

# REVIEW TEXT IN HEALTH

PAPERBACK  
EDITION

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*Dedicated to serving*



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# REVIEW TEXT IN HEALTH

## CONTENTS

Unit	Page	Unit	Page
1. THE HUMAN BODY .....	1	19. INVASION BY MICROORGANISMS .....	62
2. PERSONAL APPEARANCE: THE SKELETON .....	3	20. SOME MODERN MEDICAL DISCOVERIES .....	67
3. PERSONAL APPEARANCE: THE SKIN .....	6	21. MENTAL HEALTH .....	69
4. MUSCLES OF THE BODY .....	10	22. MAJOR HEALTH PROBLEMS .....	72
5. THE DIGESTIVE SYSTEM .....	12	23. BRIEF HISTORY OF MAN'S FIGHT AGAINST DISEASE .....	76
6. FOOD AND NUTRITION .....	15	24. MAN'S CONQUEST OF INFECTIOUS DISEASE .....	78
7. REST AND RECREATION .....	18	25. SUPERVISION OF HEALTH .....	80
8. DENTAL HEALTH .....	20	26. PROBLEMS RELATING TO MEDICAL CARE .....	83
9. THE SPECIAL SENSES: VISION AND CARE OF THE EYES .....	23	27. HOUSING AND HEALTH .....	85
10. THE SPECIAL SENSES: HEARING AND CARE OF THE EARS .....	27	28. ENVIRONMENTAL AND, OCCUPATIONAL HAZARDS .....	88
11. THE SPECIAL SENSES: TASTE, SMELL, TOUCH .....	29	29. SAFEGUARDING FOODS.....	91
12. DRUGS: ALCOHOL, TOBACCO, NARCOTICS .....	32	30. WATER SUPPLIES AND WASTE DISPOSAL .....	95
13. THE CIRCULATORY SYSTEM .....	36	31. SAFETY FOR HEALTH PROMOTION.....	99
14. THE RESPIRATORY SYSTEM .....	41	32. FIRST AID .....	103
15. THE NERVOUS SYSTEM .....	46	33. THE-HOME MEDICINE CABINET .....	107
16. EXCRETION OF WASTES .....	51	34. HEALTH PROBLEMS IN SPACE TRAVEL.....	110
17. THE ENDOCRINE SYSTEM .....	54		
18. A-B-C WARFARE: THE HYGIENIC CONSIDERATIONS .....	57	INDEX .....	118

## PREFACE

The purpose of this book is to cover the subject matter in Health as presently taught throughout the country.

Because there is always doubt as to just how much the student has carried away from the text or from the classroom instruction, the question-and-answer method has been used to present fundamentals briefly and concisely with a view to embodying minimum essentials.

Whenever possible, the material has been arranged in tabular form as an aid to memory.

The drawings are simple and clearly labeled to illustrate the subject matter. The student should have no difficulty in reproducing them.

Each chapter has been followed by varied objective questions that check the student's grasp of the factual content of the chapter.

Since the course in Health is offered at various grade levels, the language used has been carefully selected to meet the needs and limitations of all students in secondary schools.

About the authors:

Brother Patricius, who is a member of the Congregation of St Francis Xavier with headquarters in Baltimore, Maryland, is a graduate of Fordham

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Both are science teachers of many years experience at the secondary and college levels. They have thus combined an understanding of students' problems and interests with authoritative knowledge of teaching practice.

While realizing that no book can be one hundred percent free from error, the authors have striven toward this perfection. They will be grateful for any suggestions from teachers that will improve the material presented.

-The Authors

UNIT 1

THE HUMAN BODY

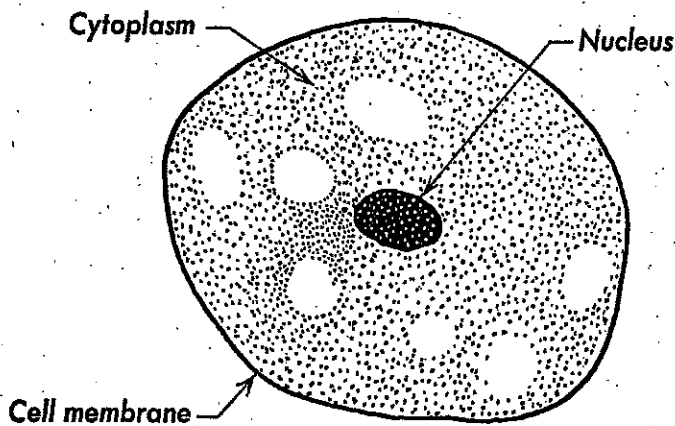
1. Of what chemical substances is the body composed?

The body is composed of 65% oxygen, 18% carbon, 10% hydrogen, 3% nitrogen, 2% calcium, 1% phosphorus. The remaining 1% consists of the following elements: sulfur, potassium, sodium, chlorine, iron, copper, silicon, iodine, fluorine, magnesium, manganese, zinc, cobalt, boron, and aluminum. These elements are combined as complex compounds. The living parts of the body are composed of a mixture of compounds, called protoplasm.

2. Of what building blocks is the body composed?

The living parts of the body are arranged in units called cells. Although cells differ among themselves, their basic structure is the same.

3. By means of a labeled diagram, show the typical parts of a human cell.



4. Name and describe the life functions performed by the cells of the body.

- A. Ingestion is the taking in of food for nourishment.
- B. Digestion is the changing of food from an insoluble form to a soluble form that can be used by the body.
- C. Absorption is the process by which digested food enters the blood.
- D. Circulation is the transportation of materials by the blood to all parts of the body.
- E. Assimilation is the changing of non-living matter into living material called protoplasm. This process results in growth and repair of tissues.
- F. Respiration is the process of (1) taking in oxygen, (2) oxidizing food in the cells, (3) releasing energy, and (4) giving off carbon dioxide and water vapor as wastes.
- G. Excretion is the elimination of wastes formed in the body.
- H. Secretion is the production of substances that help the body to function properly.
- I. Locomotion is the ability to move from place to place.
- J. Irritability (or sensitivity) is the ability to react to stimuli

in the environment.

- K. Reproduction is the process of producing offspring similar to the Parents.

5. How does specialization help the body perform the life functions efficiently?

In an efficient factory, the work is divided among many people. Each person is assigned a simple task in which he becomes proficient. Similarly, the body has different organs that perform particular life functions. For example, the heart pumps blood while the muscles help us move. Thus, these specialized organs, together with many others, enable the body to carry out the life functions efficiently.

6. How are cells organized in the body?

- A. A group of similar cells performing a similar function is called a tissue.
- B. A group of tissues performing a specific function is called an organ.
- C. A group of organs cooperating to perform a specific function is called an organ system.
- D. A group of systems cooperating to perform all the life functions makes up an organism, such as man.

7. In tabular form, list the major tissues, their locations, and their functions.

Tissue	Location	Function
Epithelial	Skin, and the lining of all cavities and hollow organs. Pancreas, salivary glands.	Protects against mechanical injury and bacterial invasion. Secretes useful substances.
Muscle	Attached to the skeleton, in the stomach and intestinal walls, and in the heart.	Produces movement by contracting and expanding.
Nerve	Brain, spinal cord, nerves, sense organs.	Carries impulses throughout the body, thus coordinating all activities.
Bone	Skeleton. Braincase, ribs.	Supports the body. Protects internal organs.
Cartilage	Ears, nose tip. Discs between vertebrae.	Supports some structures. Absorbs shock.
Blood	Within the heart and the blood vessels.	Transports food, oxygen, waste and other substances.

8. In tabular form, name five different organs, the organ system to which each belongs, and some life functions that the organ helps the body to perform.

Organ	Organ System	Life Function
Small intestine	Digestive	Digestion, absorption
Heart	Circulatory	Circulation
Lung	Respiratory	Respiration, excretion
Kidney	Excretory	Excretion
Brain	Nervous	Irritability

**9. Briefly describe the digestive system.**

The digestive system consists of a long food tube, called the alimentary canal, and several accessory organs.

- A. The *alimentary canal* is composed of the mouth, the throat (pharynx), the gullet (esophagus), the stomach, the small intestine, and the large intestine.
- B. The accessory organs include the *salivary glands*, the *pancreas*, and, the *liver*. The salivary glands and the pancreas, known as digestive glands, secrete certain chemicals, called enzymes which digest food. The liver, which is also a gland, secretes bile. However, bile contains no enzymes.
- C. The walls of the stomach and small intestine contain microscopic, digestive glands that secrete enzymes.

**10. Briefly describe the circulatory system.**

The circulatory system consists of the heart, blood, and blood vessels. The heart pumps blood through one set of blood vessels to all parts of the body. The blood flows back to the heart through another set of blood vessels.

- A. The *heart* is a muscular organ consisting of two receiving chambers (the *auricles*) and two pumping chambers (the *ventricles*). Contractions of the ventricles pump blood to the lungs and other parts of the body.
- B. Blood consists of cells suspended in a liquid called plasma.
  - (1) There are two main types of blood cells - *red corpuscles* and *white corpuscles*.
  - (2) *Plasma* is composed mainly of water in which different substances are dissolved.
- C. There are three main types of blood vessels:
  - (1) *Arteries* transport blood away from the heart.
  - (2) *Veins* transport blood back to the heart.
  - (3) *Capillaries*, which are microscopic, connect arteries and veins.

**11. Briefly, describe the respiratory system.**

The respiratory system consists of the respiratory tract through which air passes to and from the lungs. Movement of the air is produced by the diaphragm and the ribs. Oxygen from the air is delivered by the blood to all cells, where oxidation occurs.

- A. The respiratory tract consists of the nasal passages, pharynx (throat), larynx (voice box), trachea (windpipe), bronchi, bronchioles, and alveoli (air sacs) in the lungs.
- B. The diaphragm is a muscular organ separating the chest cavity from the abdominal cavity. The contractions and relaxations of the diaphragm, together with the movement of the ribs, cause air to enter and leave the lungs in the process of breathing.
- C. In the cells, oxygen combines with digested food. This process, called oxidation, makes energy available to the cells.

**12. Briefly describe the excretory system.**

- A. The excretory system consists of two kidneys that filter out certain wastes collected by the blood from the cells of the body. These wastes then pass down two tubes, called ureters, to the bladder, where the wastes are stored

temporarily.

- B. In addition, the skin and the lungs act as organs of excretion.
  - (1) Sweat glands in the skin remove some wastes and water from the blood.
  - (2) The lungs remove the waste products carbon dioxide and water, which are formed during cell respiration.

**13. Briefly describe the nervous system.**

The nervous system consists of the central nervous system, the autonomic nervous system, nerves, and sense organs.

- A. The central nervous system includes the brain and the spinal cord.
- B. The autonomic nervous system includes nerves from the lowest part of the brain (the medulla oblongata) and two chains of nerves and ganglia outside the spinal cord. Additional nerves interconnect all these parts.
- C. Nerves carry impulses to and from the central and autonomic nervous systems.
- D. Sense organs, such as the eyes, receive stimuli and convert them into impulses that are transmitted along nerves to the brain.

**14. Briefly describe the endocrine system.**

The endocrine system is composed of a number of ductless glands. Most glands, like the pancreas, possess a duct (tube) through which the glandular secretion passes out of the gland. Some glands lack such a duct. Instead, their secretions pass directly into the blood. Some examples of ductless glands are:

- A. the thyroid gland located just below the larynx.
- B. the pituitary gland located at the base of the brain.
- C. the adrenal glands located just above each kidney.

**15. Briefly describe the skeletal system.**

The skeletal system consists of 206 bones arranged in the following groups:

- A. The skull is composed of a cranium (braincase) and facial bones.
- B. The spinal column (backbone) consists of a number of vertebrae, fitted together, end to-end.
- C. The chest, or rib cage, consists of 12 pairs of ribs, the breastbone, and part of the spinal column.
- D. The arm bones are attached to the trunk by means of the shoulder girdle.
- E. The leg bones are attached to the trunk by means of the pelvic (hip) girdle.

**16. Briefly describe the muscular system.**

The muscular system includes a number of skeletal muscles attached to bones by tendons. Movement of the skeleton is brought about by movement of the muscles.

---

**MULTIPLE-CHOICE QUESTIONS**

Write the letter preceding the word or expression that, of those given, best completes, the statement.

- 1. The chemical substance in which protoplasm is richest is (a) oxygen (b) phosphorus (c) copper (d) sodium.

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- A group of similar cells engaged in the same activity is (a) an organ (b) a system (c) an organism (d) a tissue.
- The smallest blood vessels in the body are the (a) veins (b) lymphatics (c) arteries (d) capillaries.
- The outermost boundary of a cell is the (a) nuclear membrane (b) cytoplasm (c) cell membrane (d) nucleus.
- A tissue that is a liquid is (a) nerve (b) water (c) blood (d) gastric juice.
- The human heart consists of (a) 3 chambers (b) 2 chambers (c) 4 chambers (d) no chambers.
- The body chemicals that help in the digestion of foods are called (a) enzymes (b) minerals (c) endocrines (d) carbohydrates.
- An organ that is not part of the alimentary canal is the (a) stomach (b) windpipe (c) mouth (d) large intestine.
- In the human body, specialization of structures increases the (a) chances of complications (b) efficiency of operation of the body (c) deficiency of food (d) work of each tissue.
- Oxidation in the body occurs in (a) all cells (b) the lungs (c) the heart (d) the blood.

### COMPLETION QUESTIONS

Write the word or expression that, when inserted in the blank, will correctly complete the statement.

- The living parts of the body are composed of units called \_\_\_\_\_.
- A tissue that acts as a framework for the body and protects some internal organs is \_\_\_\_\_.
- Ductless glands make up the \_\_\_\_\_ system.
- The small intestine is part of that organ system called the \_\_\_\_\_ system.
- The living material that surrounds the nucleus of a cell is called the \_\_\_\_\_.
- Organs that function in excretion are the lungs, skin, and \_\_\_\_\_.
- The voice box is part of the \_\_\_\_\_ tract.
- The shoulder girdle is part of the \_\_\_\_\_ system.
- The secretion of the liver is called \_\_\_\_\_.
- The chief breathing muscle in the human body is the \_\_\_\_\_.

### MODIFIED TRUE-FALSE QUESTIONS

In some of the following statements the term in *italics* makes the statement incorrect. For each *incorrect* statement write the term that must be substituted for the italicized term to make the statement correct. For each *correct* statement, write the word *true*.

- Cartilage may be found in *fingernails*.
- Muscle tissue produces motion by *contraction*.
- Epithelial tissue, is *supporting* tissue.
- The process that releases energy in the body is called *secretion*.
- The liquid part of blood is called the *enzyme*.
- Blood in the arteries moves *away from* the heart.
- Wastes carried by the blood are those collected from various body *cells*.
- The central nervous system consists of the spinal cord and the *pituitary gland*.

- Nerves carry impulses to and from the *digestive* system.
- The secretions of ductless glands pass into the *adrenals*.

### MATCHING TEST

Next to each number in column *A*, write the *letter* preceding the item in column *B* that is most closely associated with the item in column *A*.

#### Column A

- food-getting
- digestion
- absorption
- circulation
- assimilation
- respiration
- excretion
- secretion
- locomotion
- irritability

#### Column B

- Sensitivity to stimuli
- Production of new protoplasm
- Skeleton and muscles
- Securing food
- Waste elimination
- Changes food to soluble form
- Releases energy
- Heart
- Helpful juices
- Produces offspring
- Food enters blood
- Cartilage

## UNIT 2

### PERSONAL APPEARANCE: THE SKELETON

#### 1. What factors determine personal appearance?

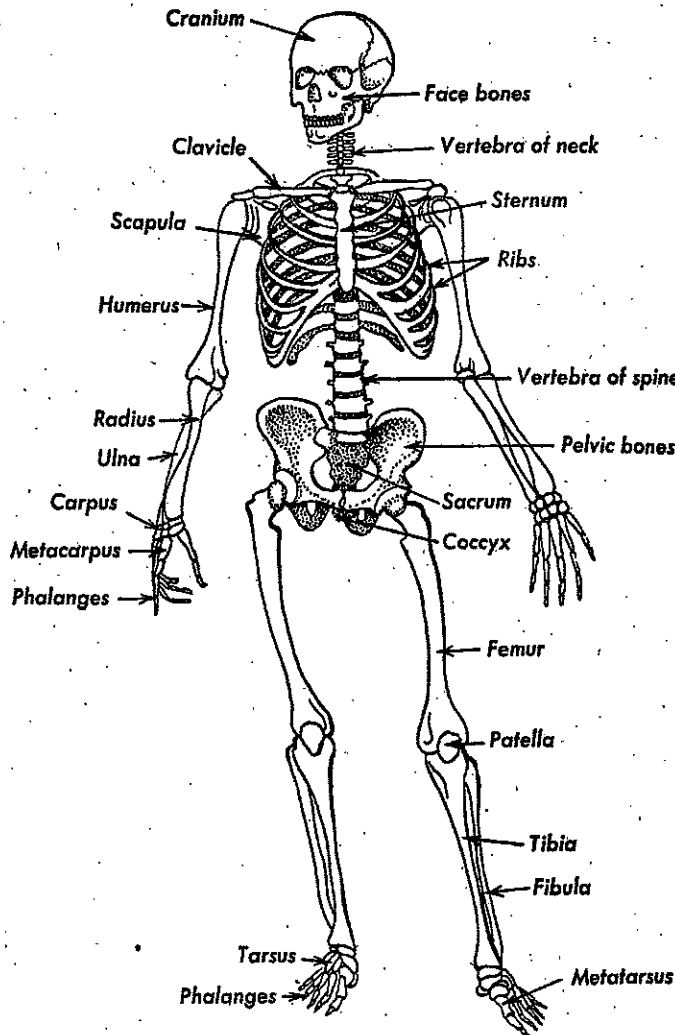
- Personal appearance is determined by skin pigmentation, facial features, and general body structure, which depends upon the skeleton. These hereditary factors cannot be modified to any extent.
- Appearance is also determined by posture, grooming, and the condition of one's skin, hair, and nails. These environmental factors are subject to control.

#### 2. The skeleton.

- What is the skeleton?
  - The skeleton is the bony framework of the body.
  - What are some of the functions of the skeleton?
- The skeleton:
  - holds the body erect.
  - supports the muscles.
  - protects the delicate internal organs.
  - manufactures blood cells in the red bone marrow.
- How many bones are included in the skeleton?

There are 206 bones in the human skeleton.
- List the principal parts of the skeleton.
  - The *skull* includes the cranium and the face bones.
  - The *neck* includes the vertebrae between the skull and the trunk.
  - The *trunk* consists of the: spinal column (vertebrae); breastbone (sternum); ribs; collarbones; (clavicles); shoulder blades (scapulae); hipbones (pelvic bones)

PERSONAL APPEARANCE: THE SKELETON



THE SKELETON

- (4) Each *upper limb* consists of the: upper arm (humerus); lower arm (radius and ulna) wrist (carpus); palm (metacarpus); fingers (phalanges)
- (5) Each *lower limb* consists of the: thigh (femur); kneecap (patella); leg (tibia and fibula); ankle (tarsus); arch (metatarsus); toes (phalanges)

3. What is the spinal column?

A. The *spinal column*, or *backbone*, is a column of small bones that supports the body. The flexible part of the spinal column is made up of a series of 24 irregularly shaped bones called *vertebrae*. Just below the vertebrae are two more bones, the sacrum and coccyx, which are formed from nine fused vertebrae.

B. How is the spinal column held erect?

The spinal column is held erect by muscles and ligaments that bind the vertebrae together. Pads of cartilage between the vertebrae serve as shock absorbers.

4. What is bone?

- A. Bone is rigid supporting tissue.
- B. Name four kinds of bones in the human body.

- (1) long (in the arms and legs)
- (2) short (in the fingers and toes)
- (3) flat (in the skull and hips)
- (4) irregular (in the vertebrae of the spinal column)

C. Describe the general structure of a typical bone.

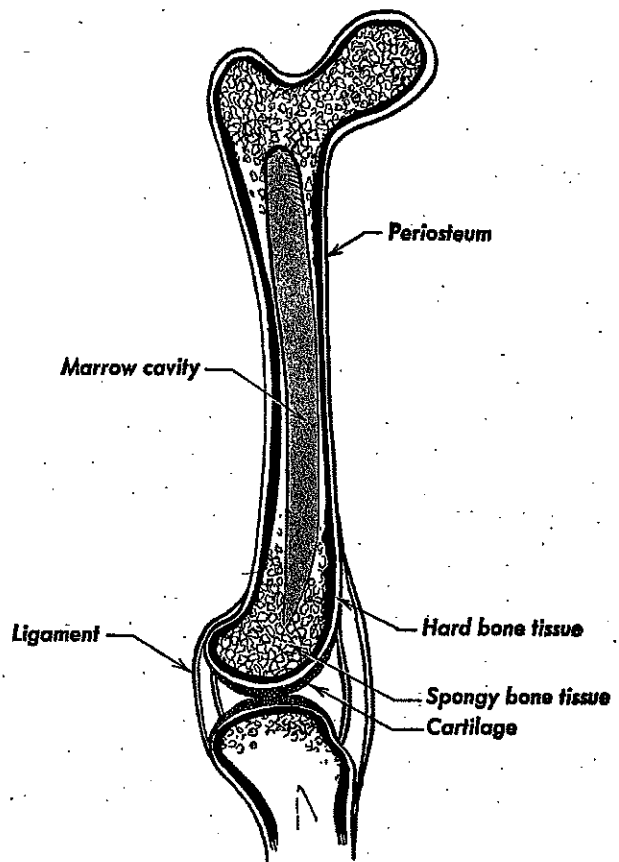
A typical live bone consists of:

- (1) a membranous outer covering, called the *periosteum*, which contains blood vessels that carry nourishment to the bone.
- (2) hard bone tissue. This tissue, beneath the periosteum, consists of living bone cells around, which minerals have been deposited.
- (3) spongy bone tissue. This porous tissue, which fills the ends, of long bones, provides space for some marrow, blood vessels, and nerves.
- (4) a cavity, called the *marrow cavity*. This cavity contains the marrow where blood cells are formed. (The marrow cavity exists only in long bones.)

D. How is bone nourished?

Bone is nourished by the blood. The blood delivers:

- (1) minerals (chiefly calcium and phosphorus), which make the bone hard.
- (2) vitamin D, which enables the bone cells to utilize the minerals in the formation of the hard part of bone.
- (3) other digested nutrients, which enable the bone cells to grow and repair themselves.
- (4) hormones, which are secreted by the pituitary and



STRUCTURE OF A TYPICAL BONE

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thyroid glands. Hormones are essential for normal growth.

### 5. What is a joint?

- A. A joint is a region where two bones move against each other.
- B. How many kinds of joints are there? Name them.  
There are four kinds of joints:
- (1) In the *ball-and-socket joint*, the rounded end, of one bone fits into the hollow of another. This permits rotating motion. An example is the femur and the pelvic bones at the hip.
  - (2) The *hinge joint* permits back-and-forth motion. Examples are the elbow and the knee.
  - (3) The *gliding joint* permits motion in almost any direction. Examples are the wrist and the ankle.
  - (4) The *pivot joint* allows partial rotating motion. An example is the joint between the skull and the first vertebra of the spinal column.
- C. What prevents scraping or grinding at the joints?  
Scraping or grinding is prevented by pads of cartilage that provide smooth surfaces at the ends of the bones. Cartilage is lubricated by *synovial fluid*, secreted by the membranes covering the bones at the joints.

### 6. What are ligaments?

- A. *Ligaments* are bands of strong, fibrous connective tissue that fasten the bones together at the joints.
- B. What is cartilage?  
*Cartilage* is semi-flexible and elastic connective tissue.
- C. Distinguish between temporary cartilage and permanent cartilage.
- (1) *Temporary cartilage* is ultimately converted into bone. Much of an infant's skeleton is temporary cartilage.
  - (2) *Permanent cartilage* persists as cartilage throughout adult life. The discs between the vertebrae are examples of permanent cartilage.
- D. What is ossification?  
*Ossification* is the process by which cartilage hardens into bone by the deposition of calcium phosphate.

### 7. Define posture.

- A. *Posture* is the habitual manner of carrying the body, whether at rest, at work, or at play.
- B. What does good posture indicate?  
Good posture indicates good muscle tone, correct habits of maintaining the body balance, and general well-being.
- C. Give several rules for correct posture.
- (1) Stand erect.
  - (2) Keep chin in, chest up, abdomen flat, knees straight, hips pulled in.
  - (3) Be relaxed

### 8. What are some postural defects? State the cause and a specific remedy for each defect.

- A. *Round shoulders* are caused by drooping the shoulders as the body bends forward. Keep the

shoulders drawn back.

- B. *Hollow back* may be due to weakness of the abdominal muscles. This defect can be corrected by exercising these muscles.
- C. *Unnatural curvature of the spine* may be due to incorrect posture, heredity, or certain diseases. This defect can usually be rectified by a persistent effort to maintain correct posture.
- D. *Flatfeet* may be caused by weakening of the arches. This condition may arise from wearing poorly fitted shoes. To strengthen the arches, practice rising off the toes and then on the heels. To preserve the arches, wear shoes that provide good support. Girls should wear high-heeled shoes only on special occasions.

### 9. What is an orthopedist?

An *orthopedist* is a physician who specializes in diseases and disorders of, the muscles, tendons, joints, ligaments, cartilage, and bones.

### 10. What is a podiatrist?

A *podiatrist*, or *chiropodist*, is a specialist who diagnoses and treats diseases and deformities of the feet. He performs minor surgery, uses drugs and physical therapy, prescribes proper shoes; and fits corrective devices. However, he refers to physicians patients who show symptoms in the feet and legs that may be of systemic origin; for example, arthritis, heart or kidney disorders.

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### MULTIPLE-CHOICE QUESTIONS

1. A factor in personal appearance that can be controlled is (a) eye color (b) skin color (c) cleanliness (d) general body build.
2. Red blood cells are manufactured in (a) certain bones in the skeleton (b) the pancreas (c) the lungs (d) the tonsils.
3. The approximate number of bones in the human skeleton is (a) 100 (b) 200 (c) 300 (d) 400.
4. A ball-and-socket joint in the body can be seen (a) in the jaw (b) at the hip (c) in the skull (d) in the little finger.
5. A good postural habit is (a) sitting erectly (b) standing erectly but allowing the shoulders to droop when sitting (c) maintaining muscle tone, (d) keeping the knees straight when sitting.
6. The process by which cartilage is converted to bone is called (a) ossification (b) assimilation (c) digestion (d) conglomeration.
7. The periosteum is a layer of tissue that (a) protects the marrow (b) protects delicate internal organs (c) manufactures important minerals (d) contains blood vessels which nourish the bone.
8. Cartilage is found in the skeleton (a) between vertebrae and at joints (b) between the ears (c) connecting muscles to bones (d) connecting bones to bones.
9. Marrow can be found in (a) flat bones (b) permanent cartilage (c) long bones (d) joints.
10. A vitamin essential to good bone formation is (a) A (b) B (c) G (d) D.

COMPLETION QUESTIONS

1. The spinal column consists of a number of bones called \_\_\_\_\_.
2. Bones are attached to other bones by \_\_\_\_\_.
3. The principal mineral elements in bone are calcium and \_\_\_\_\_.
4. A joint that permits the gliding of one bone over another can be found in the \_\_\_\_\_.
5. Synovial fluid acts as a (an) \_\_\_\_\_ between the bones at joints.
6. The skull rests upon the type of joint called the \_\_\_\_\_ joint.
7. Babies bones are soft because they contain a good deal of \_\_\_\_\_.
8. The way in which a person carries himself is his \_\_\_\_\_.
9. The hardest structures in the body are teeth and \_\_\_\_\_.
10. Weak arches result in a condition called \_\_\_\_\_.
11. Flat bones are found in the \_\_\_\_\_ and hips.
12. The humerus is an example of a (an) \_\_\_\_\_ bone.
13. A region where two bones meet is called a (an) \_\_\_\_\_.
14. Secretions of the thyroid and \_\_\_\_\_ glands are necessary for normal growth of the skeleton.
15. Hinge joints are located at the \_\_\_\_\_ and knee.

MATCHING TEST

Column A

1. vertebrae
2. sternum
3. clavicle
4. pelvis
5. humerus
6. radius
7. patella
8. femur
9. cranium
10. phalanges

Column B

- a. fingers
- b. breastbone
- c. thigh
- d. collarbone
- e. hip,
- f. wrist
- g. lower arm
- h. knee
- i. skull
- j. neck
- k. ankle
- l. upper arm

UNIT 3

PERSONAL APPEARANCE: SKIN

1. The skin.

A. Describe the structure of the skin.

The skin is composed of two layers of cells, the epidermis (outer skin) and the dermis (inner skin).

- (1) The *epidermis* is composed of the:
  - cuticle - the surface layer of hard, horny cells.
  - germinative layer - capable of producing new cells.
 The lowest cells of this layer contain pigment, which colors the skin.
- (2) The *dermis* includes: papillae ridges containing nerve

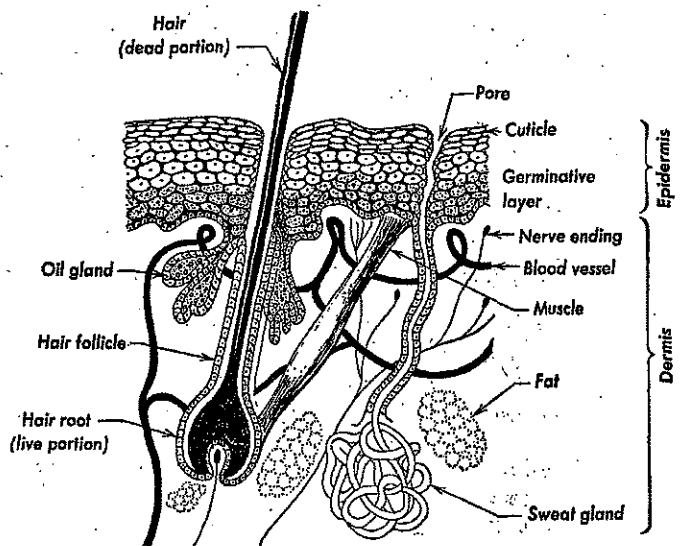
endings. (The ridges push up the epidermis and appear as fingerprints or ridges on the skin surface); sweat glands and ducts; oil glands and ducts; hair and hair follicles; blood vessels; muscle fibers; fat tissue

B. Draw a diagram showing a cross section of the skin. (See figure below.)

2. Name several functions of the skin.

The skin:

- A. serves as a protective covering for the body.
- B. prevents disease-producing germs from entering the body.
- C. excretes some wastes in the process of perspiration.
- D. helps regulate body temperature, as the evaporation of perspiration cools the surface of the skin.
- E. is an organ of sensation, making us aware of heat, cold, pressure, and pain.



STRUCTURE OF THE SKIN

3. List some common skin disorders, and state the generally prescribed treatment for each.

- A. The skin normally secretes an oily substance that helps keep it soft and flexible. During adolescence, secretion of this oily substance increases. This often leads to blackheads, pimples, and acne (chronic pimples).
  - (1) *Blackheads*. Steam the face with hot towels. Wash thoroughly with soap. Rinse with cool water. Pat dry.
  - (2) *Pimples*. Wash the skin thoroughly. Apply an antiseptic, such as alcohol, swabbing each spot where the skin is broken.
  - (3) *Acne*. Apply the hygienic measures stated, above. Abstain from sugars, starches, fats, chocolate, and nuts. Drink plenty of liquid daily in the form of water, fruit juice, and milk. Frequent exposure of the skin to sunlight is beneficial for many people.
- B. *Warts* are horny outgrowths, of the epidermis. Most types of warts are caused by a virus and are harmless. However, if you notice a change in the color of a wart or of the immediate surrounding area, have it checked