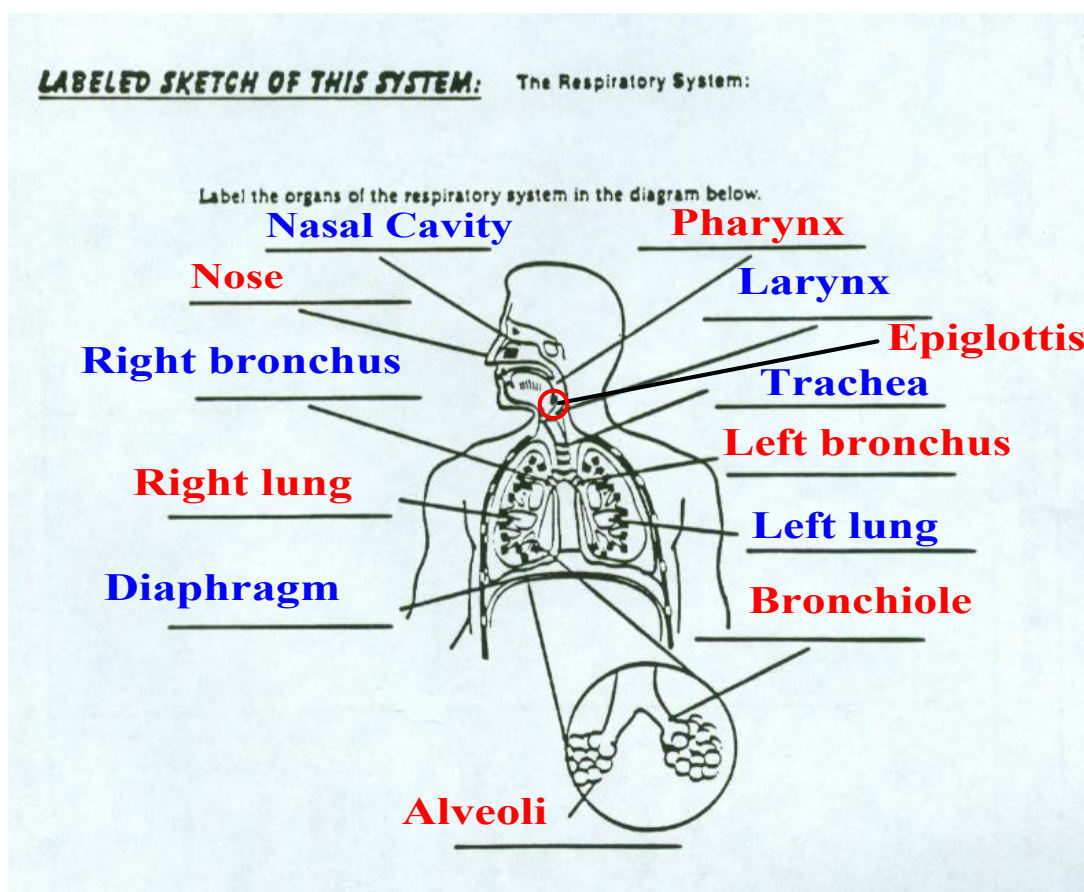
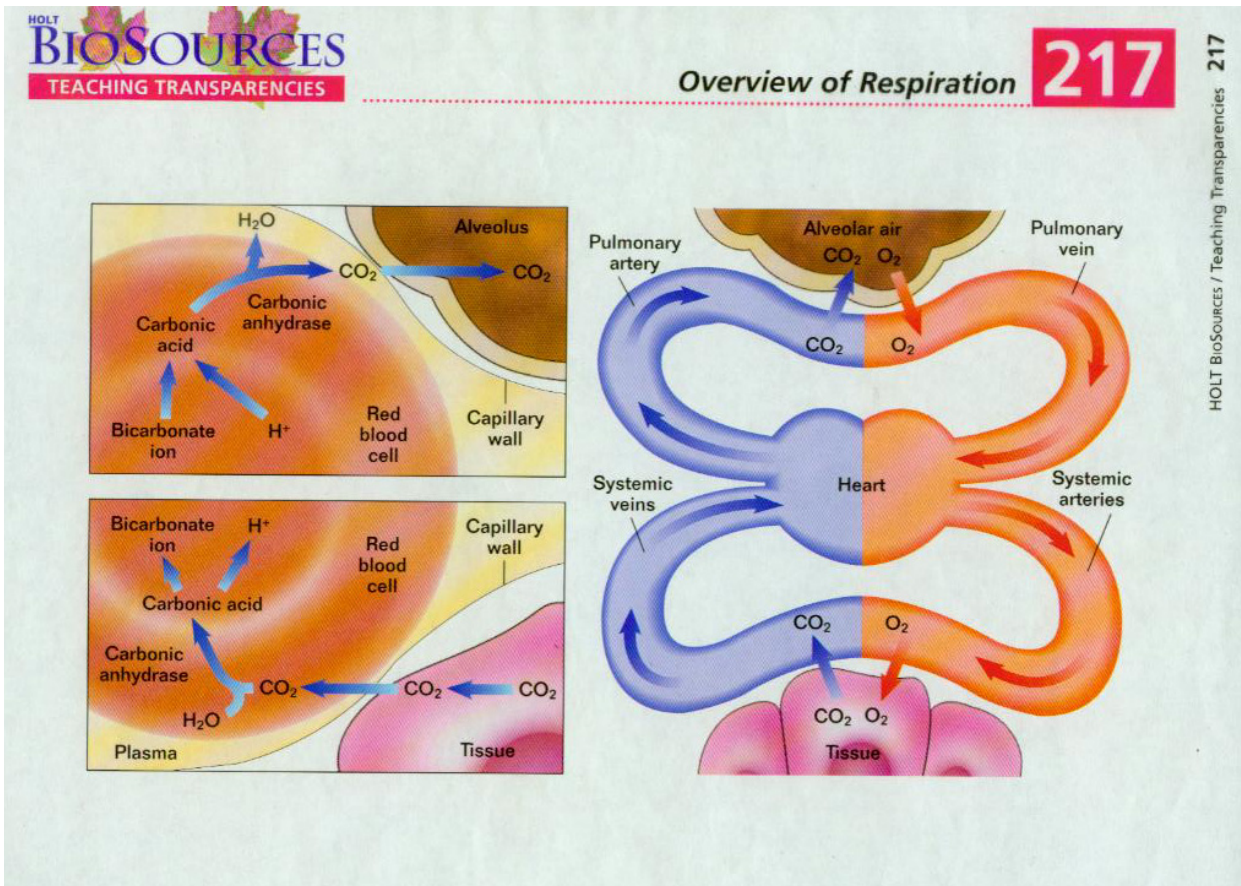
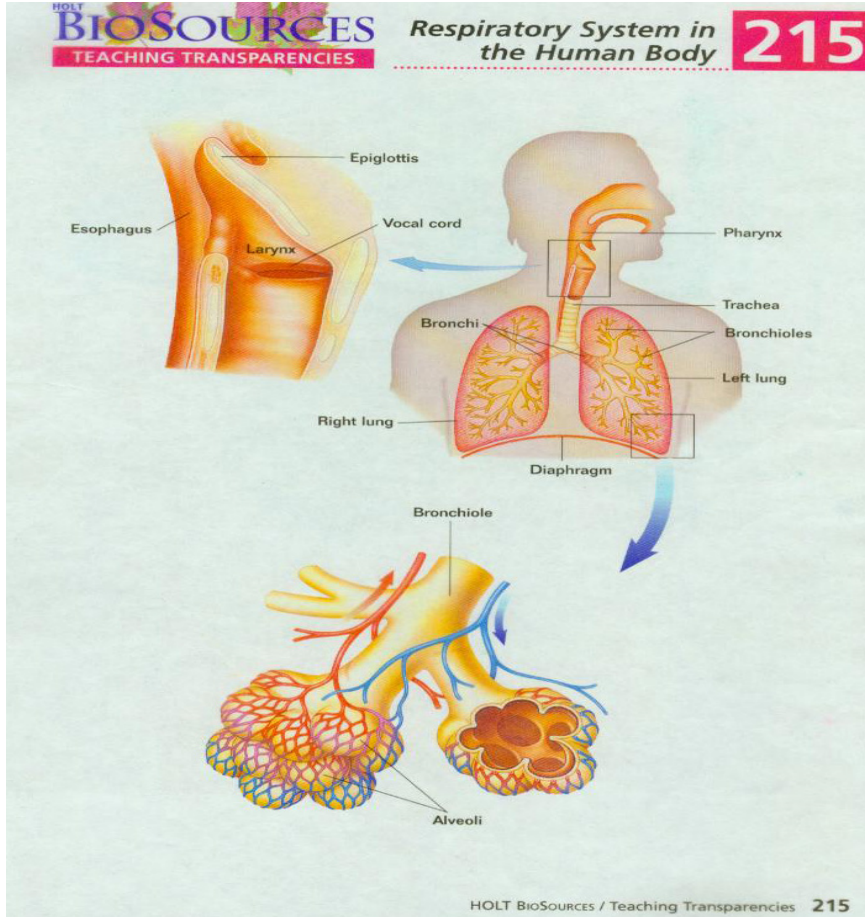


# RESPIRATORY SYSTEM

## JOB OF THIS SYSTEM:

- *A group of organs working together to bring about the exchange of oxygen & carbon dioxide in the body & clean & filter impurities that may interfere with their function.*
- Our atmosphere is 78% nitrogen, 21% oxygen, 1% trace gasses.
- If oxygen is below 15% our respiratory system can't function.





- **List path of one inhaled breath of air through the nose.**

*Nose* → *nasal cavity* → *pharynx* (throat) → *larynx* (voice box) → *trachea* (windpipe) *protected by epiglottis* (small flap of skin folds over to prevent foods from moving down wrong pipe) → *bronchus* (leading into lungs) → *bronchioles* → *alveoli* (air sacs where gas exchange between O<sub>2</sub> and CO<sub>2</sub> takes place) → *reverse process to eliminate CO<sub>2</sub> out of body*

## CIRCULATORY SYSTEM

### JOB OF THIS SYSTEM:

- *Blood is the body's internal transport system.*
- *Pumped by the heart, blood travels through a network of vessels; carries oxygen, nutrients, & hormones to & wastes products from each of the cells (1,000,000,000,000) in the human body.*
- **The Heartbeat**
- *at rest ≈ 60 to 80 beats per minute*
- *with exercise ≈ 200 beats per minute.*

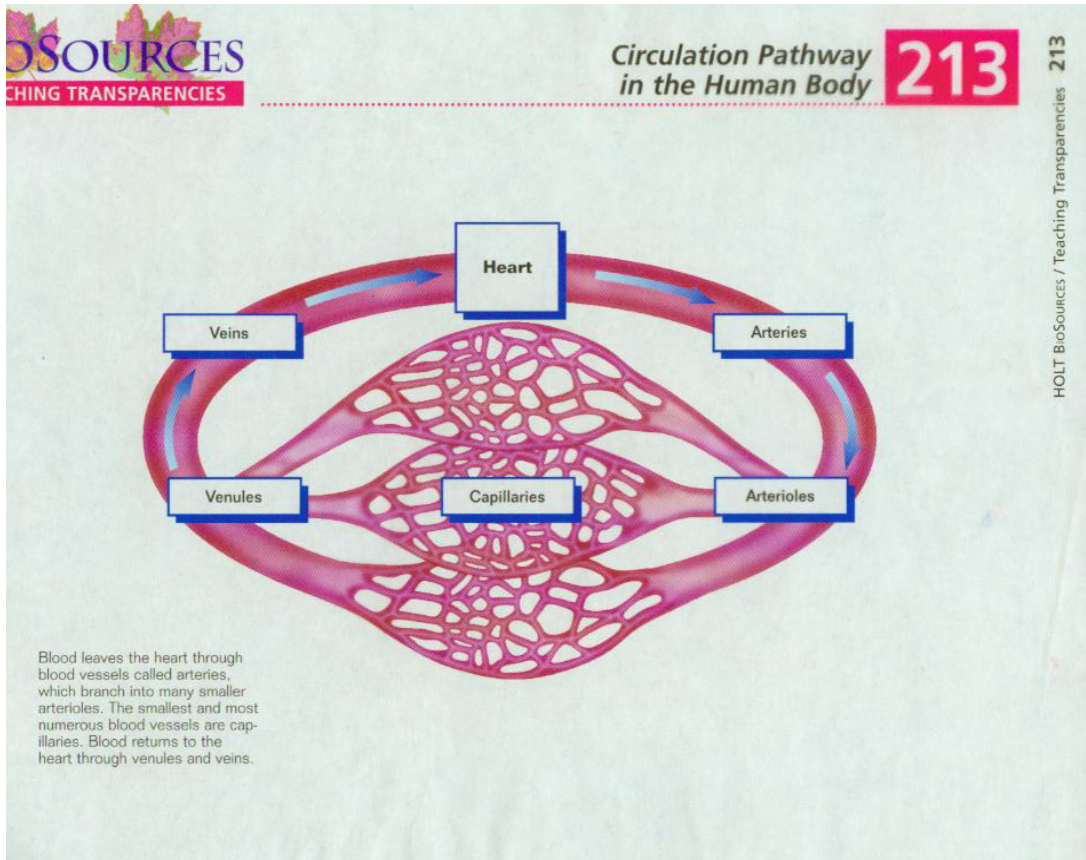
## The Lymphatic System

- As blood circulates throughout body, *fluid leaks into tissues* (about 3 liters a day).
- The **lymphatic system** controls *the level of leakage by collecting fluid (lymph) and returning it to the circulatory system.*

## Blood Pressure

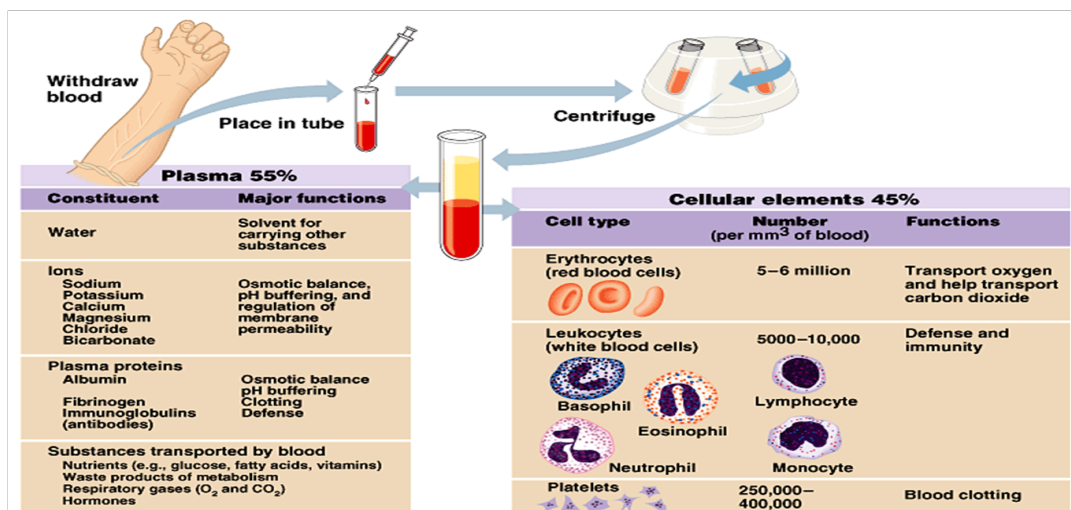
- A measure of the *force that blood exerts against a vessel wall.*
- **Systolic** - when *heart is contracting*
- **Diastolic** - when *heart is relaxed*
- Written as *Systolic/ Diastolic*
- Normal is *systolic 100 to 130 and diastolic 70 to 90*





## Blood

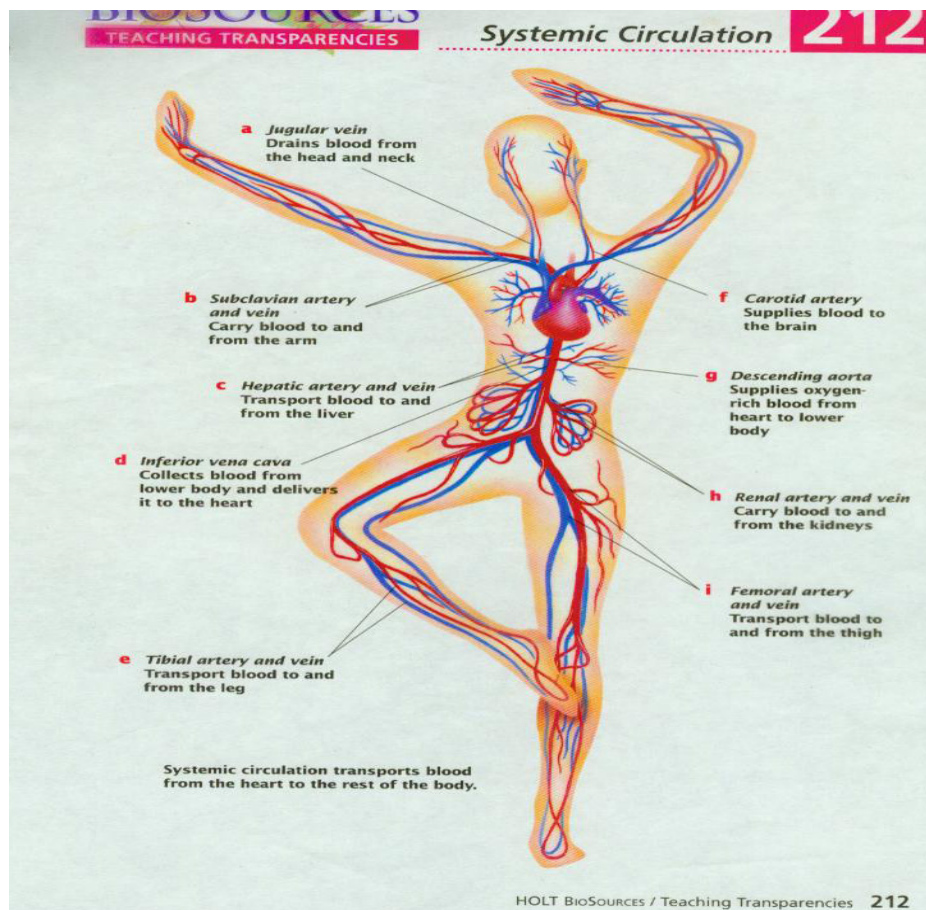
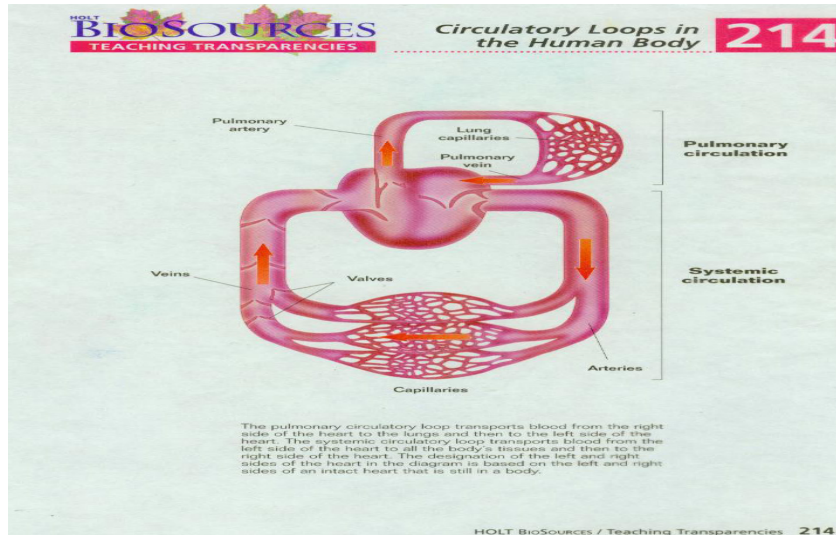
- adults have about 4 to 6 liters of blood (8% of total mass of the body)
- The blood is made of 55% plasma; 45 % cell portion



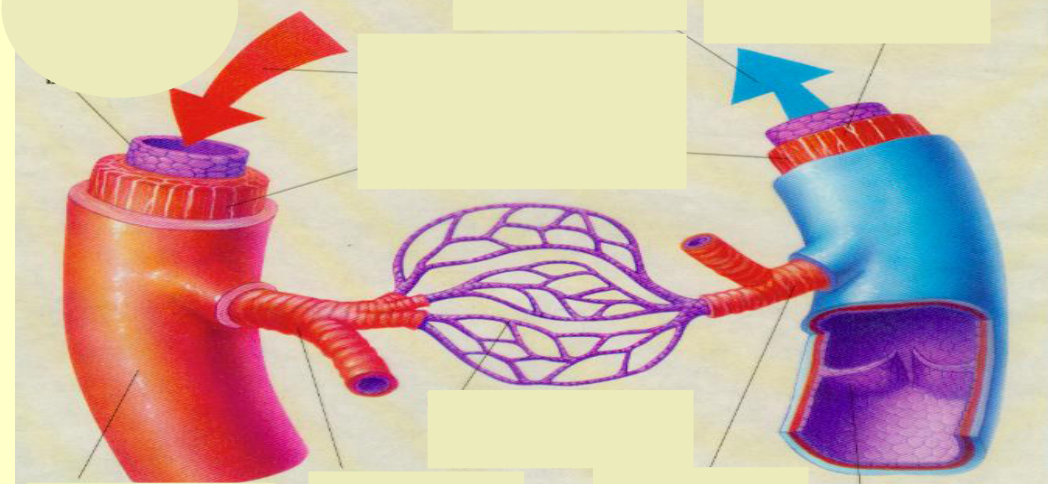
## ADD: Pathways of Circulation

### Two Ways:

- *Pulmonary circulation carries blood between heart and lungs.*
- *Systemic circulation carries blood to rest of body.*







The walls of arteries are thicker than veins to handle the higher pressure of blood coming from the pumping heart.

Valves within the veins prevent back flow of blood.

**HOLT BIOSOURCES**  
TEACHING TRANSPARENCIES

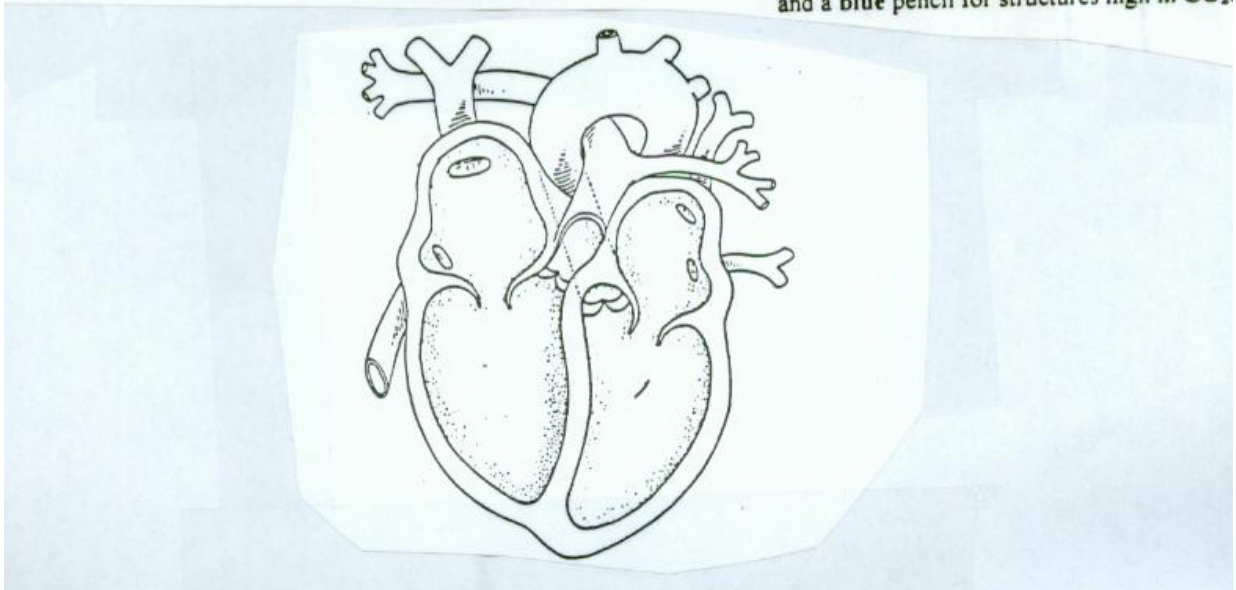
**Structure of the Human Heart** **210**

The arrows indicate the pathway that the blood takes as it travels into, through, and out of the heart. Oxygen-rich blood from the lungs, red arrows, enters the left side of the heart through pulmonary veins. Oxygen-poor blood from the body, blue arrows, enters the right side of the heart through two large veins, the superior vena cava and the inferior vena cava.

HOLT BioSources / Teaching Transparencies 210

**LABELED SKETCH OF THIS SYSTEM:**

Draw arrows to show direction of blood flow  
use a red pencil for structures high in  $O_2$   
and a blue pencil for structures high in  $CO_2$ .



- List the path a drop of blood would travel, starting at the right atrium.

*From vena cava the blood drop ( $\downarrow O_2$ )  $\rightarrow$  right atrium  $\rightarrow$  tricuspid valve  $\rightarrow$  right ventricle  $\rightarrow$  pulmonary artery  $\rightarrow$  lungs  $\rightarrow$  pulmonary veins ( $\uparrow O_2$ )  $\rightarrow$  left atrium  $\rightarrow$  bicuspid valve  $\rightarrow$  left ventricle  $\rightarrow$  aorta  $\rightarrow$  body*