

# ANSWERS TO CHAPTER 1

## CONTENT LEARNING ACTIVITY

### Anatomy and Physiology

1. Systemic anatomy; 2. Regional anatomy;
3. Surface anatomy; 4. Anatomic imaging;
5. Physiology

### Structure and Functional Organization

1. Organelle; 2. Cell; 3. Tissue; 4. Organ
1. Integumentary; 2. Nervous; 3. Respiratory;
4. Urinary; 5. Digestive; 6. Skeletal;
7. Cardiovascular; 8. Endocrine; 9. Muscular

### Characteristics of Life

1. Organization; 2. Metabolism; 3. Responsiveness;
4. Growth; 5. Differentiation; 6. Reproduction

### Homeostasis

1. Variable; 2. Set point; 3. Normal range;
4. Receptor; 5. Control center; 6. Effector
1. Negative feedback; 2. Positive feedback;
3. Negative feedback; 4. Negative feedback;
5. Positive feedback; 6. Positive feedback

### Directional Terms

1. Inferior; 2. Posterior and dorsal; 3. Anterior and ventral; 4. Distal; 5. Lateral; 6. Deep

### Planes

1. Sagittal plane; 2. Transverse plane;
3. Frontal (coronal) plane; 4. Longitudinal section; 5. Transverse (cross) section;
6. Oblique section

1. Frontal (coronal) plane; 2. Transverse plane; 3. Midsagittal plane

1. Longitudinal section; 2. Transverse (cross) section; 3. Oblique section

### Body Regions

1. Upper limb; 2. Arm; 3. Forearm; 4. Lower limb;
5. Thigh; 6. Leg; 7. Thorax; 8. Abdomen; 9. Pelvis

### Body Cavities

1. Thoracic cavity; 2. Abdominal cavity;
3. Pelvic cavity; 4. Thoracic cavity;
5. Abdominal cavity; 6. Pelvic cavity
1. Thoracic cavity; 2. Mediastinum; 3. Pleural cavity; 4. Pericardial cavity; 5. Diaphragm;
6. Abdominopelvic cavity; 7. Abdominal cavity; 8. Pelvic cavity

### Serous Membranes

1. Visceral; 2. Parietal; 3. Pleural membrane;
4. Peritoneal membrane; 5. Mesentery;
6. Retroperitoneal
1. Parietal peritoneum; 2. Visceral peritoneum;
3. Peritoneal cavity; 4. Retroperitoneal;
5. Mesentery

## QUICK RECALL

1. Chemical, organelle, cell, tissue, organ, organ system, organism
2. Epithelial, connective, muscular, and nervous tissues
3. Organization, metabolism, responsiveness, growth, differentiation, and reproduction.
4. Negative and positive feedback
5. A person standing erect with the feet pointing forward, arms hanging to the sides, and the palms of the hands facing forward
6. Sagittal, transverse (horizontal), and frontal (coronal) planes of the body; Longitudinal, transverse (cross), and oblique sections of organs
7. Thoracic, abdominal, and pelvic cavities; pericardial, pleural, and peritoneal membranes
8. Kidneys, adrenal glands, pancreas, portions of the intestines, and urinary bladder

## WORD PARTS

1. homeostasis
2. homeostasis
3. sagittal; midsagittal
4. pericardium; peritoneum; retroperitoneal
5. parietal
6. retroperitoneal

## MASTERY LEARNING ACTIVITY

1. A. Physiology deals with the processes or functions of living things. It is divided according to the organisms involved or the levels of organization within a given organism. Physiology emphasizes the dynamic nature of living things.
2. C. An organ is two or more tissues that perform a common function. An organelle is a small structure within a cell. Organelles are at a lower level of organization than a cell, but organs are at a higher level. A tissue is a group of cells with similar structure and function.
3. D. The nervous and endocrine systems are the most important regulatory systems of the body. The circulatory system transports gases, nutrients, and waste products. The muscular system is responsible for movement.
4. D. Negative-feedback mechanisms maintain homeostasis by making deviations from normal smaller. When blood pressure decreases, a negative-feedback mechanism causes heart rate to increase, causing an increase in blood pressure that helps to maintain homeostasis.
5. B. First, you must be able to interpret the graphs. For response 1, body temperature increased still further from the normal value, and for response 2 body temperature returned to normal. Next, the definitions of positive and negative feedback must be applied to the graphs. Negative-feedback mechanisms resist further change or return the values to normal (homeostasis) as in response 2. Positive-feedback mechanisms increase the difference between a value and its normal level as in response 1.
6. C. Anterior (toward the front of the body) and ventral (toward the belly) can be used interchangeably.
7. D. The chin is superior to (higher than) the umbilicus.
8. A. A frontal plane divides the body into anterior and posterior portions. A sagittal plane divides the body into left and right portions, and a transverse plane divides the body into superior and inferior portions.
9. B. The lower limb includes the thigh (hip to knee), leg (knee to ankle), ankle, and foot. The upper limb includes the arm (shoulder to elbow), forearm (elbow to wrist), wrist, and hand. The thorax extends from the neck to the abdomen, and the abdomen is between the thorax and pelvis. An abdominal region is one of nine subdivisions of the abdomen. An abdominal quadrant is one of four abdominal subdivisions.
10. A. The diaphragm separates the thoracic cavity from the abdominal cavity. The mediastinum divides the thoracic cavity into left and right parts.
11. E. The pelvic cavity contains the urinary bladder, the internal reproductive organs, and the lower part of the digestive tract. The other organs listed are found in the abdominal cavity.
12. D. The mediastinum is a partition containing the heart, trachea, esophagus, and other structures. The heart is surrounded by the pericardial cavity. The mediastinum, pericardial cavity, and heart are found in the thoracic cavity.
13. A. Serous membranes line cavities into which they secrete serous fluid. The serous fluid reduces friction between organs. Serous membranes line cavities that do NOT open to the exterior of the body.
14. B. The kidneys are retroperitoneal; therefore they are NOT surrounded by the peritoneal cavity.
15. E. The abdominal and pelvic cavities are lined by the peritoneum, the thoracic cavity by the pleural membrane, and the pericardial cavity by the pericardial membrane.



## FINAL CHALLENGES



1. a. Proximal or superior  
b. Lateral and posterior  
c. Superior  
d. Anterior  
e. Posterior (dorsal) or deep
2. A sagittal or frontal plane through the body also makes a longitudinal section through the esophagus. A transverse plane makes a cross section.
3. It is part of a negative-feedback system. Stimulation of the hunger center can result in eating, and the ingested food causes blood sugar levels to increase (return to homeostasis).
4. After passing through the abdominal wall, the parietal peritoneum is the first membrane pierced. In passing through the stomach, the visceral peritoneum on one side of the stomach, the stomach itself, and the visceral peritoneum on the other side of the stomach are penetrated. To enter the kidney, which is retroperitoneal, the bullet passes through the parietal peritoneum.