**Breathing & The Diaphragm**

**(Outcome 22)**

Name:  Date:

**What is Breathing?**

* Breathing and respiration are *related*, but they are not the same
  + *– the release of energy by combining oxygen with digested food (glucose)*
  + *– taking* ***air into*** *the lungs and forcing the* ***air out of*** *the lungs*
* Diagram

  Description automatically generatedThe  are the organs involved with breathing

🡪 main organ of the respiratory system

* Breathing happens by the actions of the lungs

**The Diaphragm**

* Your chest size changes when you breathe because of the:
  + *Actions of your*  *muscles*
  + *Actions of your* *muscle*
* – a large flat muscle at the base of the lungs that aids in breathing

**Fun fact:** does anyone know what your rib muscles are called?

**Feedback Loop of Breathing**

* The amount of carbon dioxide in your blood INCREASES to a certain level . . .
* The INCREASE is sensed by a receptor in your body . . .
* A message is sent to your brain . . .
* Your brain sends a message to your diaphragm and rib muscles to INCREASE the size of your chest cavity . . .
* **Diagram

  Description automatically generated**This causes more air to move into the lungs, DECREASING the amount of carbon dioxide in your blood

**Task:** Identify the parts of this feedback loop. 🡪 above

**Mechanics of Breathing**

* It is the **moving of your**  that makes your lungs  **and**
* Breathing IN
  + *Chest cavity moves*
  + *Diaphragm moves*
* Breathing OUT
  + *Chest cavity moves*
  + *Diaphragm moves*

**Diagram

Description automatically generatedBoyle’s Law - INHALE**

Breathing IN

* Chest cavity moves
  + *Diaphragm moves* 
    - INCREASES volume of chest cavity
      * *DECREASES pressure in the chest cavity*
        + Allows air to rush the lungs

**Boyle’s Law - Exhale**

Breathing OUT

* Chest cavity moves
  + *Diaphragm moves* 
    - **Diagram

      Description automatically generated**DECREASES volume of chest cavity
      * *INCREASES pressure in the chest cavity*
        + Air is forced the lungs

**Extension**: why does pressure INCREASE when volume DECREASES?