Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
NDHS Per: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_

**Cardiopulmonary System**

Cardio – heart

Pulmonary - lungs

**Gas Exchange in Humans**

 1. : air entrance

  open - allows air into \_\_\_\_\_\_\_\_\_\_\_\_

 Larynx:

  - air passing over vocal chords causes vibration

2. : Wind Pipe - in front of esophagus

  - reinforcement

3. :

 Trachea splits into bronchi

 Each bronchus splits further into more **­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

4. : air sac

 - located at the end of bronchioles

 - enveloped by  for gas exchange

5. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 Inhale: lots of oxygen - diffuses across membrane into blood - fixed by hemoglobin - binds to the iron at the center of the  subunit

 - oxygen binds less well in  environments (control mechanism)

 Blood has lots of  - diffuses out of RBC into alveoli

1. : RBC move throughout body and O2 diffuses with concentration gradient to cells via the  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 - CO2 diffuses opposite direction

**RESPIRATION CONTROL**

1. : moving air in and out of lungs

 : mammals, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 - generated by  (muscle separating the pulmonary and abdominal cavities) and  muscles (muscles between )

 - diaphragm contracts and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Result: decreases  in lungs (more volume)

 -

 - diaphragm relaxes and moves up -

 2. :

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 - chemoreceptors in  and  monitor pH

 - when pH drops () a signal is sent to the breathing control center (medulla oblongata) in the brain which signals the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circulatory System**

Function: distribute nutrients and oxygen

 transport waste products for removal

 immune system

**Structures of Circulatory Systems**

 Vessels:

 **Arteries** **Veins**

 move blood  blood \_\_\_\_\_\_\_\_\_\_\_\_\_

 **\_\_\_\_\_\_\_** layer of smooth muscle **\_\_\_\_\_\_\_\_** layer of smooth muscle

 Branch into **\_\_\_\_\_\_\_\_\_\_\_\_** Formed from converging **\_\_\_\_\_\_\_\_\_\_**

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: smallest blood vessels - transfer of nutrients and waste

 **\_\_\_\_\_\_\_\_\_\_\_\_\_**: Pumping mechanism: cardiac muscle tissue

 Compartments:

 **\_\_\_\_\_\_\_\_\_\_\_\_**: receive blood from veins pump blood to ventricles

 **\_\_\_\_\_\_\_\_\_\_\_\_**: typically larger chamber with thicker wall - pump blood into arteries

**Human Circulatory Systems**

Parts/Pathway:

 1. **\_\_\_\_\_\_\_\_\_\_\_\_**: - largest veins: **\_\_\_\_\_\_\_\_\_\_\_\_** (anterior) - head and forelimbs and **\_\_\_\_\_\_\_\_\_\_\_** (posterior) - torso and legs

 2. **\_\_\_\_\_\_\_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**)-** receives blood from vena cavas

 3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** **\_\_\_\_\_\_\_\_\_\_\_\_**valve

 - passes blood to RV - separates the right chambers

 - prevents  of blood from RV so blood only moves forward

 4.  thicker **\_\_\_\_\_\_\_\_\_\_**- pumps blood to Pulmonary Artery

 5. : gateway to pulmonary artery - prevents blood from flowing into the **\_\_\_\_\_\_\_**

 6. : carries blood to lungs for oxygen - **NOTE**: blood is leaving the heart through an artery but is \_\_\_\_\_\_\_\_\_\_\_\_\_

 - in lungs the arteries branch into arterioles and then into a capillary net around the alveoli allowing for gas exchange

 7. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: from lungs to LA - carries **\_\_\_\_\_\_\_\_\_\_** blood

 8.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:** receives O2 rich blood and pumps it into the LV

 9. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** - aka **\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 - prevents backflow from LV

 10.**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** : pumps blood into Aorta

11.**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** : prevents blood from flowing back into LV

 12. **\_\_\_\_\_\_\_\_\_\_\_\_**: main artery - branches

 - sends blood to body systems

 13. **\_\_\_\_\_\_\_\_\_\_\_\_\_**:

 - branch into **arterioles** and then into capillaries

 14. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:

 - gas and nutrient exchange

 15. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: capillaries merging into larger vessels like streams into rivers

[THE HEART](http://www.youtube.com/watch?v=D3ZDJgFDdk0&feature=related)

In 1 year, the average human heart circulates from 770,000 to 1.6 million gallons of blood through the body. This is enough fluid to fill 200 tank cars, each with a capacity of 8,000 gallons

[Beating Heart/Heart Surgery](http://www.youtube.com/watch?v=Zxqj1BcBpIg&feature=related)

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: **\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **\_\_\_\_\_\_\_\_\_\_\_\_\_**: blood being forced into the **\_\_\_\_\_\_\_\_\_\_\_**

- larger pressure because of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 : relaxing of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Increased blood pressure**:

 - higher amounts of **\_\_\_\_\_\_\_\_\_\_\_\_** in the blood due to increased **\_\_\_\_\_\_\_\_** content

- **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 - decreased **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of blood vessels – **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Capillary Exchange**:

 - nutrient rich blood from arteries enters capillaries

 - water, food and gases leave blood to cells

 - metabolic wastes enter blood and nearly all of the fluid that left the capillary