<tr>
<td></td>
<td>b. gladiolus</td>
</tr>
<tr>
<td></td>
<td>c. mararigolus</td>
</tr>
<tr>
<td></td>
<td>d. xiphoid process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 12</th>
<th>5. There are a total of ____ rib pairs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. 7</td>
</tr>
<tr>
<td></td>
<td>b. 10</td>
</tr>
<tr>
<td></td>
<td>c. 12</td>
</tr>
<tr>
<td></td>
<td>d. 16</td>
</tr>
</tbody>
</table>

| Objective 6 | 6. The item indicated by the letter “X” in the illustration below is the _____.
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. tibia</td>
</tr>
<tr>
<td></td>
<td>b. fibia</td>
</tr>
<tr>
<td></td>
<td>c. tarsal</td>
</tr>
<tr>
<td></td>
<td>d. femur</td>
</tr>
</tbody>
</table>

![Anterior view](Anterior view) ![Posterior view](Posterior view)
7. The item indicated by the letter “Y” in the illustration above is the_____.
   a. patella
   b. tibia
   c. humerus
   d. fibula

8. The item indicated by the letter “X” in the illustration below is the_____.
   a. mandible
   b. maxilla
   c. lacrimal bone
   d. zygomatic bone

9. The item indicated by the letter “Y” in the illustration above is the_____.
   a. lacrimal bone
   b. maxilla
   c. mandible
   d. zygomatic bone
| Objective 5 | 10. The two major divisions of the human skeleton are the _____ and the _____.
|            | a. vertical; horizontal  
|            | b. true; false  
|            | c. axial; appendicular  
|            | d. osteotic; cartilaginous  
| Objective 5 | 11. Which of the following is in the appendicular skeleton?
|            | a. the ribs  
|            | b. the bones of the shoulders  
|            | c. the sternum  
|            | d. the bones of the vertebral column  
| Objective 6 | 12. The items indicated by the letter “X” in the illustration below are the _____.
|            | a. phalanges  
|            | b. carpals  
|            | c. tarsals  
|            | d. metacarpals  

Assignment Sheet 6

![Diagram of the human skeleton with Anterior and Posterior views indicated.](image-url)
<table>
<thead>
<tr>
<th>Objective 6</th>
<th>13. The item indicated by the letter “Y” in the illustration above is the _______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. ulna</td>
</tr>
<tr>
<td></td>
<td>b. radius</td>
</tr>
<tr>
<td></td>
<td>c. humerus</td>
</tr>
<tr>
<td></td>
<td>d. femur</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>14. The items indicated by the letter “X” in the illustration below are the _______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. sphenoid bone</td>
</tr>
<tr>
<td></td>
<td>b. parietal bone</td>
</tr>
<tr>
<td></td>
<td>c. temporal bone</td>
</tr>
<tr>
<td></td>
<td>d. occipital bone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>15. The item indicated by the letter “Y” in the illustration above is the _______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. sphenoid bone</td>
</tr>
<tr>
<td></td>
<td>b. parietal bone</td>
</tr>
<tr>
<td></td>
<td>c. frontal bone</td>
</tr>
<tr>
<td></td>
<td>d. ethmoid bone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 10</th>
<th>16. Which of the following statements is NOT true concerning the major bones and structures of the vertebral column?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. The axis is the second cervical vertebra.</td>
</tr>
<tr>
<td></td>
<td>b. The atlas is the second cervical vertebra.</td>
</tr>
<tr>
<td></td>
<td>c. The atlas articulates with the occipital bone and the axis.</td>
</tr>
<tr>
<td></td>
<td>d. The axis allows the head to be turned, extended, and flexed.</td>
</tr>
</tbody>
</table>
Objective 4

17. The miniature long bones of the fingers and toes are called ______.
   a. carpals
   b. metacarpals
   c. tarsals
   d. phalanges

Objective 11

18. The item indicated by the letter “X” in the illustration below is the_______ region of the vertebral column.
   a. coccygeal
   b. lumbar
   c. cervical
   d. thoracic

19. The item indicated by the letter “Y” in the illustration above is the ______ region of the vertebral column.
   a. coccyx
   b. sacrum
   c. atlas
   d. axis
Objective 12

20. All ribs attach to the _____ region of the vertebral column.
   a. sacral
   b. lumbar
   c. thoracic
   d. coccygeal

Objective 3

21. An example of a sesamoid bone is the _____.
   a. elbow
   b. trachea
   c. nasal septum
   d. patella

Objective 4

22. The long bones forming the framework of the palm of the hand are called _____.
   a. carpals
   b. metacarpals
   c. tarsals
   d. phalanges

Objective 2

23. One function of the skeletal system is to store _____ and _____.
   a. calcium; phosphorus
   b. calcium; carbonate
   c. phosphorus; carbonate
   d. none of the above; the skeletal system has no storage function

Objective 13

24. The item indicated by the letter “X” in the illustration below is the _____.
   a. manubrium
   b. gladiolus
   c. xiphoid process
   d. sternum

[Anterior view of rib cage with labeled X]
Assignment Sheet 6

Objective 1  25. The skeletal system consists of all the _____ and _____ of the body.
   a. muscles; organs  
   b. bones; cartilage  
   c. muscles; ligaments  
   d. joints; blood

Objective 3  26. Short bones include the _____ .
   a. facial bones  
   b. scapulae and ilium  
   c. carpals and tarsals  
   d. small bones in hands

Objective 4  27. Two of the long bones of the lower leg are the _____ and the _____.
   a. tibia; fibula  
   b. ulna; radius  
   c. femur; humerus  
   d. scapula; patella

Objective 2  28. Which of the following is NOT a function of the skeletal system?
   a. provides support and shape for the body  
   b. protects delicate vital organs  
   c. assists with body movements  
   d. manufactures muscle cells

Objective 3  29. Flat bones include the ribs, scapulae, ilium, and ______.
   a. carpals  
   b. tarsals  
   c. vertebrae  
   d. cranial bones

Objective 3  30. ______ bones are found in the arms, legs, hands, and feet.
   a. Short  
   b. Long  
   c. Flat  
   d. Irregular
Objective 13  
31. The items indicated by the letter “X” in the illustration below are ______.
   a. the true ribs
   b. the false ribs
   c. the floating ribs
   d. the vertebral column

Posterior view

Objective 12  
32. How many pairs of ribs attach directly to the sternum and are referred to as true ribs?
   a. 2
   b. 3
   c. 5
   d. 7

Objective 6  
33. Another name for the collarbone is the ______.
   a. humerus
   b. clavicle
   c. ilium
   d. radius

Objective 3  
34. ______ bones are made of spongy bone covered with compact bone.
   a. Long
   b. Short
   c. Irregular
   d. All of the above
<table>
<thead>
<tr>
<th>Objective 5</th>
<th>35. The axial skeleton centers around the vertebral column and includes the bones of the __________.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. ribs and sternum</td>
</tr>
<tr>
<td></td>
<td>b. pelvis</td>
</tr>
<tr>
<td></td>
<td>c. arms</td>
</tr>
<tr>
<td></td>
<td>d. shoulders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>36. Which of the following statements is NOT true of the cranium?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. The cranium is the bony part of the skull that holds the brain.</td>
</tr>
<tr>
<td></td>
<td>b. The cranium is composed of eight bones.</td>
</tr>
<tr>
<td></td>
<td>c. The parietal bone of the cranium is located at the side of the skull and contains various cavities.</td>
</tr>
<tr>
<td></td>
<td>d. The occipital bone of the cranium is a cuplike bone at the back of the skull.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>37. A single bone that forms the front of the skull is the __________ bone.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. parietal</td>
</tr>
<tr>
<td></td>
<td>b. frontal</td>
</tr>
<tr>
<td></td>
<td>c. occipital</td>
</tr>
<tr>
<td></td>
<td>d. temporal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 10</th>
<th>38. The first vertebra of the neck is called the ______________.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. sphenoid bone</td>
</tr>
<tr>
<td></td>
<td>b. ethmoid bone</td>
</tr>
<tr>
<td></td>
<td>c. orbit</td>
</tr>
<tr>
<td></td>
<td>d. atlas</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 12</th>
<th>39. Rib pairs ______ are not attached to the sternum and are called the floating ribs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. 8, 9, and 10</td>
</tr>
<tr>
<td></td>
<td>b. 11 and 12</td>
</tr>
<tr>
<td></td>
<td>c. 8 through 12</td>
</tr>
<tr>
<td></td>
<td>d. 1 through 7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 10</th>
<th>40. The region at the upper-back portion of the vertebral column that consists of 12 segments is the ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. lumbar region</td>
</tr>
<tr>
<td></td>
<td>b. sacral region</td>
</tr>
<tr>
<td></td>
<td>c. coccygeal region</td>
</tr>
<tr>
<td></td>
<td>d. thoracic region</td>
</tr>
</tbody>
</table>
Module 7

Muscular System

Objective 19

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–8)

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Directions were followed ______
• Terms were identified correctly ______

Basic Skills

Reading  
Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across

1. The slight tension that is present in muscles even when they are at rest so that they can respond more easily and quickly when needed
5. The ability to respond to stimuli
7. A fibrous sheath that enfolds a skeletal muscle and extends over the origin and insertion and between bundles of muscle fibers
9. The internal organs in the abdominal cavity
12. Functioning without the conscious control of the organism
13. A structure in which the epimysium extends from the muscle as a broad, flat sheet of connective tissue that attaches to an adjacent structure; one of many white, glistening fibrous bands of tissue that attach muscle to bone
14. Consisting of narrow bands or rows
15. The ability to stretch (lengthen) and remain stretched (hold)

Down

2. The ability to return to a former length when the stretching force is removed
3. A fibrous, vascular membrane covering the bones, except at their extremities
4. A structure in which the epimysium extends from the muscle as a strong, tough cord of connective tissue that is continuous with the periosteum of the bone; a strong sheet of fibrous connective tissue that serves as a tendon to attach muscles to bone or as fascia to bind muscles together
6. The ability to transmit impulses
8. All of the muscles of the body considered as an interrelated structural group
10. The ability to contract or shorten
11. Functioning under the conscious control of the organism
Module 7  Muscular System

Objective 20

Assignment Sheet 2—Complete the Crossword Puzzle of Terms (Objective 9)

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria Rating

• Directions were followed
• Terms were identified correctly

Basic Skills

Reading  Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
1. Performs retraction, moving a part back
3. Performs tension, making a part more rigid
9. Performs inversion, turning a part upside down or inside out
11. Performs dorsiflexion, moving a part toward the back
12. Performs adduction, moving toward a part or toward a midline
13. Performs depression, lowering a part
14. Performs elevation, lifting a part
15. Performs protraction, moving a part forward

Down
2. Performs extension, straightening a part at a joint
4. Performs constriction, closing a body opening
5. Performs medial rotation—revolving a part on its axis—or lateral rotation—moving a part so that its distal point travels in a circle
6. Performs supination, turning a part upward
7. Performs eversion, turning or rotating a part outward
8. Performs pronation, turning a part downward
10. Performs flexion, bending a part at a joint
12. Performs abduction, moving away from a part or a midline
Module 7  Muscular System

Objective 21

Assignment Sheet 3—Complete the Crossword Puzzle of Terms (Objectives 10–12)

Name _________________________________________________________
Date _________________________________  Score __________________

Evaluation Criteria Rating
• Directions were followed _______
• Terms were identified correctly _______

Basic Skills

Reading  Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
1. Rotates the head from side to side, flexes the upper vertebral column and head as in bowing the head, and helps hold the head erect
2. Draws the lips together as in kissing
3. Closes the mandible
4. Moves the shoulders by raising, assists in moving the head to one side or the other, hyperextends the head when the occiput acts as insertion, and helps hold the head erect
5. Acts to wrinkle the skin in the neck and depresses the mandible
6. The back of the head
7. The shoulder blade
8. Assist in defecation and urination and form the floor of the pelvic cavity
9. The breastbone
10. To extend to its fullest range of motion or beyond
11. The collarbone
12. The lower jawbone
13. Assist in respiration and movements of the neck, arms, and trunk
14. Allow the body to bend, turn, and stand erect
15. Control talking, chewing, swallowing, facial expressions, and blinking

Down
1. Moves the lips for blowing, whistling, and smiling
2. Closes the eyelids
3. The process of the temporal bone behind the ear
4. Support the internal organs, assist in respiration, and assist in eliminating waste from the large intestine and bladder
5. The back of the head
6. The collarbone
7. Move the head from side to side, from front to back, and in rotation
8. Wrinkles the forehead horizontally
9. Closes the jaws as in chewing
10. The lower jawbone
11. The back of the head
12. The lower jawbone
13. Assist in respiration and movements of the neck, arms, and trunk
14. Allow the body to bend, turn, and stand erect
15. Control talking, chewing, swallowing, facial expressions, and blinking

MAVCC—A Cosmetologist’s Introduction to Anatomy and Physiology
Assignment Sheet 3

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20
Module 7
Muscular System

Objective 22

Assignment Sheet 4—Locate and Identify Major Muscles of the Head, Face, and Neck

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria

Rating

• While performing a facial and neck massage:

  — Identified the major muscles of the face and stated their functions. _______

  — Identified the major muscles of the neck and stated their functions. _______

• Teamwork demonstrated throughout completion of assignment _______

Basic Skills

Directions

Part 1

Work in teams of two with the purpose of using peer tutoring to assist each other in locating, identifying, and discussing the functions of the major muscles of the face and neck during a facial and neck massage. Work with your partner to develop keys to help you remember the names and locations of the major muscles of the face and neck. Write the location of the muscle in the space provided below and the key you developed to help you remember. This information will help you in preparing for the identification and location of the muscles of the face and neck during the facial and neck massage.

Frontalis       Wrinkles the forehead horizontally
Key:   __Front of head, forehead

Temporalis: __________________________________________________________________________
Key:   __________________________________________________________________________

Orbicularis Oculi: _______________________________________________________________________
Key:   _______________________________________________________________________

Orbicularis Oris: __________________________
Key:   __________________________
### Assignment Sheet 4

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buccinator:</td>
<td></td>
</tr>
<tr>
<td>Key:</td>
<td></td>
</tr>
<tr>
<td>Masseter:</td>
<td></td>
</tr>
<tr>
<td>Key:</td>
<td></td>
</tr>
<tr>
<td>Trapezius:</td>
<td></td>
</tr>
<tr>
<td>Key:</td>
<td></td>
</tr>
<tr>
<td>Sternocleidomastoid:</td>
<td></td>
</tr>
<tr>
<td>Key:</td>
<td></td>
</tr>
<tr>
<td>Platysma:</td>
<td></td>
</tr>
<tr>
<td>Key:</td>
<td></td>
</tr>
<tr>
<td>Mentalis:</td>
<td></td>
</tr>
<tr>
<td>Key:</td>
<td></td>
</tr>
</tbody>
</table>

**Directions**  
**Part 2**

Perform a facial and neck massage on your partner. Use the completed form to assist in identifying the muscles of the face and neck and the location and function of each. Each partner should receive a facial and neck massage. As you continue in your training each time you perform a facial and neck massage, visualize the muscles of the face and neck and the location and function of each. Review in your mind the name of the muscle and the function as you massage the face and neck. Use this as a review for the skeletal system and visualize the muscles over the bones of the head and the names of each.
Module 7

Muscular System

Objective 23

Assignment Sheet 5—Complete the Crossword Puzzle of Terms (Objectives 13–16)

Name _________________________________________________________

Date _________________________________ Score _________________

Evaluation Criteria Rating

• Directions were followed
• Terms were identified correctly

Basic Skills

Reading

Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across

2. Forms the floor of the pelvic cavity
3. Control thumb movements
7. Compresses the abdomen and rotates the trunk laterally (internal)
9. Compresses the abdomen and rotates the trunk laterally
12. Forms the floor of the pelvic cavity and supports the organs
14. Rotates the scapula and raises the shoulder, as in full flexion and abduction of the arm
16. Brings the arms down forcefully
17. Elevate and depress the ribs
18. Moves the upper arm at the point of the shoulder
19. Flexes the pronated forearm

Down

1. Flexes the forearm
4. Compresses the abdomen and rotates the trunk laterally (external)
5. Flexes the supinated forearm
6. Compresses the abdomen and rotates the trunk laterally and flexes the trunk
8. Control hand movements
10. Control finger movements
11. Flexes the upper arm, adducts the upper arm anteriorly, and draws the arm across the chest
13. Extends the lower arm
15. Contracts and relaxes to cause inhalation and exhalation
Module 7  Muscular System

Objective 24

Assignment Sheet 6—Complete the Crossword Puzzle of Terms (Objectives 17–18)

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria

• Directions were followed  ________
• Terms were identified correctly  ________

Basic Skills

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
2. Abducts the thigh, rotates the thigh outward, stabilizes the pelvis on the femur, and extends the thigh
4. Helps maintain an erect posture and extends and rotates the thigh
9. Inverts the ankle
11. Adducts and flexes the leg
12. Extends the foot
13. Flexes the foot and inverts the ankle

Down
1. Abducts the thigh, rotates the thigh outward, and stabilizes the pelvis on the femur
3. Extends the leg
5. Flexes the toes
6. Extends the toes
7. Everts the ankle
8. Presses the thighs together
10. Flexes the lower leg
Assignment Sheet 6
Module 7

Objective 25

Assignment Sheet 7—Analyze Cosmetology Scenarios

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria | Rating
--- | ---
• Analysis demonstrates the ability to apply knowledge of the information presented in the Information Sheet to a given situation _______
• Answers are clear and concise ______
• Handwriting is neat and legible ______

Basic Skills

Reading  Writing  Science  Oral Communication  Interpersonal  Critical Thinking

Directions

Read each scenario and answer the questions that follow.

Scenario 1

Ms. Kirkland comes to the salon for a manicure. She is working on her nursing degree and uses technical terms relating to anatomy and physiology. You know immediately that you need to remember the name of bones, muscles, and nerves that are associated with the forearm, wrist, and hand. She states that her pollicis in both arms seem to be tight and needs to be stretched. She states that her digitorum are sore in both arms and she is experiencing slight pain.

1. Ms. Kirkland is speaking of which bones, muscles, or nerves and where are they located?

2. What should you do?

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________
### Assignment Sheet 7

**Scenario 2**

Nalini comes into the salon regularly for a pedicure usually following a workout at the gym. You notice she is limping and it appears there is something wrong with her left leg or foot. As you begin to prepare and in conversation, you discover that Nalini has pulled a muscle in her leg during the workout.

What should you do?

<table>
<thead>
<tr>
<th>What you do</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Scenario 3**

Mr. Santos comes into the salon regularly for a shampoo and haircut. He is a regular client and experiences headaches. Today he requests head, neck, and shoulder massage to help relieve his headache.

1. What do you do?

<table>
<thead>
<tr>
<th>What you do</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Mr. Santos expresses that his sinus have given him trouble this week.

2. What do you do?

<table>
<thead>
<tr>
<th>What you do</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Module 7

Muscular System

Objective 26

Assignment Sheet 8—Complete Module 7 Review

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>• Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>• Answers demonstrated comprehensive knowledge</td>
<td>______</td>
</tr>
<tr>
<td>of the information presented in the Information Sheet</td>
<td></td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Science

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 11 1. The back of the head is called the ________________.

a. clavicle
b. scapula
c. occiput
d. mastoid process

Objective 17 2. The ________________ muscle is the major muscle of the legs that inverts the ankle.

a. extensor digitorum
b. soleus
c. peroneous
d. tibialis

Objective 9 3. Moving a part so that its distal point travels in a circle is referred to as ______.

a. medial rotation
b. lateral rotation
c. inversion
d. eversion
Objective 9

4. Bending a part at a joint is called ______.
   a. elevation
   b. depression
   c. extension
   d. flexion

5. A muscle that performs a movement toward a part or toward a midline is called ______.
   a. an abductor
   b. an adductor
   c. an extensor
   d. a flexor

Objective 16

6. What muscle is indicated by the letter “X” in the illustration below?
   a. biceps brachii
   b. triceps brachii
   c. brachialis
   d. brachioradialis
Objective 16  
7. What muscles are indicated by the letter “Y” in the illustration on page 130?
   a. carpi muscles
   b. digitorum muscles
   c. tarsi muscles
   d. pollicis muscles

Objective 12  
8. What muscle is indicated by the letter “X” in the illustration below?
   a. trapezius
   b. sternocleidomastoid
   c. platysma
   d. frontalis

9. What muscle is indicated by the letter “Y” in the illustration above?
   a. orbicularis oculi
   b. orbicularis oris
   c. buccinator
   d. masseter

Objective 1  
10. “All of the muscles of the body considered as an interrelated structural group” is the definition of ______.
   a. visceral muscle tissue
   b. the viscera
   c. skeletal muscle tissue
   d. the muscular system
Objective 13  11. The ______ is the major muscle of the torso that contracts and relaxes to cause inhalation and exhalation.
   a. latissimus dorsi
   b. diaphragm
   c. external oblique
   d. internal oblique

Objective 15  12. The ______ muscles are the major muscles of the arms that control thumb movements.
   a. carpi
   b. digitorum
   c. tarsi
   d. pollicis

Objective 13  13. The ______ is the major muscle of the torso that forms the floor of the pelvic cavity and supports the organs.
   a. transversus abdominis
   b. rectus abdominis
   c. levator ani
   d. internal oblique

Objective 18  14. What muscle is indicated by the letter “X” in the illustration below?
   a. gastrocnemius
   b. hamstring
   c. adductor
   d. quadriceps femoris

![Posterior view](image)
Objective 15

15. The ____________ muscles of the arms control hand movements.
   a. triceps
   b. carpi
   c. digitorum
   d. pollicis

Objective 10

16. The primary function of the neck muscles is to ______.
   a. control talking, chewing, swallowing, facial expressions, and blinking
   b. move the head from side to side, from front to back, and in rotation
   c. allow the body to bend, turn, and stand erect
   d. assist in respiration and movements of the neck, arms, and trunk

Objective 7

17. The coordinated actions of a pair of muscles generally mean that one muscle contracts while the other ______.
   a. contracts more
   b. relaxes
   c. holds its position
   d. twists

Objective 15

18. The ______ flexes the supinated forearm.
   a. biceps brachii
   b. brachialis
   c. brachioradialis
   d. all of the above

Objective 7

19. Muscles that move a body part usually lie ______ to the part that they move.
   a. medial
   b. lateral
   c. distal
   d. proximal

Objective 9

20. An example of a supinator performing supination is ______.
   a. turning the palm upward
   b. turning the palm downward
   c. pointing the toes downward
   d. none of the above
<table>
<thead>
<tr>
<th>Objective 10</th>
<th>21. The perineal muscles ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. support the internal organs, assist in respiration, and assist in eliminating waste from the large intestine and bladder</td>
</tr>
<tr>
<td></td>
<td>b. assist in defecation and urination and form the floor of the pelvic cavity</td>
</tr>
<tr>
<td></td>
<td>c. form the perineal cavity</td>
</tr>
<tr>
<td></td>
<td>d. support the skin throughout the body</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 6</th>
<th>22. Skeletal muscles are enclosed in the ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. myleum</td>
</tr>
<tr>
<td></td>
<td>b. aponeurosis</td>
</tr>
<tr>
<td></td>
<td>c. epimysium</td>
</tr>
<tr>
<td></td>
<td>d. periosteum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 3</th>
<th>23. ______ muscle tissue is involuntary, is partially striated, is found only in the heart, and contracts moderately fast in response to stimulation to nerve impulses.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Skeletal</td>
</tr>
<tr>
<td></td>
<td>b. Smooth</td>
</tr>
<tr>
<td></td>
<td>c. Visceral</td>
</tr>
<tr>
<td></td>
<td>d. Cardiac</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 14</th>
<th>24. What muscle is indicated by the letter “X” in the illustration below?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. latissimus dorsi</td>
</tr>
<tr>
<td></td>
<td>b. diaphragm</td>
</tr>
<tr>
<td></td>
<td>c. external oblique</td>
</tr>
<tr>
<td></td>
<td>d. internal oblique</td>
</tr>
</tbody>
</table>

![Posterior view of the muscular system](file:///C:/Users/Example/Downloads/Posterior%20view.png)
### Assignment Sheet 8

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>25. Muscles contract in response to ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. increased heat</td>
</tr>
<tr>
<td></td>
<td>b. chemical stimulus</td>
</tr>
<tr>
<td></td>
<td>c. electrical impulses</td>
</tr>
<tr>
<td></td>
<td>d. proton flow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2</th>
<th>26. Which of the following is NOT a major function of the muscular system?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. assists in body movements and in maintaining posture and balance</td>
</tr>
<tr>
<td></td>
<td>b. assists in the movement of materials internal to the body</td>
</tr>
<tr>
<td></td>
<td>c. produces blood and hormones</td>
</tr>
<tr>
<td></td>
<td>d. helps to protect the internal organs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>27. The ability of a muscle to respond to stimuli is called ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. irritability</td>
</tr>
<tr>
<td></td>
<td>b. elasticity</td>
</tr>
<tr>
<td></td>
<td>c. conductivity</td>
</tr>
<tr>
<td></td>
<td>d. extensibility</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 6</th>
<th>28. Skeletal muscles are firmly attached to the structures on which they pull during ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. contraction</td>
</tr>
<tr>
<td></td>
<td>b. extension</td>
</tr>
<tr>
<td></td>
<td>c. contusion</td>
</tr>
<tr>
<td></td>
<td>d. conduction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 7</th>
<th>29. Locomotion of the body is caused by muscles pulling on ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. bones</td>
</tr>
<tr>
<td></td>
<td>b. each other</td>
</tr>
<tr>
<td></td>
<td>c. nerves</td>
</tr>
<tr>
<td></td>
<td>d. all of the above</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>30. The slight tension that is present in muscles even when they are at rest so that they can respond more easily and quickly when needed is called ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. contractility</td>
</tr>
<tr>
<td></td>
<td>b. durability</td>
</tr>
<tr>
<td></td>
<td>c. flexion</td>
</tr>
<tr>
<td></td>
<td>d. tone</td>
</tr>
</tbody>
</table>
Objective 13  31. Which of the following muscles is primarily responsible for flexing the upper arm, adducting the upper arm anteriorly, and drawing the arm across the chest?
   a. deltoid
   b. pectoralis major
   c. serratus anterior
   d. intercostals

Objective 6  32. Skeletal muscles may be attached directly to the periosteum of a bone or may be attached by _____.
   a. ligaments
   b. tendons or aponeuroses
   c. bone spurs
   d. bone processes

Objective 5  33. In the illustration below, what is the correct association between major structures of skeletal muscles and the numbers in the illustration?
   a. (1) origin, (2) body, (3) insertion
   b. (1) body, (2) insertion, (3) origin
   c. (1) insertion, (2) origin, (3) body
   d. (1) insertion, (2) body, (3) origin

Objective 11  34. The _____ is the major muscle of the neck, head, and face that moves the shoulders by raising, assists in moving the head to one side or the other, hyperextends the head when the occiput acts as insertion, and helps hold the head erect.
   a. masseter
   b. trapezius
   c. sternocleidomastoid
   d. platysma
Objective 4  
35. The end of a skeletal-muscle attachment that is attached to the more-movable bone is the ______.
   a. origin
   b. body
   c. insertion
   d. voluntary tissue

Objective 3  
36. Which of the following is NOT a characteristic of skeletal muscle tissue?
   a. is voluntary
   b. is striated, consisting of long, slender, striped cells
   c. is attached to the skeleton and moves the skeleton’s moving parts, acting in opposing groups with some muscles relaxing and some contracting
   d. contracts slowly in response to stimulation of nerve impulses

Objective 11  
37. The ______ is the major muscle of the neck, head, and face that wrinkles the forehead horizontally.
   a. temporalis
   b. frontalis
   c. orbicularis oculi
   d. orbicularis oris

Objective 7  
38. The energy to produce movement in muscles is released from ________.
   a. blood stored in the bone marrow
   b. simple sugars through metabolism
   c. proteins within the muscles
   d. the movement of electrons between sodium and potassium
39. What muscle is indicated by the letter “X” in the illustration below?

   a. transversus abdominis
   b. diaphragm
   c. internal oblique
   d. intercostals

*Anterior view*
Objective 18

40. What muscle is indicated by the letter “X” in the illustration below?

a. extensor digitorum  
b. soleus  
c. sartorius  
d. tibialis anterior
Module 8  

Objective 15

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–5)

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Directions were followed</td>
<td></td>
</tr>
<tr>
<td>• Terms were identified correctly</td>
<td></td>
</tr>
</tbody>
</table>

Basic Skills

Reading  
Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across

3. An organ with the primary purpose of monitoring conditions in the environment and within the body in order to provide the brain with information that may require a response
6. The part of the peripheral nervous system that connects the central nervous system to the visceral organs via the cranial and spinal nerves and initiates involuntary responses
12. Of, relating to, or affecting the body
14. An organ with the primary function of moving materials within the body parts of the body itself
15. The cord of nerve tissue that extends from the brain lengthwise along the back in the spinal canal and gives off pairs of spinal nerves, carries impulses to and from the brain, and serves as a center for initiating and coordinating reflex acts

Down

1. The part of the autonomic nervous system that restores homeostatic balance and conserves energy
2. The part of the autonomic nervous system that prepares the body to deal with emergencies through the expenditures of energy
4. The extensive intricate network of structures that activates, coordinates, and controls all of the functions of the body
5. The part of the peripheral nervous system that connects the central nervous system to the skin and the skeletal muscles via the cranial and spinal nerves and initiates voluntary responses
7. A change in an organism’s external environment or internal conditions that cause a response in one or more of the organism’s systems
8. The part of the nervous system that is outside the central nervous system and consists of 12 pairs of cranial nerves and 31 pairs of spinal nerves that link the various parts of the body to the central nervous system
9. The part of the nervous system that consists of the brain and spinal cord, to which sensory impulses are transmitted and from which motor impulses pass out; the part of the nervous system that coordinates the activity of the entire nervous system
10. The row of aligned holes in the vertebrae through which the spinal cord passes
11. Acting or occurring involuntarily
13. The portion of the central nervous system contained within the cranium and containing specialized cells that coordinate and regulate the functions of the central nervous system
Module 8  Nervous System

Objective 16

Assignment Sheet 2—Complete the Crossword Puzzle of Terms (Objectives 6–13)

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria Rating
• Directions were followed
• Terms were identified correctly

Basic Skills

Directions
Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
1. Nerve tissue that consists of motor neurons and interneurons
3. An involuntary response to a stimulus, such as blinking the eyes when something approaches them, salivating at the sight of appetizing food, and jerking of the knee when a certain spot is tapped
4. Any one of the three membranes that envelop the brain and the spinal cord
6. Conduct messages or impulses from sensory to motor neurons
9. Acts as a sending and receiving center, performs metabolic and reproductive functions for the cell, and stores energy
10. Many reflexes do not involve action on part of the brain; instead, the affector/efferent circuit is completed by a loop in the spinal cord
12. Tissue consisting of one or more bundles of impulse-carrying fibers that connect the brain and the spinal cord with other parts of the body
14. The basic nerve-tissue cells that support neurons and play a role when there is injury or infection in the nervous system

Down
2. Transmit messages from the central nervous system to all parts of the body
5. Receive messages from all parts of the body and transmit them to the central nervous system
7. One of a pair of large oval organs in the brain
8. Carries impulses to the cell body
11. The basic nerve-tissue cells that are capable of transmitting nerve impulses
13. Carries impulses from the cell body
Objective 17

Assignment Sheet 3—Complete the Crossword Puzzle of Terms (Objective 14)

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria Rating
• Directions were followed ______
• Terms were identified correctly ______

Basic Skills

Reading  Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
2. Nerve pair VIII; support the sense of hearing and balance
6. Nerve pair XI; control the muscles of the neck and upper back; carry impulses to the neck and shoulder muscles
9. Nerve pair II; support the sense of sight
10. Nerve pair VI; control lateral eye movement
12. Nerve pair IX; support the sense of taste and control swallowing
13. The mucous membrane that lines the inner surface of the eyelids and continues over the forepart of the eyeball
14. A large gland that secretes digestive enzymes and the hormones insulin and glucagon
15. Nerve pair V; control the muscles of the cornea and conjunctiva, the upper portion of the face, the ear, the lower lip, the teeth, the gums, and the muscles for chewing

Down
1. Nerve pair X; control swallowing, hunger, speech, breathing, heart rate, and glands in the stomach and pancreas
3. Nerve pair I; support the sense of smell
4. Nerve pair XII; control the tongue muscles
5. Nerve pair IV; control some of the eye muscles
7. Nerve pair VII; supply the face muscles, the middle ear, and the taste sensors
8. Nerve pair III; control four muscles of the eye
11. The transparent part of the coat of the eyeball that covers the iris and pupil and admits light to the interior
Module 8  

**Nervous System**

**Objective 18**

**Assignment Sheet 4—Participate in a "Face Off"**

**Name** _________________________________________________________

**Date** _________________________________  **Score** _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directions were followed</td>
<td>_____</td>
</tr>
<tr>
<td>Answers demonstrated comprehensive knowledge of the nervous system</td>
<td>_____</td>
</tr>
<tr>
<td>Explained how the nervous system affects the work of the cosmetologist</td>
<td>_____</td>
</tr>
<tr>
<td>Demonstrated teamwork throughout participation in &quot;Face Off&quot;</td>
<td>_____</td>
</tr>
</tbody>
</table>

**Basic Skills**

**Writing**  
**Science**  
**Oral Communication**  
**Interpersonal**

**Directions**

**Part 1**

Work individually to answer the questions below. This is a timed exercise, therefore write everything you know about each question as quickly as possible. You may use additional paper if needed. Your paper will not be submitted for a grade. You may even use text messaging techniques to write answers more quickly. Your answers are to be used during the "Face Off". You have 5 minutes.

1. Define the nervous system.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. State the functions of the nervous system.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

MAVCC—A Cosmetologist's Introduction to Anatomy and Physiology  
Page 147
Assignment Sheet 4

3. Describe a reflex arc and give an example of a reflex.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. Describe major structures within the spinal canal.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

5. Discuss the structure and function of the spinal cord.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

6. Explain how the nervous system affects the work of the cosmetologist.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
Directions Part 2

Move to the location that has been prepared with two rows of chairs facing each other in two straight lines. There should be enough chairs for each member of the class. Take your answers to the questions with you. Take a seat facing a classmate. The teacher will assign each student a question to ask each student that faces them. As the teacher states “Start” the students on the right hand row of chairs read the question from your assignment sheet that has been assigned to them. The students on the left hand row of chairs begin giving their answer to the question asked. While the student is giving their answer, the student in the right hand row of chairs writes the other student’s answers on the question sheet provided in the assignment. When the teacher states “Stop”, all communication ceases and the responsibilities of the students change. The student on the left hand row asks the student opposite them the question they have been assigned.

The process continues with the same two students. When the teacher states “Stop” the second time, all communication ceases and the students on the left hand row of chairs rotate to the left one chair. The student on the end of the row rotates the opposite end of the row. These students ask the same question each time. The students on the right hand row of chairs remain in the same chair throughout the exercise and ask the same question each time. This process continues with asking the questions on the assignment sheet until every student has rotated through the line and every question has been asked to all students.

✔ Note: Thirty seconds per student is sufficient time to answer a question. While one student is speaking the student facing he/she should not speak. They should listen and write what they hear.

Directions Part 3

Following the “Face Off” students come together in a group. The teacher asks the student that was on the right hand row with question 1 to respond to what they received as answers. Once all answers to question 1 have been recorded from the student, other students may add what they heard or know. This process continues until all questions have been answered as a group.

✔ Note: The responses should be recorded on an area large enough for all students to view as answers are given for each question.
### "Face Off"—Question Sheet

1. Define the nervous system.

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

2. State the functions of the nervous system.

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

3. Describe a reflex arc and give an example of a reflex.

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

4. Describe major structures within the spinal canal.

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
5. Discuss the structure and function of the spinal cord.

________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

6. Explain how the nervous system affects the work of the cosmetologist.

________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
Module 8

Nervous System

Objective 19

Assignment Sheet 5—Analyze Cosmetology Scenarios

Name _________________________________________________________

Date _________________________________  Score __________________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>Analysis demonstrates the ability to apply knowledge of the information presented in the Information Sheet to a given situation</td>
<td>_____</td>
</tr>
<tr>
<td>Answers are clear and concise</td>
<td>_____</td>
</tr>
<tr>
<td>Handwriting is neat and legible</td>
<td>_____</td>
</tr>
</tbody>
</table>

Basic Skills

- Reading
- Writing
- Science
- Oral Communication
- Interpersonal
- Critical Thinking

Directions

Read each scenario and answer the questions that follow.

Scenario 1

Ms. Ramirez comes into the salon for a haircut and style. She informs you that she has shampooed her hair earlier in the day and wants you to wet it with a spray bottle. In your analysis of her hair you detect that the hair feels as if it is coated with a foreign substance much like a polymer. You ask Ms. Ramirez if she would like a good relaxing shampoo. She responds that she has a nervous problem in her neck and she cannot lay back or bend over the shampoo bowl and that she always shampoos her hair in the shower. You ask Ms. Ramirez about the texture of her hair and she states that her hair has changed over the last few months as a result of the medication she has been taking.

1. What should you do?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. Are there issues concerning the possible coating or feeling of the hair? What should you do?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
### Scenario 2

Mr. Bunch has been a client for a long time. On his last visit you noticed that he had developed a jerk in his neck that happens unexpectedly and without cause or warning. As Mr. Bunch enters the salon you notice that the jerk has increased in degree and appears to happen much more frequently. Mr. Bunch requests a haircut.

1. What subsystem of the nervous system could be involved with the symptoms portrayed by Mr. Bunch?

2. What should you do?

3. What precautions should you take?
Module 8  Nervous System

Objective 20

Assignment Sheet 6—Complete Module 8 Review

Name__________________________

Date__________________________ Score__________________

Evaluation Criteria Rating

• Directions were followed ______

• Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet ______

Basic Skills

Reading  Science

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 10

1. Motor neurons are located in the ______ and ______.
   a. central; peripheral nervous systems
   b. white; gray matter
   c. sympathetic; parasympathetic nervous systems
   d. glands; muscles

Objective 3

2. Which of the following is NOT part of the peripheral nervous system?
   a. cranial nerves
   b. spinal cord
   c. spinal nerves
   d. autonomic nervous system

Objective 5

3. The part of the autonomic nervous system that prepares the body to deal with emergencies is the ______.
   a. somatic nervous system
   b. sympathetic nervous system
   c. parasympathetic nervous system
   d. peripheral nervous system
Objectives 7 & 8

4. Which of the following statements is NOT true of a neuron?
   a. A neuron is a basic nerve-tissue cell capable of transmitting nerve impulses.
   b. A neuron plays a role when there is injury or infection in the nervous system.
   c. An axon is one of the major structures of a neuron that carries impulses from the cell body of the neuron.
   d. A dendrite is one of the major structures of a neuron that carries impulses to the cell body of the neuron.

Objective 9

5. In the illustration below, which of the following shows the correct labeling for the structures of a neuron?
   a. (1) dendrite, (2) cell body, (3) axon
   b. (1) cell body, (2) axon, (3) dendrites
   c. (1) axon, (2) dendrite, (3) cell body
   d. (1) axon, (2) cell body, (3) dendrites

Objective 3

6. The _____ is the part of the nervous system that consists of the brain and spinal cord.
   a. CNS
   b. PNS
   c. SNS
   d. ANS
| Objective 14 | 7. The nerve that supports the sense of smell is the ______ nerve.  
|             | a. trochlear  
|             | b. glossopharyngeal  
|             | c. olfactory  
|             | d. hypoglossal  
| Objective 11 | 8. A reflex arc consists of ______ that provides a signal through a sensory neuron into a spinal nerve and into the spinal cord.  
|             | a. an effector  
|             | b. an afferent  
|             | c. an impulse  
|             | d. a synapse  
| Objective 2 | 9. Which of the following is NOT a function of the nervous system?  
|             | a. receives internal and external stimuli through the sensory organs  
|             | b. stores any needed information  
|             | c. generates external stimuli  
|             | d. coordinates any required responses  
| Objective 10 | 10. Sensory neurons are also called ______ neurons.  
|             | a. afferent  
|             | b. efferent  
|             | c. central  
|             | d. internuncial  
| Objective 10 | 11. Which of the following statements is NOT true concerning interneurons?  
|             | a. Interneurons are also called central neurons.  
|             | b. Interneurons are found only in the central nervous system.  
|             | c. Interneurons transmit messages from the central nervous system to all parts of the body.  
|             | d. Interneurons conduct messages or impulses from sensory to motor neurons.  
| Objective 1 | 12. The extensive intricate network of structures that activates, coordinates, and controls all the functions of the body is the ______.  
|             | a. sensory organs  
|             | b. central nervous system  
|             | c. peripheral nervous system  
|             | d. nervous system  

### Assignment Sheet 6

| Objective 4 | 13. The part of the peripheral nervous system that connects the central nervous system to the skin and skeletal muscles is the _____.
|-------------|----------------------------------------------------------------------------------|
|             | a. autonomic nervous system  
|             | b. sympathetic nervous system  
|             | c. somatic nervous system  
|             | d. parasympathetic nervous system  |

| Objective 14 | 14. The _____ is the nerve that controls lateral eye movement.
|--------------|----------------------------------------------------------------------------------|
|              | a. abducens  
|              | b. optic  
|              | c. trochlear  
|              | d. trigeminal  |

| Objective 12 | 15. Which of the following is NOT a major structure within the spinal canal?
|--------------|----------------------------------------------------------------------------------|
|              | a. spinal cord  
|              | b. cerebrospinal fluid  
|              | c. meninges  
|              | d. lymphatic vessels  |

| Objective 13 | 16. The spinal cord acts as a conduction pathway for impulses between the _____ nerves to and from the brain.
|--------------|----------------------------------------------------------------------------------|
|              | a. peripheral  
|              | b. sensory  
|              | c. motor  
|              | d. connecting  |

| Objective 2 | 17. The nervous system transmits messages to and from the ______.
|-------------|----------------------------------------------------------------------------------|
|             | a. sensory organs  
|             | b. motor organs  
|             | c. spinal cord  
|             | d. brain  |

| Objective 6 | 18. Tissue consisting of one or more bundles of impulse-carrying fibers that connect the brain and the spinal cord with other parts of the body is ______.
|-------------|----------------------------------------------------------------------------------|
|             | a. white matter  
|             | b. myelin  
|             | c. sulcus  
<p>|             | d. nerve tissue  |</p>
<table>
<thead>
<tr>
<th>Objective 10</th>
<th>19. Sensory neurons are controlled by the ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. frontal lobe of the brain</td>
</tr>
<tr>
<td></td>
<td>b. pons</td>
</tr>
<tr>
<td></td>
<td>c. thalamus</td>
</tr>
<tr>
<td></td>
<td>d. meninges</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 13</th>
<th>20. The spinal cord is a small cord about ______ inches long in an adult.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. 10</td>
</tr>
<tr>
<td></td>
<td>b. 12</td>
</tr>
<tr>
<td></td>
<td>c. 18</td>
</tr>
<tr>
<td></td>
<td>d. 24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 14</th>
<th>21. The ______ controls the muscles of the neck and upper back and carries impulses to the neck and shoulder muscles.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. vagus</td>
</tr>
<tr>
<td></td>
<td>b. spinal accessory</td>
</tr>
<tr>
<td></td>
<td>c. abducens</td>
</tr>
<tr>
<td></td>
<td>d. hypoglossal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 10</th>
<th>22. Motor neurons are controlled by the ______ lobe of the brain.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. frontal</td>
</tr>
<tr>
<td></td>
<td>b. occipital</td>
</tr>
<tr>
<td></td>
<td>c. temporal</td>
</tr>
<tr>
<td></td>
<td>d. parietal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 13</th>
<th>23. The spinal cord lies within the spinal canal surrounded by the ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. medulla oblongata</td>
</tr>
<tr>
<td></td>
<td>b. myelin sheath</td>
</tr>
<tr>
<td></td>
<td>c. neurilemma tube</td>
</tr>
<tr>
<td></td>
<td>d. vertebrae</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 11</th>
<th>24. ______ is nerve tissue that consists of motor neurons and interneurons.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. White matter</td>
</tr>
<tr>
<td></td>
<td>b. Gray matter</td>
</tr>
<tr>
<td></td>
<td>c. Myelin</td>
</tr>
<tr>
<td></td>
<td>d. Neurilemma</td>
</tr>
</tbody>
</table>
## Assignment Sheet 6

<table>
<thead>
<tr>
<th>Objective 3</th>
<th>25. The row of aligned holes in the vertebrae through which the spinal cord passes is the ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. CNS</td>
</tr>
<tr>
<td></td>
<td>b. PNS</td>
</tr>
<tr>
<td></td>
<td>c. spinal cord</td>
</tr>
<tr>
<td></td>
<td>d. spinal canal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 4</th>
<th>26. The term somatic means _______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. preparing the body to deal with emergencies</td>
</tr>
<tr>
<td></td>
<td>b. occurring involuntarily</td>
</tr>
<tr>
<td></td>
<td>c. affecting the body</td>
</tr>
<tr>
<td></td>
<td>d. restoring homeostatic balance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 5</th>
<th>27. The part of the autonomic nervous system that restores homeostatic balance and conserves energy is the _________.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. parasympathetic nervous system</td>
</tr>
<tr>
<td></td>
<td>b. sympathetic nervous system</td>
</tr>
<tr>
<td></td>
<td>c. somatic nervous system</td>
</tr>
<tr>
<td></td>
<td>d. peripheral nervous system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 14</th>
<th>28. Which of the following nerve pair supply the face muscles, the middle ear, and the taste sensors?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Oculomotor</td>
</tr>
<tr>
<td></td>
<td>b. Facial</td>
</tr>
<tr>
<td></td>
<td>c. Abducens</td>
</tr>
<tr>
<td></td>
<td>d. Vagus</td>
</tr>
</tbody>
</table>
Module 9  Circulatory System

Objective 25

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–7)

Name _________________________________________________________
Date _________________________________  Score _________________

Evaluation Criteria Rating
•  Directions were followed ________
•  Terms were identified correctly ________

Basic Skills
Reading  Science

Directions
Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
2. Red blood cells (RBCs) that transport oxygen and carbon dioxide in support of respiration
3. The fluid part of blood and lymph
6. The liquid part of blood that serves as a source of nutrition and a means of removing waste products from the cells of the body
10. The network of channels through which the nutrient fluids of the body circulate
11. The process of blood becoming solid
12. One of two types of white blood cells—a T cell or a B cell—that performs various functions related to recognizing, marking, and remembering pathogens based on their antigens

Down
1. A chemical that prevents blood from clotting
4. A type of white blood cell that enlarges to form a macrophage in order to perform more-rapid phagocytosis
5. Blood platelets, the tiny protoplasmic discs of the blood that assist in blood clotting
7. Another term for white blood cell
8. The liquid pumped by the heart through the arteries, veins, and capillaries, carrying nourishment and oxygen to and bringing away waste products from all parts of the body
9. The pale fluid that bathes the tissues, passes into lymphatic vessels and ducts, and is discharged into the blood
Module 9  
Circulatory System

Objective 26

Assignment Sheet 2—Complete the Crossword
Puzzle of Terms (Objectives 8–24)

Name _________________________________________________________
Date _________________________________ Score _________________

Evaluation Criteria

<table>
<thead>
<tr>
<th>Rating</th>
</tr>
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<tbody>
<tr>
<td>• Directions were followed</td>
</tr>
<tr>
<td>• Terms were identified correctly</td>
</tr>
</tbody>
</table>

Basic Skills

Reading
Science

Directions

Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
1. Pertaining to the arm
4. Pertaining to the radius, the bone of the forearm
5. Pertaining to the ulna, the bone on the little-finger side of the forearm
9. The network of anatomical structures, including the heart and the blood vessels, that pump blood throughout the body
10. Of or pertaining to the blood vessels
12. The upper border of the heart

Down
2. Pertaining to the armpit
3. Half-moon shaped
6. Of or pertaining to the heart
7. The portion of the cardiovascular system that deals with the blood vessels that allow for the circulation of blood throughout the body
8. A portion of the thoracic cavity in the middle of the thorax, between the pleural sacs containing the two lungs
11. The lower border of the heart
Assignment Sheet 2
Module 9  
Circulatory System

Objective 27  

Assignment Sheet 3—Construct a Model of the Human Heart

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
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<tbody>
<tr>
<td>Model reflects research findings related to:</td>
<td></td>
</tr>
<tr>
<td>— Major structures of the heart</td>
<td></td>
</tr>
<tr>
<td>— Characteristics of the chambers of the heart</td>
<td></td>
</tr>
<tr>
<td>— Characteristics of the major veins of the heart</td>
<td></td>
</tr>
<tr>
<td>— Characteristics of the major arteries of the heart</td>
<td></td>
</tr>
<tr>
<td>— Characteristics of the major valves of the heart</td>
<td></td>
</tr>
<tr>
<td>Presentation is clear and concise</td>
<td></td>
</tr>
<tr>
<td>Teamwork demonstrated throughout completion of assignment</td>
<td></td>
</tr>
<tr>
<td>Internet used to conduct research</td>
<td></td>
</tr>
<tr>
<td>Computer used to develop 3-D model (if available)</td>
<td></td>
</tr>
<tr>
<td>Bonus points—Discuss observations a cosmetologist may make during services for a client that has heart problems.</td>
<td></td>
</tr>
</tbody>
</table>

Basic Skills

Directions Part 1

Research the human heart using resources available on the Internet or provided by your instructor. Work with another student and write your findings below. This information will help you in constructing your model and preparing your presentation.

Major structures ________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________
## Assignment Sheet 3

<table>
<thead>
<tr>
<th>Chambers of the heart and characteristics of each</th>
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<th>Major veins of the heart</th>
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<th>Major arteries of the heart</th>
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<table>
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<tr>
<th>Major valves of the heart</th>
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</tbody>
</table>
Assignment Sheet 3

**Directions Part 2**

Draw a rough sketch of the human heart, noting any structural features that should be included on the model. Work with your partner on the sketch.

**Directions Part 3**

Construct a model of the human heart using the findings collected through your research. You may use paper, clay, or other materials as directed by your instructor. You may use a 3-D modeling computer program if available.

Present your model of the human heart to class members. Expound on the points listed in the evaluation criteria. Provide time for classmates to ask questions.
### Assignment Sheet 4—Research the Route of a Blood Cell Through the Circulatory System

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Used the Internet to conduct research</td>
<td>______</td>
</tr>
<tr>
<td>• Organizer is clear and concise and includes:</td>
<td>______</td>
</tr>
<tr>
<td>— Selection of a blood cell</td>
<td>______</td>
</tr>
<tr>
<td>— Description of blood cell traveling from the heart</td>
<td>______</td>
</tr>
<tr>
<td>— Description of blood cell traveling through the body</td>
<td>______</td>
</tr>
<tr>
<td>— Description of blood cell returning to the heart</td>
<td>______</td>
</tr>
<tr>
<td>• Used the completed graphic organizer to develop paper on a blood cell's trip</td>
<td>______</td>
</tr>
<tr>
<td>on the circulatory system</td>
<td>______</td>
</tr>
<tr>
<td>• Followed instructor’s directions pertaining to the style and length of paper</td>
<td>______</td>
</tr>
<tr>
<td>and length of paper to the written</td>
<td>______</td>
</tr>
<tr>
<td>• Used computer to write the paper</td>
<td>______</td>
</tr>
</tbody>
</table>

---

**Basic Skills**

- **Reading**
- **Writing**
- **Science**
- **Critical Thinking**
- **Technology**

**Directions**

Research the circulatory system, the direction and path the blood takes through the body, and the function of the blood cell and what it accomplishes during the travel and return to the heart. Organize your research using the graphic organizer included in this assignment sheet, or one provided by your instructor. After organizing your research and thoughts, write a paper as if you are a white blood cell or a red blood cell. Describe your trip through the circulatory system. Follow your instructor's directions pertaining to length and style, and use a computer, if available, to write your paper.
Use as many blocks for your graphic organizer as needed. You are not limited to the area and space provided.
Module 9  
Circulatory System

Objective 29

Assignment Sheet 5—Analyze Cosmetology Scenarios

Name _________________________________________________________

Date _________________________________  Score _________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Analysis demonstrates the ability to apply knowledge of the information presented in the Information Sheet to a given situation</td>
<td>______</td>
</tr>
<tr>
<td>• Answers are clear and concise</td>
<td>______</td>
</tr>
<tr>
<td>• Handwriting is neat and legible</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  Writing  Science  Oral Communication  Interpersonal  Critical Thinking

Directions

Read each scenario and answer the questions that follow.

Scenario 1

Mr. Turner brings his daughter, Apple, to the salon for a manicure. In your examination of the hands, you notice Apple’s skin appears thin and there is a blue color at the base of each fingernail.

1. What could cause the blue color?

2. What should you do?
Assignment Sheet 5

Scenario 2
Ms. Buckingham comes into the salon for a pedicure. In your examination you discover a large burse on her right leg that extends the circumference of the leg that reaches from just below the knee to above the ankle. Ms. Buckingham explains that she is diabetic and that it is just a diabetic leg. Her left leg appears to be free of burses.

What should you do?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Scenario 3
Mr. Santos comes into the salon again with a terrible headache. You notice a hard ridge across his forehead. He requests a head, neck, shoulder, and face massage.

1. What could cause the ridge across the forehead?
____________________________________________________________________________________
____________________________________________________________________________________

2. What should you do?
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
Module 9  

Circulatory System

Objective 30

Assignment Sheet 6—Complete Module 9 Review

Name_______________________________________________________

Date_______________________________ Score____________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Directions were followed</td>
<td>______</td>
</tr>
<tr>
<td>• Answers demonstrated comprehensive knowledge of the information presented in the Information Sheet</td>
<td>______</td>
</tr>
</tbody>
</table>

Basic Skills

Reading  

Science

Directions

Read each of the items below. From the choices given, select the response that most-correctly provides the required information. Circle the letter of the most-correct response.

Objective 5  

1. ______ ingest and digest foreign particles in blood, form antibodies, and release ______.
   a. Leukocytes; heparin
   b. Leukocytes; carbon dioxide
   c. Erythrocytes; heparin
   d. Erythrocytes; carbon dioxide

Objective 4

2. Pumping blood to maintain the circulation of the blood is the function of the ______.
   a. heart
   b. vessels
   c. spleen
   d. lymph nodes

Objective 7

3. Blood plasma contains ______.
   a. electrolytes and respiratory gases
   b. nutrients, metabolic wastes, and water
   c. antibodies
   d. all of the above
<table>
<thead>
<tr>
<th>Objective 6</th>
<th>4. Oxygenated blood in the arteries is ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. purple</td>
</tr>
<tr>
<td></td>
<td>b. blue</td>
</tr>
<tr>
<td></td>
<td>c. dark red</td>
</tr>
<tr>
<td></td>
<td>d. bright red</td>
</tr>
<tr>
<td>Objective 6</td>
<td>5. Which of the following represents the correct proportions of blood constituents?</td>
</tr>
<tr>
<td></td>
<td>a. 78 percent water and 22 percent solids</td>
</tr>
<tr>
<td></td>
<td>b. 45 percent plasma and 55 percent cells</td>
</tr>
<tr>
<td></td>
<td>c. both “a” and “b”</td>
</tr>
<tr>
<td></td>
<td>d. neither “a” nor “b”</td>
</tr>
<tr>
<td>Objective 6</td>
<td>6. The normal pH of blood is approximately ______.</td>
</tr>
<tr>
<td></td>
<td>a. 6.95 to 7.05</td>
</tr>
<tr>
<td></td>
<td>b. 7.15 to 7.25</td>
</tr>
<tr>
<td></td>
<td>c. 7.35 to 7.45</td>
</tr>
<tr>
<td></td>
<td>d. 7.55 to 7.65</td>
</tr>
<tr>
<td>Objective 5</td>
<td>7. ______ is the liquid part of blood that serves as a source of nutrition and a means of removing waste products from the body cells.</td>
</tr>
<tr>
<td></td>
<td>a. Blood serum</td>
</tr>
<tr>
<td></td>
<td>b. Glucose</td>
</tr>
<tr>
<td></td>
<td>c. Fibrin</td>
</tr>
<tr>
<td></td>
<td>d. Blood plasma</td>
</tr>
<tr>
<td>Objective 4</td>
<td>8. ________ are the many blood vessels that convey blood from the capillaries to the heart.</td>
</tr>
<tr>
<td></td>
<td>a. Arteries</td>
</tr>
<tr>
<td></td>
<td>b. Veins</td>
</tr>
<tr>
<td></td>
<td>c. Arterioles</td>
</tr>
<tr>
<td></td>
<td>d. Venules</td>
</tr>
<tr>
<td>Objective 2</td>
<td>9. Which of the following is NOT a function of the circulatory system?</td>
</tr>
<tr>
<td></td>
<td>a. protects the body against invading organisms</td>
</tr>
<tr>
<td></td>
<td>b. helps regulate body temperature</td>
</tr>
<tr>
<td></td>
<td>c. prevents homeostasis</td>
</tr>
<tr>
<td></td>
<td>d. transports waste products to excretory organs</td>
</tr>
</tbody>
</table>
Objective 3
10. The major subsystems of the circulatory system are the ______ and ______ systems.
   a. blood; lymphatic
   b. arteries; veins
   c. lymphatic vessels; nodes
   d. lymphocytes; monocytes

Objective 1
11. The circulatory system is the network of channels through which the ______ fluids of the body circulate.
   a. excretory
   b. lymphatic
   c. plasma
   d. nutrient

Objective 5
12. Thrombocytes assist in blood ______.
   a. circulation
   b. clotting
   c. pressure
   d. cell division

Objective 6
13. The normal adult human body contains approximately ______ cubic centimeters of blood.
   a. 2000 to 2500
   b. 3000 to 3500
   c. 4000 to 4500
   d. 5000 to 5500

Objective 5
14. ______ are red blood cells (RBCs) that transport oxygen and carbon dioxide in support of respiration.
   a. Leukocytes
   b. Erythrocytes
   c. Electrolytes
   d. Lymphocytes

Objective 6
15. Blood tastes slightly ______.
   a. metallic and salty
   b. sweet and sugary
   c. sour and stale
   d. bitter and tangy

Objective 4
16. ______ are the smallest blood vessels forming networks throughout the body.
   a. Veins
   b. Venules
   c. Arterioles
   d. Capillaries
Objective 2

17. Which of the following are transported to and from the cells by the circulatory system?
   a. oxygen and carbon dioxide
   b. food and water
   c. both “a” and “b”
   d. neither “a” nor “b”

Objective 15

18. What major structure of the heart is indicated by the letter “X” in the illustration below?
   a. aorta
   b. left pulmonary artery
   c. superior vena cava
   d. inferior vena cava

Objective 15

19. What major structure of the heart is indicated by the letter “Y” in the illustration above?
   a. aorta
   b. left pulmonary artery
   c. superior vena cava
   d. inferior vena cava
Objective 15  
20. What tissue layer of the heart is indicated by the letter “X” in the illustration below?
   a. endocardium
   b. myocardium
   c. epicardium
   d. right ventricle

21. What major structure of the heart is indicated by the letter “Y” in the illustration above?
   a. endocardium
   b. myocardium
   c. septum
   d. right ventricle

Objective 14  
22. The ______ valve consists of three flaps or cusps.
   a. aortic semilunar valve
   b. pulmonary semilunar valve
   c. bicuspid valve
   d. tricuspid valve
<table>
<thead>
<tr>
<th>Objective 12</th>
<th>23. The superior vena cava ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. carries blood from the lower part of the body</td>
</tr>
<tr>
<td></td>
<td>b. carries blood from the upper part of the body</td>
</tr>
<tr>
<td></td>
<td>c. carries oxygenated blood back to the heart from the lungs</td>
</tr>
<tr>
<td></td>
<td>d. deposits oxygenated blood in the left ventricle</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 14</th>
<th>24. The semilunar valves are shaped like a ______.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. square</td>
</tr>
<tr>
<td></td>
<td>b. triangle</td>
</tr>
<tr>
<td></td>
<td>c. circle</td>
</tr>
<tr>
<td></td>
<td>d. half-moon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 9</th>
<th>25. Which of the following statements is NOT true about the positioning of the heart?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. It lies in the mediastinum with approximately two-thirds of its mass to the left of the midline of the body.</td>
</tr>
<tr>
<td></td>
<td>b. It rests obliquely in the body with the right side anterior to the left side.</td>
</tr>
<tr>
<td></td>
<td>c. It rests on the liver with the apex pointing left.</td>
</tr>
<tr>
<td></td>
<td>d. It is positioned with the base below the second rib.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 15</th>
<th>26. What major structure of the heart is indicated by the letter “X” in the illustration below?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. aortic valve</td>
</tr>
<tr>
<td></td>
<td>b. bicuspid valve</td>
</tr>
<tr>
<td></td>
<td>c. tricuspid valve</td>
</tr>
<tr>
<td></td>
<td>d. pulmonary valve</td>
</tr>
</tbody>
</table>
Objective 15  27. What major structure of the heart is indicated by the letter “Y” in the illustration on the previous page?
   a. aortic valve
   b. bicuspid valve
   c. tricuspid valve
   d. pulmonary valve

Objective 10  28. The heart is divided into left and right halves by the ______.
   a. endocardium
   b. myocardium
   c. pericardium
   d. septum

Objective 11  29. The left ventricle ______.
   a. receives deoxygenated blood
   b. receives oxygenated blood
   c. pumps deoxygenated blood to the lungs
   d. pumps oxygenated blood to the body

Objective 11  30. The right atrium ______.
   a. receives deoxygenated blood
   b. receives oxygenated blood
   c. pumps deoxygenated blood to the lungs
   d. pumps oxygenated blood to the body

Objective 8  31. The network of anatomical structures, including the heart and the blood vessels, that pump blood throughout the body is the ______.
   a. cardiac system
   b. vascular system
   c. cardiovascular system
   d. mediastinum

Objective 9  32. The heart weighs approximately ______ grams.
   a. 100 to 200
   b. 250 to 350
   c. 400 to 500
   d. 550 to 650
<table>
<thead>
<tr>
<th>Objective</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>When the heart contracts, blood leaves the right ventricle of the heart</td>
</tr>
<tr>
<td></td>
<td>through the ______ and the ______ and travels to the lungs.</td>
</tr>
<tr>
<td></td>
<td>a. superior vena cava; inferior vena cava</td>
</tr>
<tr>
<td></td>
<td>b. right atrium; left atrium</td>
</tr>
<tr>
<td></td>
<td>c. left pulmonary artery; right pulmonary artery</td>
</tr>
<tr>
<td></td>
<td>d. left ventricle; aorta</td>
</tr>
<tr>
<td>14</td>
<td>Which of the following statements is NOT true about the bicuspid valve?</td>
</tr>
<tr>
<td></td>
<td>a. It is located between the two left chambers.</td>
</tr>
<tr>
<td></td>
<td>b. It consists of two flaps or cusps.</td>
</tr>
<tr>
<td></td>
<td>c. It has valve flaps that prevent blood from flowing back into the right</td>
</tr>
<tr>
<td></td>
<td>ventricle.</td>
</tr>
<tr>
<td></td>
<td>d. It is located between the left atrium and the left ventricle.</td>
</tr>
<tr>
<td>9</td>
<td>The heart is suspended in the thoracic cavity by ______.</td>
</tr>
<tr>
<td></td>
<td>a. vessels</td>
</tr>
<tr>
<td></td>
<td>b. ligaments</td>
</tr>
<tr>
<td></td>
<td>c. tendons</td>
</tr>
<tr>
<td></td>
<td>d. pericardium</td>
</tr>
<tr>
<td>9</td>
<td>The heart lies in a fibrous, loose-fitting sac called the ______.</td>
</tr>
<tr>
<td></td>
<td>a. pericardium</td>
</tr>
<tr>
<td></td>
<td>b. parietal pericardium</td>
</tr>
<tr>
<td></td>
<td>c. pericardial space</td>
</tr>
<tr>
<td></td>
<td>d. none of the above</td>
</tr>
<tr>
<td>12</td>
<td>The right pulmonary vein ______.</td>
</tr>
<tr>
<td></td>
<td>a. carries blood from the lower part of the body</td>
</tr>
<tr>
<td></td>
<td>b. carries blood from the upper part of the body</td>
</tr>
<tr>
<td></td>
<td>c. carries oxygenated blood back to the heart from the lungs</td>
</tr>
<tr>
<td></td>
<td>d. deposits deoxygenated blood in the left ventricle</td>
</tr>
<tr>
<td>17</td>
<td>Which of the following is NOT a major structure of the vascular system?</td>
</tr>
<tr>
<td></td>
<td>a. arteries and arterioles</td>
</tr>
<tr>
<td></td>
<td>b. capillaries and venules</td>
</tr>
<tr>
<td></td>
<td>c. venules and veins</td>
</tr>
<tr>
<td></td>
<td>d. visceral organs and tissues</td>
</tr>
</tbody>
</table>
| Objective 16 | 39. The portion of the cardiovascular system that deals with the blood vessels that allow for circulation throughout the body is the _____.  
   a. vascular system  
   b. systemic circulation system  
   c. circulatory system  
   d. portal circulation system |
| Objective 18 | 40. The main artery from the aortic arch that supplies the right arm and the surrounding area is the right __________ artery.  
   a. carotid  
   b. brachial  
   c. radial  
   d. subclavian |
| Objective 18 | 41. The __________ artery has nine branches: four in the forearm; two in the wrist; and three in the hand.  
   a. axillary  
   b. radial  
   c. ulnar  
   d. brachial |
| Objective 18 | 42. __________ means “pertaining to the arm.”  
   a. Brachial  
   b. Radial  
   c. Axillary  
   d. Ulnar |
| Objective 20 | 43. Capillaries _____ arterioles and venules.  
   a. separate  
   b. grow into  
   c. connect  
   d. provide nervous-system inputs to |
| Objective 20 | 44. Nutrients, oxygen, and cell metabolic wastes pass through the capillary walls by _______.  
   a. hydrophilic pressure  
   b. hydrophobic pressure  
   c. osmosis  
   d. stenosis |
Objective 19  45. The artery indicated by the letter “W” in the illustration on the next page is the ______.

   a. aortic arch
   b. innominate artery
   c. right subclavian artery
   d. right carotid artery

Objective 19  46. The artery indicated by the letter “X” in the illustration on the next page is the ______ artery.

   a. axillary
   b. brachial
   c. left subclavian
   d. radial

Objective 19  47. The artery indicated by the letter “Y” in the illustration on the next page is the ______ artery.

   a. axillary
   b. brachial
   c. radial
   d. ulnar

Objective 19  48. The artery indicated by the letter “Z” in the illustration on the next page is the ______ artery.

   a. radial
   b. ulnar
   c. brachial
   d. subclavian
Objective 21  49. The ______ carry oxygenated blood from the lungs to the heart.
   a. vena cava and vena superior
   b. aorta and descending aorta
   c. pulmonary arteries
   d. pulmonary veins

Objective 21  50. Veins branch into ________ and these branch into __________.
   a. arterioles, capillaries
   b. venules, capillaries
   c. arterioles, venules
   d. venules, arterioles

Objective 20  51. Capillary walls are ______ thick.
   a. one cell layer
   b. two cell layers
   c. three cell layers
   d. four cell layers
<table>
<thead>
<tr>
<th>Objective 23</th>
<th>52. Which of the following statements is NOT true concerning blood pressure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Blood pressure is the pressure exerted by the circulating volume of blood on the walls of the arteries, the veins, and the chambers of the heart.</td>
<td></td>
</tr>
<tr>
<td>b. Blood pressure is created by the contraction of the ventricles in the heart.</td>
<td></td>
</tr>
<tr>
<td>c. Blood pressure measurement is always given stating the diastole first and the systole second.</td>
<td></td>
</tr>
<tr>
<td>d. A blood pressure reading for a typically healthy young adult is 120/70.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 22</th>
<th>53. Which of the following statements is NOT correct with regard to the pulse and pulse points?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The pulse points are the sites on the surface of the body where vein pulsations can be easily felt.</td>
<td></td>
</tr>
<tr>
<td>b. The pulse points are the sites on the surface of the body where arterial pulsations can be easily felt.</td>
<td></td>
</tr>
<tr>
<td>c. Normal pulse rate is between 60 to 80 beats per minute.</td>
<td></td>
</tr>
<tr>
<td>d. At the pulse points, vibrations can be felt where arteries are near the surface of the body.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 18</th>
<th>54. The left and right sides of the head, neck, and brain are supplied by the _______ arteries.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. carotid</td>
<td></td>
</tr>
<tr>
<td>b. subclavian</td>
<td></td>
</tr>
<tr>
<td>c. superior phrenic</td>
<td></td>
</tr>
<tr>
<td>d. inferior phrenic</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 21</th>
<th>55. Which of the following is NOT a true statement about veins?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The middle layer of muscle tissue in a vein is not well developed or very flexible.</td>
<td></td>
</tr>
<tr>
<td>b. The wall of a vein is relatively thick so that the vein does not collapse when cut.</td>
<td></td>
</tr>
<tr>
<td>c. Many veins contain valves that prevent the backflow of blood.</td>
<td></td>
</tr>
<tr>
<td>d. Many veins share their names with the corresponding arteries.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 24</th>
<th>56. What is the function of the lymphatic system?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. maintenance of the internal fluid environment of the body</td>
<td></td>
</tr>
<tr>
<td>b. filtering lymph</td>
<td></td>
</tr>
<tr>
<td>c. both “a” and “b”</td>
<td></td>
</tr>
<tr>
<td>d. neither “a” nor “b”</td>
<td></td>
</tr>
</tbody>
</table>
Module 10

Objective 12

Assignment Sheet 1—Complete the Crossword Puzzle of Terms (Objectives 1–11)

Name _________________________________________________________
Date _________________________________ Score _________________

Evaluation Criteria Rating
• Directions were followed ______
• Terms were identified correctly ______

Basic Skills
Reading
Science

Directions
Read the definition given for each term in the puzzle and write the term in the correct blocks to complete the crossword puzzle.

Across
3. The organs, structures, and accessory glands of the digestive tube of the body through which food passes
5. Resembling a sac
7. A broad mass of nerve fibers conspicuous on the ventral surface of the brainstem
9. The bitter, yellow-green secretion of the liver that is stored in the gallbladder
10. Related to those chemicals that contain carbon and are commonly found as the building blocks of living things
11. The process of inhaling and exhaling air through the lungs; breathing
12. The waste material that is secreted by the kidneys
13. The digestive tube; the muscular tube that extends from the mouth to the anus
14. The part of the brain composed of the mesencephalon, pons, and medulla oblongata and connecting the spinal cord with the forebrain and cerebrum

Down
1. All of the organs involved in the secretion and elimination of urine
2. One of the three parts of the brainstem that contains the cardiac, vasomotor, and the respiratory centers of the brain
4. The process of oxygen carried by the blood passing into the cells and being used by the cells, which leads to the production of carbon dioxide that is then carried away by the blood
6. The complex of organs and structures that performs the pulmonary ventilation of the body and cellular respiration
8. The glands of the digestive system that secrete the digestive enzymes that are used by the digestive system to break down food substances in preparation for absorption into the bloodstream before carrying the waste to the intestines for excretion
Module 10

Respiratory, Digestive, and Urinary Systems

Objective 13

Assignment Sheet 2—Participate in a "Face Off"

Name _________________________________________________________

Date _________________________________  Score __________________

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>• Directions were followed</td>
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</tr>
<tr>
<td>• Answers demonstrated comprehensive knowledge of the</td>
<td></td>
</tr>
<tr>
<td>respiratory, digestive, and urinary systems</td>
<td></td>
</tr>
<tr>
<td>• Demonstrated teamwork throughout participation</td>
<td></td>
</tr>
<tr>
<td>in &quot;Face Off&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Basic Skills

Directions

Part 1

Work individually to answer the questions below. This is a timed exercise, therefore write everything you know about each question as quickly as possible. You may use additional paper if needed. Your paper will not be submitted for a grade. You may even use text messaging techniques to write more quickly. Your answers are to be used during the "Face Off." You have 5 minutes.

1. Define the respiratory system.

________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

2. Describe characteristics of pulmonary ventilation.

________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

Respiratory, Digestive, and Urinary Systems
3. Define the digestive system.

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

4. Discuss the functions of the digestive system.

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

5. Define the urinary system.

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

6. Discuss the functions of the urinary system.

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________
### Assignment Sheet 2

**Directions**

**Part 2**

Move to the location that has been prepared with two rows of chairs facing each other in two straight lines. There should be enough chairs for each member of the class. Take your answers to the questions with you. Take a seat facing a classmate. The teacher will assign each student a question to ask each student that faces them. As the teacher states “Start” the students on the right hand row of chairs read the question from your assignment sheet that has been assigned to them. The students on the left hand row of chairs begin giving their answer to the question asked. While the student is giving their answer, the student in the right hand row of chairs writes the other student’s answers on a blank assignment sheet that has the questions already written. When the teacher states “Stop”, all communication ceases and the responsibilities of the students change. The student on the left hand row asks the student opposite them the question they have been assigned.

The process continues with the same two students. When the teacher states “Stop” the second time, all communication ceases and the students on the left hand row of chairs rotate to the left one chair. The student on the end of the row rotates to the opposite end of the row. These students ask the same question each time. The students on the right hand row of chairs remain in the same chair throughout the exercise and ask the same question each time. This process continues until every student has rotated through the line and every question has been asked to all students.

✔ **Note:** Thirty seconds per student is sufficient time to answer a question. While one student is speaking the student facing he/she should not speak. They should listen and write what they hear.

---

**Directions**

**Part 3**

Following the “Face Off” students come together in a group. The teacher asks the student that was on the right hand row with question 1 to respond to what they received as answers. Once all answers to question 1 have been recorded from the student, other students may add what they heard or know. This process continues until all questions have been answered as a group.

✔ **Note:** The responses should be recorded on an area large enough for all students to view as answers are given for each question.
Participate In a "Face Off"

1. Define the respiratory system.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. Describe characteristics of pulmonary ventilation.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. Define the digestive system.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. Discuss the functions of the digestive system.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
5. Define the urinary system.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

6. Discuss the functions of the urinary system.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Module 10

Objective 14

Assignment Sheet 3—Analyze Cosmetology Scenarios

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Analysis demonstrates the ability to apply knowledge of the information presented in the Information Sheet to a given situation _______

• Answers are clear and concise _______

• Handwriting is neat and legible _______

Basic Skills

Reading

Writing

Science

Interpersonal

Critical Thinking

Directions

Read each scenario and answer the questions that follow.

Scenario 1

Ms. Naifeh comes into the salon for a shampoo, cut, and style. She has difficulty breathing and is using oxygen. She has difficulty walking and moves very slowly.

1. What body system may be involved in the difficulties Ms. Naifeh is experiencing?

________________________________________________________

2. What should you do?

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________
**Assignment Sheet 3**

<table>
<thead>
<tr>
<th>Scenario 2</th>
<th>Ms. Carr comes into the salon and immediately goes into the restroom. She returns and before you can complete a hair analysis on her, she has to return to the restroom. This situation continues to occur. Ms. Carr appears upset and frightened. She states that she continues to feel like she must urinate, but she hurts and cannot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What body system is involved?</td>
<td></td>
</tr>
<tr>
<td>2. What should you do?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scenario 3</th>
<th>Mr. Santelli comes into the salon for a chemical service. You notice that he has yellow color to his skin. You question him and he states that he has been having problems with his gallbladder and that he is scheduled for surgery to have it removed the following week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What body system is the gallbladder a part?</td>
<td></td>
</tr>
<tr>
<td>2. What should you do?</td>
<td></td>
</tr>
</tbody>
</table>
Scenario 4

Ms. Zarrabi comes into the salon for services. You notice that she has a yellow color to her skin and her eyes even look yellow. You question her and she states that she has not been feeling well. Ms. Zarrabi states that she is tired and just feels sick.

1. What body system may be involved?

2. What part of the system may be involved?

3. What do you think could be the condition Ms. Zarrabi is experiencing?

4. What do you do?

5. Why should you follow up on what the physician diagnosed as the problem?
Objective 15

Assignment Sheet 4—Complete Module 10 Review

Name _________________________________________________________

Date _________________________________  Score _________________

Evaluation Criteria Rating

• Directions were followed

• Answers demonstrated comprehensive knowledge
  of the information presented in the Information Sheet

Basic Skills

Reading  Science

Directions

Read each of the items below. From the choices given, select the response that
most-correctly provides the required information. Circle the letter of the most-
correct response.

Objective 2  1. The mechanical portion of external respiration is referred to as

   a.  venting
   b.  contracting
   c.  breathing
   d.  expiring

Objective 2  2. The major regulator of respiration is the carbon-dioxide level in the

   a.  lungs
   b.  blood
   c.  brain
   d.  heart

Objective 10  3. Which of the following statements is NOT a function of the urinary

   system?

   a.  The urinary system filters the urine by removing various toxins, metabolic waste
       products, and some water.
   b.  The urinary system manufactures and excretes urine.
   c.  The urinary system assists in regulation of water, electrolyte, and acid-base
       balance of the body.
   d.  The urinary system influences blood pressure.
| Objective 5 | 4. The digestive system converts nutrients into _____________ at the cellular level.  
| a. proteins  
| b. fat  
| c. carbohydrates  
| d. energy |

| Objective 3 | 5. Another term used to describe the windpipe is the _____________.  
| a. pharynx  
| b. larynx  
| c. trachea  
| d. nares |

| Objective 11 | 6. The ______________ is the small, tubular structure that drains urine from the bladder.  
| a. kidney  
| b. right ureter  
| c. left ureter  
| d. urethra |

| Objective 6 | 7. The ____________ secrete the digestive enzymes that are used by the digestive system to break down food substances for absorption into the bloodstream.  
| a. intestines  
| b. pharynx and esophagus  
| c. esophagus and stomach  
| d. accessory glands |

| Objective 9 | 8. The urinary system consists of all the organs involved in the _________ and ___________ of urine.  
| a. secretion; filtering  
| b. secretion; elimination  
| c. filtering; elimination  
| d. filtering; calculi formation |

| Objective 3 | 9. The ______________ is the muscular, tubular structure that extends from the base of the skull to the esophagus and serves as a passageway for both the respiratory and digestive tracts.  
| a. pharynx  
| b. larynx  
| c. trachea  
| d. nares |
| Objective 5 | 10. The digestive system converts excess nutrients into _________ for later use.
|            | a. proteins  
b. fat  
c. carbohydrates  
d. energy |
| Objective 2 | 11. High concentrations of carbon dioxide in the blood _________ the rate of respiration, while decreased concentrations of carbon dioxide will _________ the rate of respiration.
|            | a. increase; slow  
b. increase; speed  
c. decrease; speed  
d. decrease; slow |
| Objective 4 | 12. The _____________ is the organs, structures, and accessory glands of the digestive tube of the body through which food passes from the mouth to the anus.
|            | a. urinary tract  
b. alimentary tract  
c. digestive system  
d. intestinal tract |
| Objective 11 | 13. A ____________ is one of the bean-shaped urinary organs in the dorsal part of the abdomen, one on each side of the vertebral column.
|            | a. kidney  
b. ureter  
c. urinary bladder  
d. urethra |
| Objective 3 | 14. Which of the following is a correct statement about the diaphragm?
|            | a. The diaphragm is a dome-shaped partition of muscle and connective tissue.  
b. The diaphragm is the primary organ of breathing.  
c. On expiration, the diaphragm contracts, flattens, and moves downward to enlarge the thoracic cavity.  
d. On inspiration, the diaphragm relaxes and moves upward to decrease the size of the thoracic cavity. |
| Objective 7 | 15. The esophagus is a muscular, collapsible tube about _________.
|            | a. 10 inches long from the pharynx to the stomach  
b. 20 inches long from the pharynx to the stomach  
c. 10 inches long from the mouth to the stomach  
d. 20 inches long from the mouth to the stomach |
Objective 2  16. There are two stages to breathing: ________________.
   a. inspiration and respiration
   b. inspiration and inhalation
   c. exhalation and expiration
   d. inhalation and exhalation

Objective 7  17. The ___________ is the longest portion of the alimentary tract.
   a. pharynx
   b. larynx
   c. large intestine
   d. small intestine

Objective 1  18. Which of the following phrases is NOT a function of the respiratory system?
   a. inhaling and exhaling air through the lungs; breathing
   b. ensuring the blood circulates through the body so that oxygen can be carried to the cells
   c. performing external respiration
   d. performing internal respiration

Objective 8  19. Which of the following is NOT a function of the liver?
   a. produces bile
   b. regulates blood volume
   c. converts excess water into urine
   d. changes proteins into urea for elimination

Objective 3  20. The large air passages in the lungs through which pass inspired air and exhaled waste gases are the ________________.
   a. bronchi
   b. intercostals
   c. pleura
   d. nares

Objective 7  21. The ___________ is the tubular structure that extends from the base of the skull to the esophagus.
   a. mouth
   b. pharynx
   c. larynx
   d. alimentary tract
<table>
<thead>
<tr>
<th>Objective 5</th>
<th>22. The digestive system eliminates _______________.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. by-products of digestion that are not used by the cells or stored</td>
</tr>
<tr>
<td></td>
<td>b. fat</td>
</tr>
<tr>
<td></td>
<td>c. pathogens that enter the body through the mouth</td>
</tr>
<tr>
<td></td>
<td>d. the need to eat continuously</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8</th>
<th>23. Which of the following is NOT a function of the liver?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. manufactures antigens</td>
</tr>
<tr>
<td></td>
<td>b. produces body heat</td>
</tr>
<tr>
<td></td>
<td>c. detoxifies harmful substances, such as drugs and poisons, before they make their way to the heart</td>
</tr>
<tr>
<td></td>
<td>d. manufactures cholesterol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 5</th>
<th>24. One of the functions of the digestive system is to convert complex organic-compound molecules of ingested food into ___________.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. carbohydrates</td>
</tr>
<tr>
<td></td>
<td>b. simple organic and inorganic compounds</td>
</tr>
<tr>
<td></td>
<td>c. proteins</td>
</tr>
<tr>
<td></td>
<td>d. lipids and protolipids</td>
</tr>
</tbody>
</table>