

- » Learning to speak the language
- » Casing the cavities
- » Orienting yourself to the body

Chapter 1

The Language of Anatomy & Physiology

Human *anatomy* is the study of our bodies' structures while *physiology* is how they work. It makes sense, then, to learn the two in tandem. But before we can dive in to the body systems and their intricate structures, you must first learn to speak the language of the science.

Organization of the Body

As you know, the body is organized into systems, grouping together the organs that work together to achieve a common goal. To house all these organs, our body must create spaces to hold them. The body has two cavities that achieve this: the *dorsal cavity*, which holds the brain and spinal cord and the *ventral cavity* that holds everything else. The dorsal cavity splits into the *spinal cavity*, which holds the spinal cord, and the *cranial cavity* that houses the brain. The ventral cavity is split into the *thoracic cavity* and the *abdominopelvic cavity* by a large band of muscle called the *diaphragm*. Within the thoracic cavity are the right and left *pleural cavities*, which hold each lung, and the *mediastinum*. Within the mediastinum is the *pericardial cavity* which contains the heart. The abdominopelvic cavity divides into the *abdominal cavity* (with the stomach, liver, and intestines) and the *pelvic cavity* (with the bladder and reproductive organs), though there's no distinct barrier between the two.

In order to create these cavities within our bodies, we have membranes to border the space. The *visceral membrane* lies atop of the organs, making direct contact with them. For example, the

outermost layer of the heart is called the *visceral pericardium* and on the lungs it's the *visceral pleura*. The *parietal membrane* lies on the other side of the spaces or lining the cavity itself. So the lining of the abdominopelvic cavity is known as the *parietal peritoneum* (note that it's not the parietal abdominopelvic that just sounds weird).

The other parts of the body are divided into *axial* and *appendicular* areas. The axial portions are the parts of your body that form your axis — the head, chest, and abdomen. The appendicular portions form your appendages — your arms and legs. For consistency when referencing them, there are proper terms for all of the body's areas. The terminology used in identifying many of the regions is found in Table 1-1. You'll notice these terms popping up all over this book.

Table 1-1 The Body's Regions

Proper Term	Region	Proper Term	Region
Antebrachial	forearm	Genicular	knee
Antecubital	inner elbow	Inguinal	groin/inner thigh
Axillary	armpit	Lumbar	lower back
Brachial	upper arm	Mental	chin
Buccal	cheek	Orbital	eye
Carpal	wrist	Otic	ear
Cephalic	head	Pectoral	chest
Cervical	neck	Pedal	foot
Coxal	hip	Plantar	sole/bottom of foot
Crural	shin	Popliteal	back of knee
Cubital	elbow	Sural	calf
Dorsum	back	Tarsal	ankle
Femoral	thigh	Vertebral	backbone
Frontal	forehead		

That’s a lot of new terms for the first chapter! Let’s see how well they’re sticking.



Q. Which of the following organs would you find in the mediastinum?

- I. lungs
 - II. heart
 - III. liver
- a. I only
b. II only
c. III only
d. I & II
e. I, II, & III

A. The correct answer is only the heart. The mediastinum is defined as the area between the lungs and the liver is in the abdomino-pelvic cavity.

1-10 Label the body cavities illustrated in Figure 1-1.

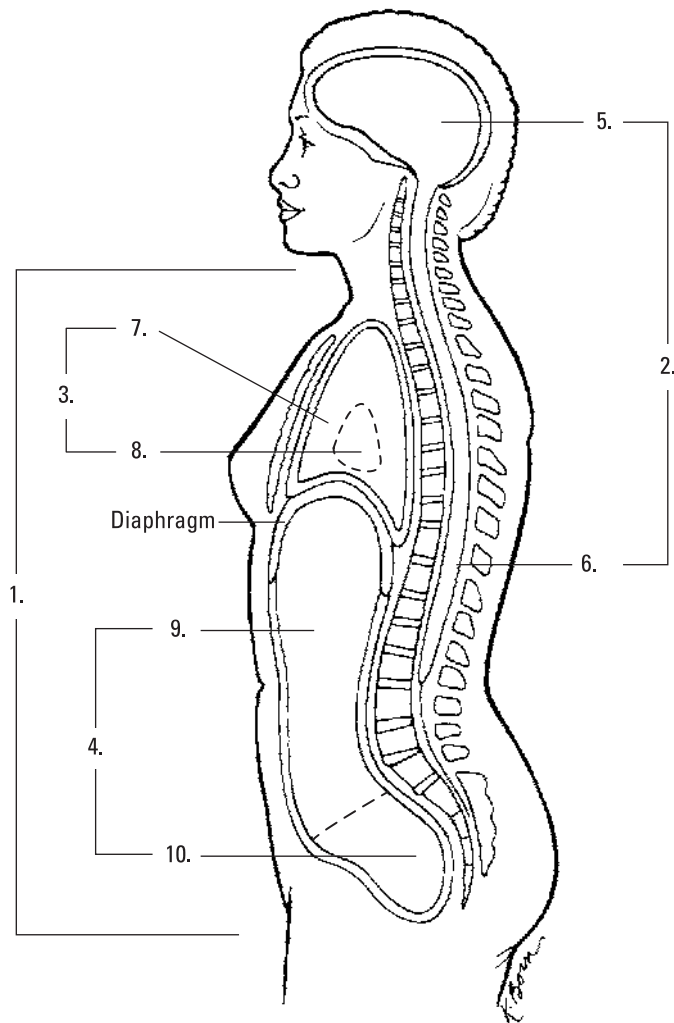


FIGURE 1-1:
Body
cavities.

Illustration by Kathryn Born, MA

- a. Abdominal
- b. Abdominopelvic
- c. Cranial
- d. Dorsal
- e. Pelvic
- f. Pericardial
- g. Pleural
- h. Spinal
- i. Thoracic
- j. Ventral

11–16

Match the description to identify the membranes that create the body's cavities.

- a. parietal pericardium
- b. parietal peritoneum
- c. parietal pleura
- d. visceral pericardium
- e. visceral peritoneum
- f. visceral pleura

- 11 _____ The outermost layer encasing the heart
- 12 _____ The membrane that lies on the surface of the liver
- 13 _____ The surface of the heart
- 14 _____ The lining of the thoracic cavity
- 15 _____ The membrane making direct contact with the lungs
- 16 _____ The layer that lines the abdominopelvic cavity

17

True or False: The cephalic region is considered part of the appendicular body.

18

Which body part would be affected if you injured your tarsal region?

- a. knee
- b. wrist
- c. ankle
- d. shoulder
- e. hip

19

If you suffered a laceration (cut) to your chin, the injury would be located in the _____ region.

- a. cubital
- b. cervical
- c. buccal
- d. mental
- e. frontal

20 Identify the correct pairing of terms:

- a. popliteal – inner elbow
- b. lumbar – back of the neck
- c. antecubital – upper arm
- d. coxal – shoulder
- e. sural – back of lower leg

Getting into Position

In anatomy and physiology, we often identify the body's features in reference to other body parts. Because of this, we need a standardized point of reference, which is known as *anatomical position*.



REMEMBER

Anatomical position is the body facing forward, feet pointed straight ahead, arms resting on the sides, with the palms turned outward. Unless you are told otherwise, this is the body's position whenever specific body parts are described in reference to other locations.

Because we can only see the external surface of the body, sections must be made in order for us to see what's inside. It's important to take note of what type of section was made to provide the view you see in a picture or diagram. There are three planes (directions) in which sections can be made:

- » **frontal:** separating the front from the back
- » **sagittal:** dividing right and left sides
- » **transverse:** creating top and bottom pieces

We also use directional terms to describe the location of structures. It helps to learn them as their opposing pairs to minimize confusion. The most commonly used terms are:

- » **anterior/posterior:** in front of/behind
- » **superior/inferior:** above/below
- » **medial/lateral:** closer to/further from the midline (also used with rotation)
- » **superficial/deep:** closer to/further from the body surface
- » **proximal/distal:** closer to/further from attachment point (used for appendages)



WARNING

Right and left are also used quite often but be careful! They refer to the patient's right and left, not yours.

You got it? Let's find out.

21-23 Identify the planes of body sections in Figure 1-2.

- a. Sagittal
- b. Transverse
- c. Frontal

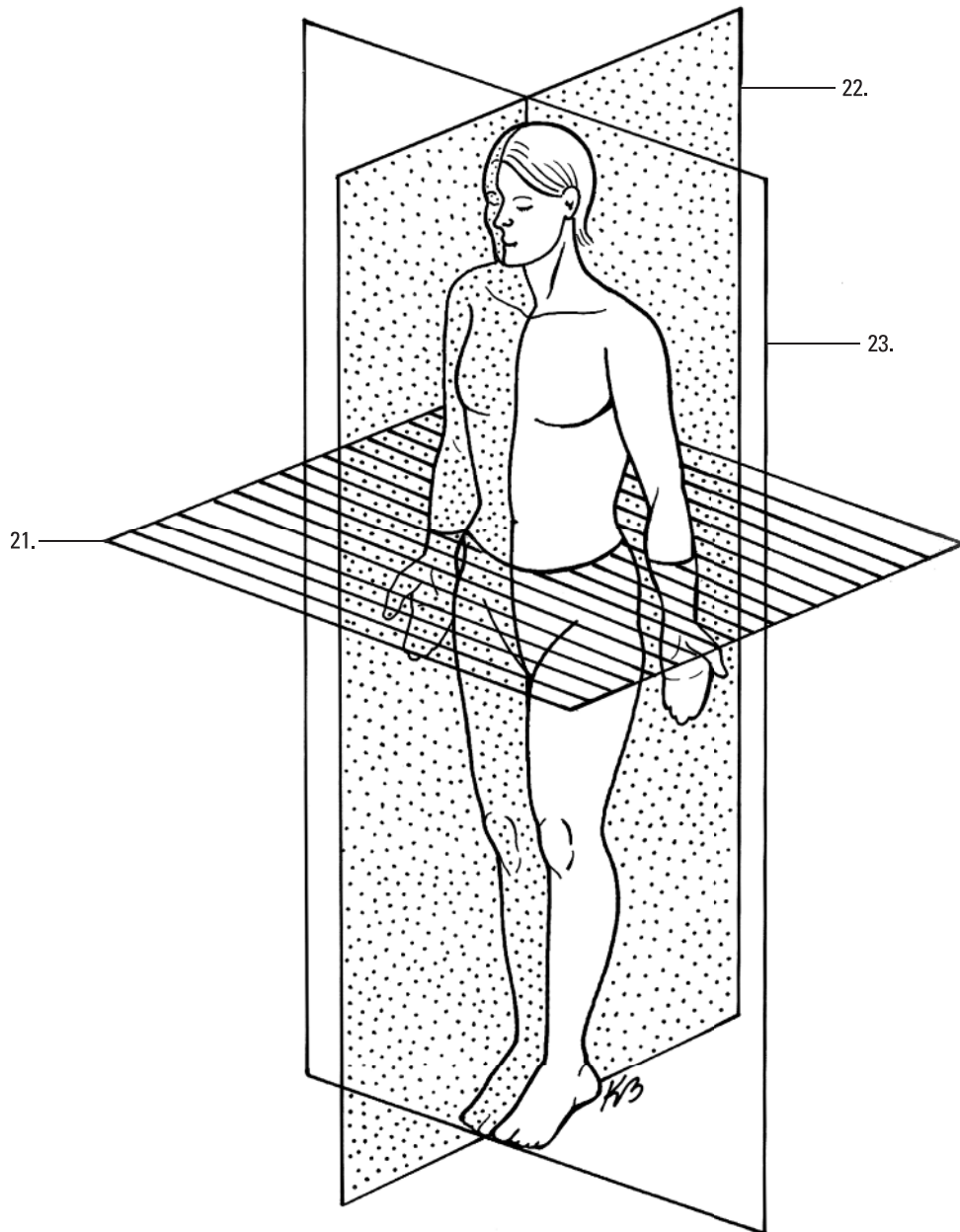


FIGURE 1-2:
The body's
planes.

Illustration by Kathryn Born, MA

Fill in the blanks.

- 24 The neck is _____ to the hips.
- 25 The lungs are _____ to the rib cage.
- 26 The nose is _____ to the ears.
- 27 The wrist is _____ to the shoulder.
- 28 The buttocks are _____ to the navel (belly button).

Answers to Questions on Terminology

The following are answers to the practice questions presented in this chapter.

- 1-10 Figure 1-1 should be labeled as follows:
1. **j.** ventral, 2. **d.** dorsal, 3. **i.** thoracic, 4. **b.** abdominopelvic, 5. **c.** cranial, 6. **h.** spinal, 7. **g.** pleural, 8. **f.** pericardial, 9. **a.** abdominal, 10. **e.** pelvic
- 11 The outermost layer encasing the heart: **a. parietal pericardium**
- 12 The membrane that lies on the surface of the liver: **e. visceral peritoneum**
- 13 The surface of the heart: **d. visceral pericardium**
- 14 The lining of the thoracic cavity: **c. parietal pleura**
- 15 The membrane making direct contact with the lungs: **f. visceral pleura**
- 16 The layer that lines the abdominopelvic cavity: **b. parietal peritoneum**



TIP

Don't memorize all nine terms (cavities included), memorize the naming system. The space is always the cavity and the visceral layer is always making direct contact with an organ. The pattern holds true everywhere (except for surrounding the brain and spinal cord; they're special).

- 17 The cephalic region is considered part of the appendicular body. **False.** The cephalic region is the head and though it does stick off the trunk, it's axial. Only the arms and legs are appendicular.
- 18 Which body part would be affected if you injured your tarsal region? **c. ankle**
- 19 If you suffered a laceration (cut) to your chin, the injury would be located in the **d. mental** region.
- 20 Identify the correct pairing of terms: **e. sural – back of lower leg**
- 21-23 Figure 1-2 should be labeled as follows: 21. **b.** transverse, 22. **a.** sagittal, 23. **c.** frontal
- 24 The neck is superior to the hips.
- 25 The lungs are deep to the ribcage.
- 26 The nose is medial to the ears.
- 27 The wrist is distal to the shoulder.
- 28 The buttocks are posterior to the navel (belly button).