

# BIOLOGY 11 – PRE-LAB EXERCISE

# 8

Name: \_\_\_\_\_

Lab Day & Time: \_\_\_\_\_

## Features of the Cardiovascular System

1. Read the “**Pulse-Rate Method**” in section **8.3 Heartbeat** of your *Lab Manual*.

On at least two different mornings, take your **resting pulse rate**, before you get out of bed in the morning, and before you engage in any activity or are disturbed. Record your daily resting heart rate and the average.

**Day 1:**

**Day 2:**

**Average Resting Pulse Rate =**

**beats per minute**

2. **Computation of your target heart rate.**

In order to improve and maintain the health of your cardiovascular system (i.e., to increase your stamina and to reduce the risks of heart disease, strokes, diabetes, and impaired circulation), it is generally recommended that you engage in aerobic exercise for at least twenty minutes, 3–4 times per week. During these exercise sessions, you should sustain a **target heart rate** that takes into account your age and the current condition of your heart. [Consult your physician before starting any radically new exercise regime!]

Calculate *your* personal target heart rate, following these steps:

- a. Begin with 220 points (a figure determined by statistics) \_\_\_\_\_ 220 .
- b. Age (for ages 1-20, use 20; for ages over 20 use your exact age) \_\_\_\_\_
- c. Prediction of maximum heart rate (subtract b from a). \_\_\_\_\_
- d. Resting Pulse Rate (per minute)  
(rate taken when you first wake up in the morning — from question #1 above). \_\_\_\_\_
- e. Working Heart Rate (per minute) (subtract d from c) \_\_\_\_\_
- f. Safe Percentage of line e  
(under age 40, use 70% of line e; over age 40, use 65% of line e) \_\_\_\_\_
- g. **Target Heart Rate** (per minute) (add d and f) \_\_\_\_\_
- h. Since during exercise it is most practical to measure your pulse over just 10 seconds, what is your **Target Heart Rate per 10 seconds** (Divide g by 6. Round to whole number.) \_\_\_\_\_

3. What exactly is meant by “pulse” and why can you feel it?

4. In the “**Stethoscope Method**” in section **8.3 Heartbeat**, what specifically causes the heart sounds?

What is the purpose of heart valves?

5. Define “blood pressure” in your own words.

Define “systolic pressure”. Is this the higher or lower number?

Define “diastolic pressure”. Is this the higher or lower number?

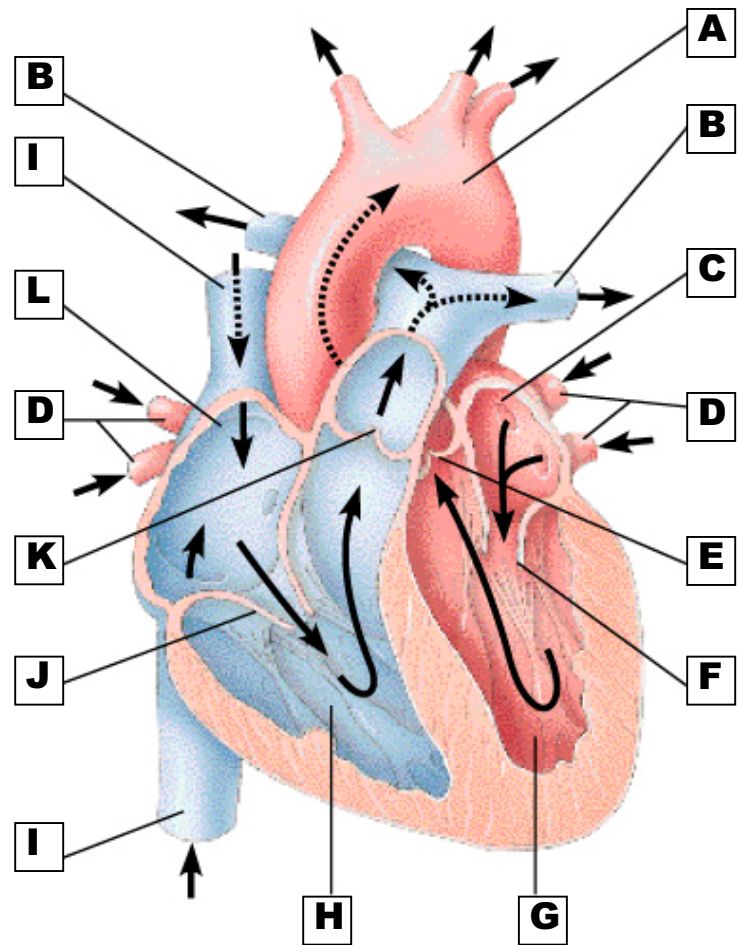
Compare this illustration with the two drawings in **Figures 8.3 & 8.4** of your *Lab Manual*.

6. In the blanks to the left of the list of terms, write the **letter** that matches that term with the indicated part of the heart in the illustration. (Hint: parts with the same letter have the same name.)

Letter from picture	Heart anatomy	Sequence number
	<b>Aorta</b>	
	Left <b>Atrium</b>	
	Right <b>Atrium</b>	
	Left <b>AV valve</b>	
	Right <b>AV valve</b>	
	<b>Pulmonary artery</b>	
	<b>Pulmonary veins</b>	
	Left <b>Semilunar valve</b>	
	Right <b>Semilunar valve</b>	
	<b>Vena cava</b>	<b>1</b>
	Left <b>Ventricle</b>	
	Right <b>Ventricle</b>	

7. Trace the path of blood flow as it returns to the heart from the body; then is pumped to the lungs, back to the heart, and back to the general systemic circulation.

In the blanks to the right of the list of terms, write the **number** that matches that part of the heart in the **order of sequence** as the blood flows through each part.



8. Which chamber of the heart is the most muscular? Why?

9. From the list in Question 6, name the two arteries that directly lead away from the heart.

Which of these two arteries carries oxygenated blood?

10. From the list in Question 6, name the two groups of veins that directly lead into the heart.

Which of these two groups of veins carries oxygenated blood?

11. As the blood flows through the atria and ventricles, does it nourish the muscle of the heart?

How does the heart muscle get the oxygen and nutrients it needs for the respiration to power its contractions?