

# Respiration and Circulation

Adapted from Schmidt, et al. 2006. Life All Around Us.

## Blood Slide

### Objectives

Become familiar with properties of white blood cells (leukocytes) and red blood cells (erythrocytes).

### Instructions

1. Examine the prepared slide of human blood.
2. Which cells have picked up the most colorful stains, leukocytes or erythrocytes?
3. Which cells are more varied in appearance, leukocytes or erythrocytes?
4. Which cells are more numerous, leukocytes or erythrocytes?
5. Which cells are larger, leukocytes or erythrocytes?

## Pulse and Blood Pressure

### Objectives

Learn to measure pulse rate and blood pressure.

Become familiar with systolic and diastolic pressure.

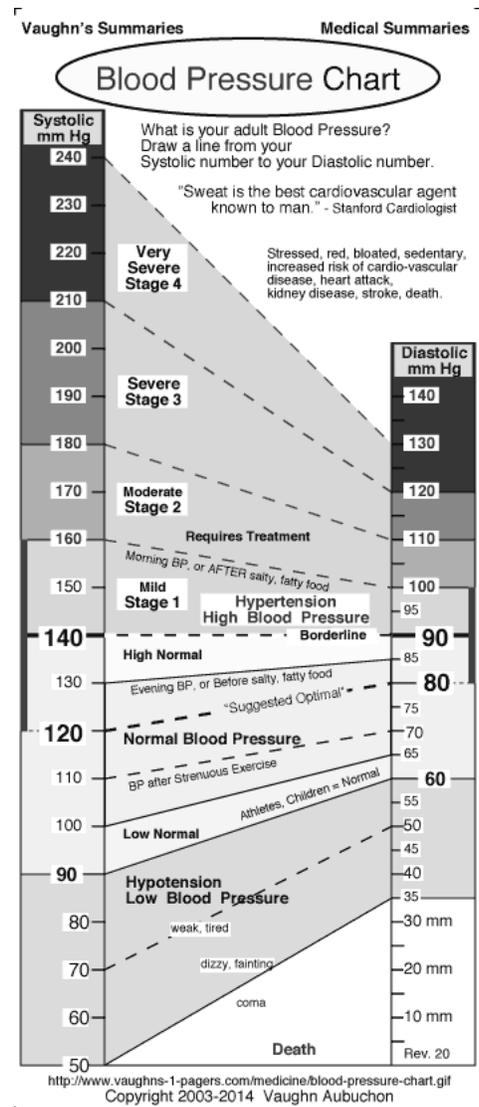
### Instructions

1. Determine your pulse rate. \_\_\_\_\_
2. If each beat pumps 70 mL of blood, how much blood does your heart pump in a minute, in liters?
3. Determine your blood pressure. \_\_\_\_\_

Note: Blood pressure is reported as "systolic pressure" over "diastolic pressure." The units are "millimeters of mercury."

Systolic pressure (from Greek, "systole" = "to contract")

Diastolic pressure (from Greek, "diastole" = "separation, expansion")



# Heart Anatomy and Dissection

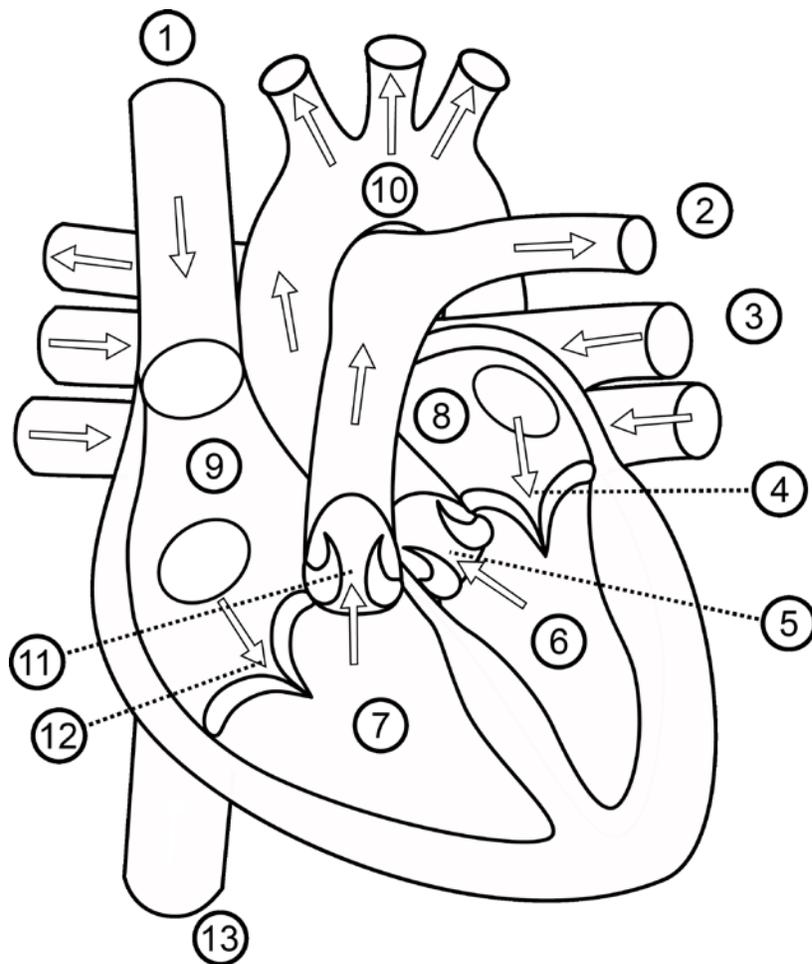
## Objectives

Observe how chambers of the heart are arranged and connected, with a diagram and a dissection.

On the dissection, notice the following:

- Left vs. right side of the heart (size, muscle thickness)
- Atrium vs. ventricle (size, muscle thickness)
- Valves (materials, size, arrangement)
- Strength of chordae tendinae
- Qualities of vessels (size, thickness, rigidity)
- Coronary arteries
- Auricles

Figure from <http://anatomy-bodychart.us/>



# Hematocrit

## Objectives

Learn to set up and interpret a hematocrit.

## Instructions

1. Set up and run your hematocrit test, based on instructions in class.
2. After the test is run, measure the total length, and the length of the packed cells.

Total length = \_\_\_\_\_ Length of packed cells = \_\_\_\_\_

3. What percentage of the sample was made up of cells?

# Normal and Forced Breathing

## Objectives

Determine breath volume.

Determine maximum apnea time before and after hyperventilation.

## Instructions

1. Use the spirometer to measure your normal breath volume. \_\_\_\_\_
2. Use the spirometer to measure your maximum breath volume. \_\_\_\_\_
3. Measure how long you can hold your breath. This is your apnea ("APP-knee-uh") time. \_\_\_\_\_
4. Sit down. Breathe as much and as fast as you can for one minute. This is "hyperventilation."
5. Immediately after the minute of hyperventilation, measure your apnea time again. \_\_\_\_\_

# Breath Composition

## Objectives

Determine whether your breath contains carbon dioxide.

## Instructions

1. Determine how phenol red reacts with acids and bases.
2. Determine whether your breath gives rise to an acid. (Hint: When carbon dioxide mixes with water, it can make carbonic acid.)
3. What is your conclusion? What is your supporting evidence?

# Lab 13 Assignment

1. What did you observe in the heart dissection? Write a paragraph describing what you learned.
2. Turn in this completed lab.