

Study Guide — HBS Unit 3: Adventure Awaits (Pretest)

Human Body Systems · Unit 3 — Adventure Awaits · Modeled on the PLTW Guided Review format

Vocabulary to know cold

Term	Definition
cardi/o	Combining form meaning heart (e.g., cardiology, cardiac).
pulmon/o	Combining form meaning lung (e.g., pulmonary, pulmonologist).
vas/o	Combining form meaning vessel (e.g., vasoconstriction, vascular).
-pnea	Suffix meaning breathing (e.g., apnea, dyspnea, tachypnea).
tachy-	Prefix meaning fast or rapid (e.g., tachycardia).
brady-	Prefix meaning slow (e.g., bradycardia).
Artery	Blood vessel that carries blood away from the heart.
Vein	Blood vessel that returns blood to the heart.
Alveoli	Tiny air sacs in the lungs where gas exchange occurs.
Heart rate	Number of heartbeats per minute (bpm).
Blood pressure	Force of blood against artery walls, written systolic/diastolic in mmHg.
Left ventricle	Heart chamber that pumps oxygenated blood to the body through the aorta.

Worked examples (follow the reasoning)

Example 1. Break down the medical term 'tachycardia' into its parts and define it.

- Identify the prefix: tachy- = fast.
- Identify the root: cardi = heart.
- Identify the suffix: -ia = condition.
- Combine the meanings: a condition of a fast heart.

Answer: Tachycardia = a fast heart rate (abnormally rapid heartbeat).

Example 2. A friend says arteries always carry oxygen-rich blood. Is this correct?

- Recall the definition: arteries carry blood AWAY from the heart, regardless of oxygen content.
- Recall that most arteries (like the aorta) carry oxygen-rich blood.
- Note the exception: the pulmonary artery carries oxygen-poor blood from the heart to the lungs.
- Conclude that the rule about direction is correct, but the oxygen claim is not always true.

Answer: Incorrect; arteries are defined by direction (away from heart), and the pulmonary artery carries oxygen-poor blood.

Practice questions (with reasoning)

1. The suffix -pnea in the word dyspnea refers to:

- A. Heart
- B. Breathing
- C. Pain
- D. Blood

Answer: B. -pnea means breathing; dyspnea is difficult or labored breathing.

2. Which structure delivers oxygen-rich blood to the body's tissues?

- A. Pulmonary artery
- B. Right atrium
- C. Left ventricle
- D. Trachea

Answer: C. The left ventricle pumps oxygenated blood out to the body.

3. During vigorous exercise, breathing rate usually:

- A. Decreases
- B. Increases
- C. Stops
- D. Does not change

Answer: B. Increased oxygen demand and CO₂ production raise the breathing (ventilation) rate.

4. A heart rate of 45 bpm in a resting non-athlete would be described using the prefix:

- A. tachy-
- B. brady-
- C. hyper-
- D. poly-

Answer: B. Brady- means slow; a slow heart rate is bradycardia.