

Chapter 1 The Human Body: An Introduction

Matching Questions

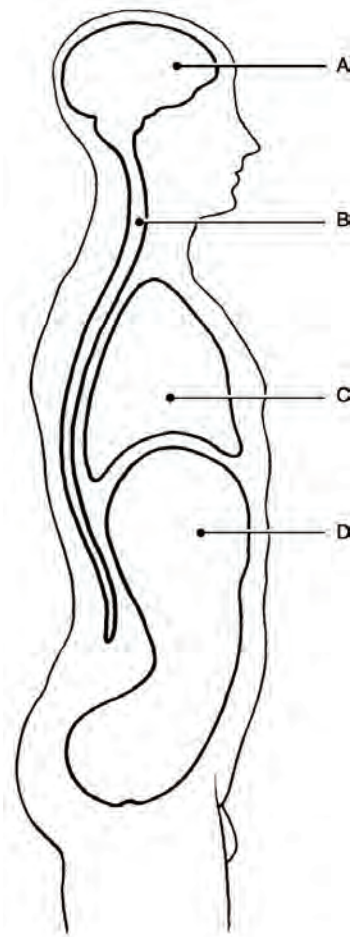


Figure 1.1

Using Figure 1.1, match the following cavities:

- 1) Thoracic cavity.

Answer: C

Diff: 1 Page Ref: 15-16; Fig. 1.9

- 2) Cranial cavity.

Answer: A

Diff: 1 Page Ref: 15-16; Fig. 1.9

- 3) Abdominal cavity.

Answer: D

Diff: 1 Page Ref: 15-16; Fig. 1.9

4) Vertebral cavity.

Answer: B

Diff: 1 Page Ref: 15-16; Fig. 1.9

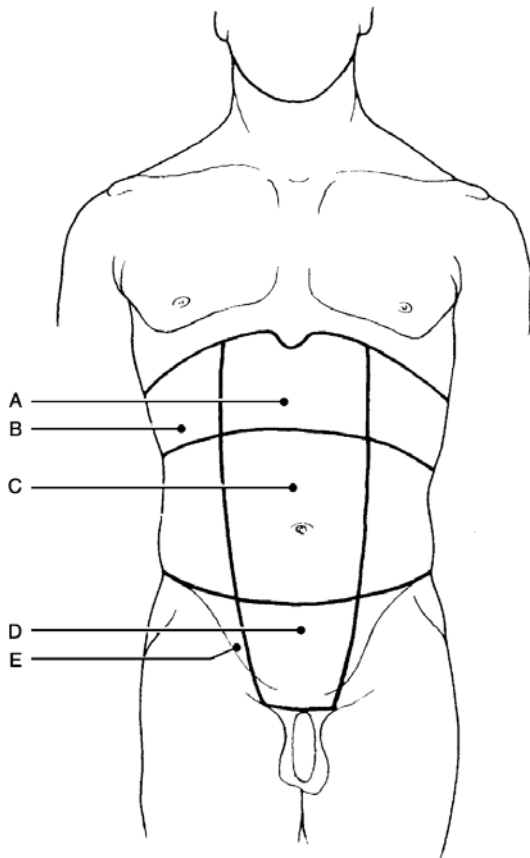


Figure 1.2

Using Figure 1.2, match the following regions:

5) Umbilical region.

Answer: C

Diff: 1 Page Ref: 17; Fig. 1.12

6) Right hypochondriac.

Answer: B

Diff: 1 Page Ref: 17; Fig. 1.12

7) Hypogastric (pubic) region.

Answer: D

Diff: 1 Page Ref: 17; Fig. 1.12

8) Epigastric region.

Answer: A

Diff: 1 Page Ref: 17; Fig. 1.12

9) Right iliac (inguinal) region.

Answer: E

Diff: 1 Page Ref: 17; Fig. 1.12

Match the following systems to their functions:

10) Directly causes mechanical motion.

Diff: 1 Page Ref: 6; Fig. 1.3c

11) Responds to environmental changes by transmitting electrical impulses.

Diff: 1 Page Ref: 6; Fig. 1.3d

12) Provides support and levers for muscles to work on.

Diff: 1 Page Ref: 6; Fig. 1.3b

13) Protects underlying organs from mechanical damage and synthesizes vitamin D.

Diff: 2 Page Ref: 6; Fig. 1.3a

A) Muscular

B) Skeletal

C) Integumentary

D) Nervous

Answers: 10) A 11) D 12) B 13) C

Match the following systems to their functions:

14) Controls the body with chemical molecules called hormones.

Diff: 2 Page Ref: 6; Fig. 1.3e

15) Delivers oxygen and nutrients to the tissues.

Diff: 1 Page Ref: 6; Fig. 1.3f

16) Produces antibodies that neutralize foreign substances.

Diff: 1 Page Ref: 7; Fig. 1.3g

17) Removes and filters excess fluid from tissues.

Diff: 1 Page Ref: 7; Fig. 1.3g

A) Immune

B) Endocrine

C) Cardiovascular

D) Lymphatic

Answers: 14) B 15) C 16) A 17) D

Match the following examples of feedback mechanisms:

- | | |
|--|----------------------|
| 18) Blood glucose levels
Diff: 2 Page Ref: 9-10 | A) Negative feedback |
| 19) Blood pressure
Diff: 3 Page Ref: 9-10 | B) Positive feedback |
| 20) Blood clotting
Diff: 2 Page Ref: 9-10 | |
| 21) Delivering a baby
Diff: 2 Page Ref: 9-10 | |

Answers: 18) A 19) A 20) B 21) B

Match the following systems and organs:

- | | |
|---|-------------------|
| 22) Arteries, veins, heart.
Diff: 1 Page Ref: 6; Fig. 1.3f | A) Digestive |
| 23) Trachea, bronchi, alveoli.
Diff: 1 Page Ref: 7; Fig. 1.3h | B) Cardiovascular |
| 24) Adrenal glands, pancreas,
pituitary.
Diff: 1 Page Ref: 6; Fig. 1.3e | C) Urinary |
| 25) Esophagus, large intestine,
rectum.
Diff: 1 Page Ref: 7; Fig. 1.3i | D) Respiratory |
| 26) Kidneys, bladder, ureters.
Diff: 1 Page Ref: 7; Fig. 1.3j | E) Endocrine |

Answers: 22) B 23) D 24) E 25) A 26) C

Match the following cavities and organs:

27) Stomach.

Diff: 1 Page Ref: 15; Fig. 1.9

28) Heart.

Diff: 1 Page Ref: 15; Fig. 1.9

29) Uterus.

Diff: 1 Page Ref: 15; Fig. 1.9

30) Brain.

Diff: 1 Page Ref: 15; Fig. 1.9

31) Lungs.

Diff: 1 Page Ref: 15; Fig. 1.9

A) Cranial

B) Abdominopelvic

C) Thoracic

Answers: 27) B 28) C 29) B 30) A 31) C

Match the following regional terms and common terms:

32) Arm.

Diff: 1 Page Ref: 13; Fig. 1.7

33) Buttock.

Diff: 1 Page Ref: 13; Fig. 1.7

34) Head.

Diff: 1 Page Ref: 13; Fig. 1.7

35) Knee (anterior aspect).

Diff: 1 Page Ref: 13; Fig. 1.7

36) Chest.

Diff: 1 Page Ref: 13; Fig. 1.7

A) Brachial

B) Gluteal

C) Cephalic

D) Patellar

E) Thoracic

Answers: 32) A 33) B 34) C 35) D 36) E

Match the regional/directional terms and examples:

- 37) The bridge of the nose is _____ to the left eye.
Diff: 2 Page Ref: 12; Tbl. 1.1
- 38) The upper arm is _____ to the forearm.
Diff: 2 Page Ref: 12; Tbl. 1.1
- 39) The heart is _____ to the stomach.
Diff: 2 Page Ref: 12; Tbl. 1.1
- 40) The fingers are _____ to the wrist.
Diff: 2 Page Ref: 12; Tbl. 1.1
- 41) The stomach is _____ to the spine.
Diff: 2 Page Ref: 12; Tbl. 1.1
- A) Medial
B) Distal
C) Proximal
D) Anterior
E) Superior

Answers: 37) A 38) C 39) E 40) B 41) D

True/False Questions

- 1) Positive feedback mechanisms tend to increase the original stimulus.
Answer: TRUE
Diff: 1 Page Ref: 9-10
- 2) The anatomical position means the body is standing at attention with the palms facing forward and the thumbs pointing away from the body.
Answer: TRUE
Diff: 1 Page Ref: 13; Fig. 1.7
- 3) The elbow is proximal to the shoulder.
Answer: FALSE
Diff: 1 Page Ref: 12; Tbl. 1.1
- 4) The serous membrane that lines the peritoneal cavity wall is called visceral peritoneum.
Answer: FALSE
Diff: 2 Page Ref: 16-17
- 5) A major function of serous membranes is to decrease friction.
Answer: TRUE
Diff: 1 Page Ref: 16-17
- 6) The right hypochondriac region contains the majority of the stomach.
Answer: FALSE
Diff: 1 Page Ref: 17; Fig. 1.12

7) Lungs carry out an excretory function.

Answer: TRUE

Diff: 2 Page Ref: 7

8) Embryology concerns the structural changes that occur in an individual from conception through old age.

Answer: FALSE

Diff: 1 Page Ref: 2

9) A tissue consists of groups of similar cells that have a common function.

Answer: TRUE

Diff: 1 Page Ref: 4

10) It is important for any organism to maintain its boundaries, so that its internal environment remains distinct from the external environment surrounding it.

Answer: TRUE

Diff: 1 Page Ref: 4

11) Without some sort of negative feedback mechanism, it would be impossible to keep our body chemistry in balance.

Answer: TRUE

Diff: 1 Page Ref: 9

12) Regardless of the variable being regulated, all homeostatic control mechanisms have at least three interdependent components.

Answer: TRUE

Diff: 2 Page Ref: 9; Fig. 1.4

13) The epigastric region is located superior to the umbilical region.

Answer: TRUE

Diff: 1 Page Ref: 17; Fig. 1.12

Multiple-Choice Questions

1) Histology would be best defined as a study of _____.

- A) cells
- B) tissues
- C) cell chemistry
- D) the gross structures of the body

Answer: B

Diff: 1 Page Ref: 2

2) The study of the heart may incorporate many aspects of anatomy but as a whole you would say it is _____ anatomy.

- A) microscopic
- B) gross
- C) developmental
- D) systemic

Answer: B

Diff: 1 Page Ref: 2

- 3) An increased rate of breathing as a result of an increased buildup of carbon dioxide in the bloodstream would be best described as an example of _____.
- A) maintaining boundaries
 - B) excretion of metabolic waste
 - C) responsiveness
 - D) metabolism

Answer: B

Diff: 2 Page Ref: 5

- 4) Average body temperature is _____ degrees centigrade.
- A) 98
 - B) 68
 - C) 47
 - D) 37

Answer: D

Diff: 1 Page Ref: 8

- 5) If you consider your home air conditioner in terms of homeostasis, then the wall thermostat would be the _____.
- A) control center
 - B) receptor
 - C) effector
 - D) variable

Answer: A

Diff: 2 Page Ref: 8-9

- 6) What is the main, general purpose of negative feedback?
- A) to control all body system tissues
 - B) to maintain homeostasis
 - C) to keep the body's sugar high
 - D) to regulate excretion

Answer: B

Diff: 2 Page Ref: 8-9

- 7) What is the specific name for the hip region?
- A) manus
 - B) inguinal
 - C) pedal
 - D) coxal

Answer: D

Diff: 1 Page Ref: 13; Fig. 1.7

- 8) An oblique cut is one that is cut _____.
- A) horizontal right and left
 - B) diagonally between the vertical and horizontal
 - C) vertical right and left
 - D) perpendicular to vertical and horizontal

Answer: B

Diff: 2 Page Ref: 13

9) The heart lies in the _____ cavity.

- A) superior mediastinal
- B) pleural
- C) dorsal
- D) pericardial

Answer: D

Diff: 1 Page Ref: 15; Fig. 1.9

10) The cavities housing the eyes are called _____ cavities.

- A) frontal
- B) cranial
- C) nasal
- D) orbital

Answer: D

Diff: 1 Page Ref: 17

11) A structure that is composed of two or more tissues would be a(n) _____.

- A) complex tissue
- B) organ system
- C) organ
- D) complex cell

Answer: C

Diff: 1 Page Ref: 4

12) _____ cavities are spaces within joints.

- A) Nasal
- B) Synovial
- C) Orbital
- D) Oral

Answer: B

Diff: 2 Page Ref: 17–18

13) Which of the following would *not* be a functional characteristic of life?

- A) movement
- B) responsiveness to external stimuli
- C) maintenance of boundaries
- D) decay

Answer: D

Diff: 2 Page Ref: 4–6

14) Which term means toward or at the back of the body, behind?

- A) anterior
- B) lateral
- C) distal
- D) dorsal

Answer: D

Diff: 1 Page Ref: 12; Tbl. 1.1

15) The single most abundant chemical substance of the body, accounting for 60% to 80% of body weight, is _____.

- A) oxygen
- B) protein
- C) water
- D) hydrogen

Answer: C

Diff: 1 Page Ref: 8

16) What is the posterior side of the patella called?

- A) sural
- B) crural
- C) antecubital
- D) popliteal

Answer: D

Diff: 2 Page Ref: 13; Fig. 1.7

17) Which of the following statements is true concerning feedback mechanisms?

- A) Positive feedback mechanisms always result in excessive damage to the host.
- B) Negative feedback mechanisms tend to increase the original stimulus.
- C) Negative feedback mechanisms work to prevent sudden severe changes within the body.
- D) Blood glucose levels are regulated by positive feedback mechanisms.

Answer: C

Diff: 2 Page Ref: 9-11

18) The anatomical position is characterized by all of the following *except* _____.

- A) body erect
- B) arms at sides
- C) palms turned posteriorly
- D) thumbs pointed laterally

Answer: C

Diff: 1 Page Ref: 11; Fig. 1.7

19) A good example of a positive feedback mechanism would be _____.

- A) body temperature regulation
- B) regulating glucose levels in the blood
- C) enhancement of labor contractions
- D) blood calcium level regulation

Answer: C

Diff: 1 Page Ref: 9-10

20) Which of the following describes a parasagittal plane?

- A) a transverse cut just above the knees
- B) two cuts dividing the body into left and right halves
- C) any sagittal plane except the median
- D) any cut dividing the body into anterior and posterior

Answer: C

Diff: 2 Page Ref: 13

- 21) Which of the following organs or structures would be found in the left iliac region?
- A) appendix
 - B) stomach
 - C) liver
 - D) intestines

Answer: D

Diff: 2 Page Ref: 17; Fig. 1.12

- 22) The parietal pleura would represent a serous membrane _____.
- A) covering individual lungs
 - B) lining the thoracic cavity
 - C) covering the heart
 - D) lining the abdominal cavity

Answer: B

Diff: 2 Page Ref: 16

- 23) Which one of the following systems responds to environmental stimuli?
- A) muscular
 - B) lymphatic
 - C) immune
 - D) nervous

Answer: D

Diff: 2 Page Ref: 6; Fig. 1.3

- 24) Choose the anatomical topic and definition that is *not* correctly matched.
- A) Gross anatomy: study of structures visible to the eye.
 - B) Microscopic anatomy: study of structures too small to be seen by the naked eye.
 - C) Cytology: study of the structures in a particular region.
 - D) Embryology: study of the changes in an individual from conception to birth.

Answer: C

Diff: 1 Page Ref: 2

- 25) Homeostasis is the condition in which the body maintains _____.
- A) the lowest possible energy usage
 - B) a relatively stable internal environment, within limits
 - C) a static state with no deviation from preset points
 - D) a dynamic state within an unlimited range

Answer: B

Diff: 2 Page Ref: 8-9

- 26) In which cavities are the lungs located?
- A) pleural, ventral, and thoracic
 - B) mediastinum, thoracic, and ventral
 - C) pleural, dorsal, and abdominal
 - D) pericardial, ventral, and thoracic

Answer: A

Diff: 1 Page Ref: 15; Fig. 1.9

- 27) Choose the following statement that is *not* completely correct regarding serous membranes.
- A) Serosa are very thin, double-layered structures.
 - B) Serous membranes are divided into parietal and visceral membranes with a potential space between the two.
 - C) Visceral pericardium covers the surface of the heart, and parietal pericardium lines the walls of the heart.
 - D) Serous membranes secrete a watery lubricating fluid.

Answer: C

Diff: 2 Page Ref: 15-16

- 28) Place the following in correct sequence from simplest to most complex:

- 1. molecules
 - 2. atoms
 - 3. tissues
 - 4. cells
 - 5. organ
- A) 1-2-3-4-5
 - B) 2-1-4-3-5
 - C) 2-1-3-4-5
 - D) 1-2-4-3-5

Answer: B

Diff: 2 Page Ref: 3; Fig 1.1

- 29) Which of these is *not* part of the dorsal cavity?
- A) cranial cavity
 - B) thoracic cavity
 - C) spinal cord
 - D) vertebral cavity

Answer: B

Diff: 1 Page Ref: 15-16; Fig. 1.9

- 30) In which abdominopelvic cavity is the stomach located?
- A) right upper
 - B) right lower
 - C) left upper
 - D) left lower

Answer: C

Diff: 2 Page Ref: 16; Fig. 1.9

- 31) Which of the following statements is the most correct regarding homeostatic imbalance?
- A) It is considered the cause of most diseases.
 - B) The internal environment is becoming more stable.
 - C) Positive feedback mechanisms are overwhelmed.
 - D) Negative feedback mechanisms are functioning normally.

Answer: A

Diff: 3 Page Ref: 10

32) Subdivisions of anatomy include which of the following?

- A) gross, macroscopic, visual, and microscopic
- B) gross, regional, dissection, and surface
- C) regional, surface, visual, and microscopic
- D) gross, regional, systemic, and surface

Answer: D

Diff: 2 Page Ref: 2

33) The term *pollex* refers to the _____.

- A) great toe
- B) calf
- C) fingers
- D) thumb

Answer: D

Diff: 1 Page Ref: 13; Fig. 1.7

34) The dorsal body cavity is the site of which of the following?

- A) intestines
- B) brain
- C) lungs
- D) liver

Answer: B

Diff: 1 Page Ref: 15; Fig. 1.9

35) Select the most correct statement.

- A) The immune system is closely associated with the lymphatic system.
- B) Organ systems operate independently of each other to maintain life.
- C) The endocrine system is not a true structural organ system.
- D) Organ systems can be composed of cells or tissues, but not both.

Answer: A

Diff: 2 Page Ref: 7; Fig. 1.3

36) One of the functional characteristics of life is irritability. This refers to _____.

- A) indigestible food residues stimulating the excretory system
- B) sensing changes in the environment and then reacting or responding to them
- C) the nervous system causing all living things to sometimes experience anger
- D) the necessity for all organisms to reproduce

Answer: B

Diff: 3 Page Ref: 5

37) Which of the following are survival needs of the body?

- A) nutrients, water, movement, and reproduction
- B) nutrients, water, growth, and reproduction
- C) water, atmospheric pressure, growth, and movement
- D) nutrients, water, atmospheric pressure, and oxygen

Answer: D

Diff: 3 Page Ref: 6–8

- 38) The anatomical position is used _____.
- A) rarely, because people don't usually assume this position
 - B) as a standard reference point for directional terms regardless of the actual position of the body
 - C) only when a body is lying down
 - D) as the most comfortable way to stand when dissecting a specimen

Answer: B

Diff: 2 Page Ref: 11

- 39) What is a vertical section through the body, dividing it into left and right, called?
- A) frontal
 - B) regional
 - C) sagittal
 - D) transverse

Answer: C

Diff: 1 Page Ref: 13

- 40) What is a vertical section through the body, dividing it into anterior and posterior regions called?
- A) frontal
 - B) median
 - C) sagittal
 - D) transverse

Answer: A

Diff: 1 Page Ref: 13-14; Fig 1.8

- 41) Which body cavity protects the nervous system?
- A) cranial
 - B) dorsal
 - C) vertebral
 - D) thoracic

Answer: B

Diff: 1 Page Ref: 15

- 42) Which of the following describes the operation of the heart and blood vessels?
- A) systemic anatomy
 - B) cardiovascular anatomy
 - C) systemic physiology
 - D) cardiovascular physiology

Answer: B

Diff: 1 Page Ref: 2

Fill-in-the-Blank/Short Answer Questions

- 1) Similar cells that have a common function are called _____.

Answer: tissues

Diff: 1 Page Ref: 4

- 2) What does the "principle of complementarity of structures and function" mean?
Answer: What a structure can do depends on its specific form, or "structure determines function."
Diff: 2 Page Ref: 2
- 3) The term that describes the back of the elbow is _____.
Answer: olecranal
Diff: 2 Page Ref: 13; Fig. 1.7
- 4) The term that describes the heel region is _____.
Answer: calcaneal
Diff: 1 Page Ref: 13; Fig. 1.7
- 5) The elbow is _____ to the wrist.
Answer: proximal
Diff: 2 Page Ref: 12; Tbl 1.1
- 6) The _____ cavity contains tiny bones that transmit sound vibrations to the organ of hearing in the inner ear.
Answer: middle ear
Diff: 1 Page Ref: 17
- 7) _____ is explained by chemical and physical principles and is concerned with the function of specific organs or organic systems.
Answer: Physiology
Diff: 1 Page Ref: 2
- 8) What is a dynamic equilibrium of your internal environment termed?
Answer: homeostasis
Diff: 2 Page Ref: 8-9
- 9) Which cavity contains the bladder, some reproductive organs, and the rectum?
Answer: pelvic
Diff: 1 Page Ref: 15; Fig. 1.9
- 10) What is the serous membrane that covers the intestines called?
Answer: visceral
Diff: 1 Page Ref: 16
- 11) _____ physiology concerns urine production and kidney function.
Answer: Renal
Diff: 1 Page Ref: 2
- 12) What broad term covers all chemical reactions that occur within the body cells?
Answer: metabolism
Diff: 1 Page Ref: 5
- 13) What is the function of the serous membranes?
Answer: They act to reduce friction and allow the organs to slide across cavity walls.
Diff: 2 Page Ref: 16

14) Fully describe the anatomical position for the human body.

Answer: The body is erect, arms hanging at the sides, palms forward, and thumbs pointed away from the midline.

Diff: 2 Page Ref: 11

15) What does gross anatomy study?

Answer: Larger structures of the body that can be seen with the naked eye.

Diff: 2 Page Ref: 2

16) Can lungs carry out excretory functions? Explain your answer.

Answer: Yes, carbon dioxide is a metabolic waste the lungs excrete.

Diff: 2 Page Ref: 5

17) The higher we go in the mountains, the greater the atmospheric pressure, which causes a loss of oxygen. Comment on this statement.

Answer: The statement is backwards—the higher we go, the less atmospheric pressure, therefore less oxygen.

Diff: 2 Page Ref: 8

18) Why is anatomical terminology necessary?

Answer: Anatomical terms are precise words that have limited usage, which prevents confusion when describing the location of body parts.

Diff: 2 Page Ref: 11

19) The five cavities of the head are cranial, oral, nasal, middle ear, and _____.

Answer: orbital

Diff: 2 Page Ref: 17

20) The ability to sense changes in the environment and respond to them is called _____.

Answer: responsiveness or irritability

Diff: 1 Page Ref: 5

21) What is the single most abundant chemical substance in the body?

Answer: water

Diff: 1 Page Ref: 8

22) Why must a normal body temperature be maintained in order for chemical reactions to be continued at life-sustaining rates?

Answer: If body temperature is too low, chemical reactions slow and eventually stop. If body temperature is too high, chemical reactions speed up and body proteins lose their normal shape, resulting in loss of function.

Diff: 3 Page Ref: 8

23) What is the pathway between the receptor and the control center in the reflex pathway called?

Answer: afferent pathway

Diff: 1 Page Ref: 9; Fig. 1.4

24) What type of homeostatic feedback reflex is the withdrawal reflex?

Answer: negative

Diff: 3 Page Ref: 9

- 25) Why are the abdominopelvic cavity organs the most vulnerable in an automobile accident?
 Answer: The walls of the abdominal cavity are formed only by trunk muscles and are not reinforced by bone. The pelvic organs receive a somewhat greater degree of protection from the bony pelvis.
 Diff: 3 Page Ref: 16
- 26) What is the goal of all of the negative feedback mechanisms of the body?
 Answer: The goal is to prevent sudden severe changes within the body.
 Diff: 2 Page Ref: 9–10
- 27) Which feedback mechanism causes the variable to deviate further and further from its original value or range?
 Answer: positive feedback
 Diff: 2 Page Ref: 9–10
- 28) What can happen when the usual negative feedback mechanisms are overwhelmed and destructive positive feedback mechanisms take over?
 Answer: Homeostatic imbalances increase our risk for illness and produce the changes we associate with aging.
 Diff: 3 Page Ref: 10
- 29) Which body system would be most affected by a lower than normal atmospheric pressure?
 Answer: respiratory system
 Diff: 3 Page Ref: 8

Clinical Questions

- 1) A small family was traveling in its van and had a minor accident. The children in the back seats were wearing lap belts, but still sustained numerous bruises about the abdomen, and had some internal organ injuries. Why is this area more vulnerable to damage than others?
 Answer: The abdominal organs are the least protected in the body because they are not surrounded by a bony covering such as the ribs, pelvis, or cranium.
 Diff: 3 Page Ref: 15; Fig. 1.9
- 2) A surgeon removed a section of tissue along a transverse plane for microscopic examination. What two names would the section be called?
 Answer: A cross section or a transverse section.
 Diff: 2 Page Ref: 13
- 3) Judy is 16 years old and collapses on the gym floor with severe pain in her chest wall. She is rushed by ambulance to the emergency room. Judy is diagnosed with pleurisy and is given an anti-inflammatory through the intravenous route. Explain why an anti-inflammatory would be prescribed for someone with pleurisy.
 Answer: The pleural space contains a small amount of fluid that acts as a lubricant, allowing the pleurae to slide smoothly over each other as the lungs expand and contract. Pleurisy is an inflammation of the parietal pleura of the lungs. When inflammation occurs in the pleural space, the pleurae do not slide smoothly and this causes severe pain.
 Diff: 3 Page Ref: 16–17

- 4) Explain why an 80-year-old woman requires a much longer time to recover from the flu than does a woman who is age 30.

Answer: As we age, our body's control systems become less efficient. As a result, our internal environment becomes less and less stable.

Diff: 3 Page Ref: 10

- 5) The nurse charted: "Patient has an open wound located on lateral aspect of leg." Describe where the wound is located.

Answer: The wound is located on the outer side of the leg.

Diff: 2 Page Ref: 12; Tbl. 1.1

- 6) The patient was admitted to the hospital with hypertension. The development of arteriosclerosis has increased peripheral resistance to blood flow, worsening his hypertension. This is an example of what type of feedback loop and why?

Answer: Positive feedback loops are common in pathophysiological perpetuation of disease. For example, arteriosclerotic hypertension results in positive feedback mechanisms that enhance and propagate the initial step in the chain of events, which is hypertension.

Diff: 3 Page Ref: 9-10