***The Respiratory System***

***Your Body Needs Oxygen!***

* Respiratory system functions:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The process of using oxygen involves both mechanical movement and chemical reactions.
  + Air is transported into your lungs by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ movements.
  + Oxygen is used during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reactions that release energy in your cells.

***Exchanging Oxygen and Carbon Dioxide***

* Oxygen is transported to cells throughout the body.
* The air you breathe contains only about \_\_\_\_\_\_\_\_\_% oxygen and less than \_\_\_\_\_\_\_\_% CO2.
* It is important to exhale CO2 because high levels of it will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells.
* Proper levels of CO2 and oxygen are required for our body to maintain homeostasis. If levels of oxygen or CO2 change, your brain signals the body to breathe faster or slower.

***Cellular Respiration***

* Cellular respiration occurs in cells as they use O2 in chemical reactions to release energy.
* The respiratory system works with the circulatory system and digestive system to make cellular respiration possible.
* CR requires glucose (from food) and oxygen (from breathing) to release energy. CO2 is a waste product of the process and must be removed.
* Remember:
  + glucose + oxygen 🡪 carbon dioxide + water + energy

***Respiratory Structure and Function***

* Nose, Throat and Trachea
  + When you inhale, air enters your body through your nose or mouth.
  + Inside your nose, tiny hairs called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ filter dirt and particles out of the air.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_, a sticky liquid in your nose, also filters the air by trapping particles.
  + The nasal cavity warms the air before it moves down your windpipe (\_\_\_\_\_\_\_\_\_\_\_\_\_\_). The trachea is surrounded by rings of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to keep the tube open.
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ keeps air, food, and liquids from entering your stomach.
* Lungs
  + The lungs are two large organs located on either side of the heart.
  + When you breathe, air enters the throat, passes through the trachea, and moves to the lungs through structures called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + The bronchial tubes branch throughout the lungs into smaller and smaller tubes.
  + At the end of the smallest tubes, air enters tiny air sacs called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The walls of alveoli are only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Oxygen passes from the inside of the alveoli into the blood and CO2 waste is passed from the blood to the alveoli.
* Ribs and Diaphragm
  + The rib cage encloses a space inside your body called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cavity.
  + Some ribs are connected by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the sternum or to each other, making the rib cage flexible. This allows the rib cage to expand when you breathe and make room for the lungs to expand and fill with air.
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a large muscle that stretches across the floor of the thoracic cavity.
    - When you inhale, your diaphragm contracts, making the lungs expand.
    - When the diaphragm relaxes, the process reverses and you exhale.

***Other Functions of Respiration***

* Speech and Other Respiratory Movements
  + Speech/Sound: The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or voice box, is a 2 inch tube shaped organ the size your thumb located at the top of your trachea.
  + Expressing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Coughing/sneezing
  + Crying
  + Sighing
  + Yawning
  + Laughing
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- sudden inhalations that make your diaphragm contract.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Removal
    - Most respiratory movements including hiccups, yawning, coughs, breathing and speaking involve releasing water from your body to the environment.
    - Water is lost through sweat, urine, and exhalations of air.