

Warm Up

- 1.) Which body system is responsible for the exchange of gases between the body and surrounding air?
- 2.) What are some of the major organs and body parts associated with the system mentioned above?
- 3.) Do you think breathing is voluntary or involuntary?

Feb 12-7:06 PM

Let's Get Movin'!

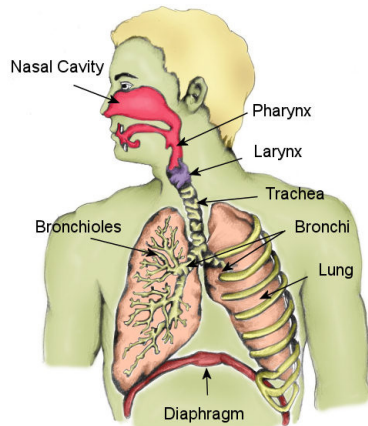


- Stand up!
- For 30 seconds, I want you to jump up and down or jog in place.
- Pay attention to your breathing before, during, and after exercise.
- Safety!! Be careful, stay in your area, don't slip, and don't bump/kick/knock over your neighbor.

What happened to your breathing rate?
Which body systems were likely involved in this activity?

Feb 12-8:08 PM

Video: Functions of the Respiratory System



Feb 12-7:51 PM

• Functions of the Respiratory System



1. Intake of Oxygen

– *Respiration (Cellular)*: chemical reaction involving oxygen & glucose that results in the release of energy to fuel various cellular processes.

« Respiration ≠ Breathing

» Breathing: the movement of air into & out of the lungs

– Body uses only 5% of the oxygen you inhale with each breath.

– Oxygen is carried throughout the body via the circulatory system (network of arteries, veins & capillaries)

2. Removal of Carbon dioxide & Water

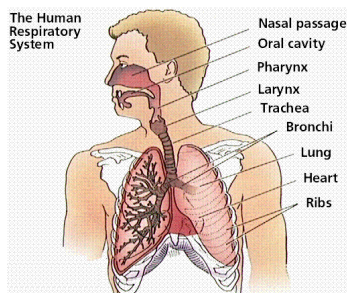


– Carbon dioxide & small amounts of water are by-products of cellular respiration.

– They are then removed via the Respiratory & Excretory systems.

Feb 12-7:30 PM

Respiratory System Overview



Apr 9-7:54 AM

Label the Respiratory System

Take a few moments to try and label the diagram of the respiratory system.
 Use the textbook to help you!

ANSWERS:

1. nasal passage
2. pharynx (throat)
3. larynx (voice box)
4. trachea (windpipe)
5. bronchial tube
6. bronchiole
7. alveoli
8. diaphragm

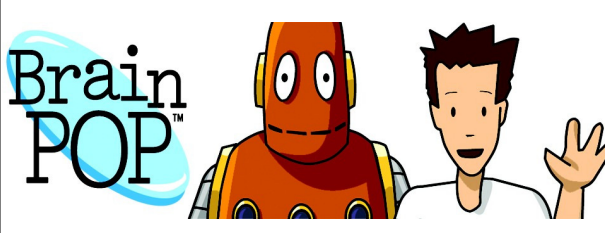
May 15-8:36 PM

Warm UP

- 1.) What are the main functions of the respiratory system?
- 2.) Where does respiration occur?
- 3.) What is the difference between respiration and breathing?

Feb 12-9:08 PM

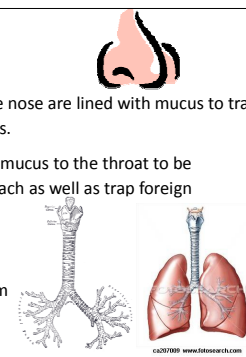
**The Respiratory System
with Tim and Moby**



Feb 12-7:40 PM

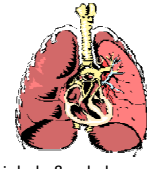
Organs of the Respiratory System

- > **Nose**
 - Nasal cavities located just inside the nose are lined with mucus to trap foreign particles from entering lungs.
 - **Cilia:** hair-like structures that move mucus to the throat to be swallowed & destroyed in the stomach as well as trap foreign particles.
- > **Pharynx**
 - throat; shared with Digestive System
- > **Trachea**
 - windpipe; lined with cartilage that strengthens & keeps the windpipe open.
 - Lined with mucus & cilia which helps to trap foreign particles & moisten the air as it enters the windpipe.



Feb 12-7:54 PM

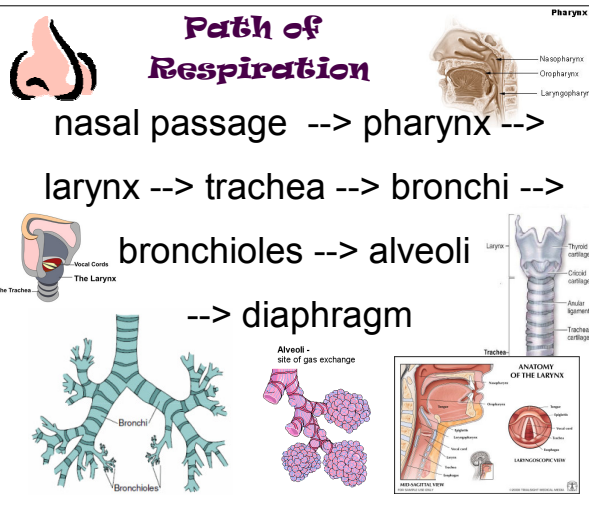
- > **Bronchus (Bronchi)**
 - muscular tubes that extend from the trachea & direct air into the lungs
 - Divides into smaller & smaller tubes inside the lungs
 - « **Alveoli:** tiny hollow sacs of specialized lung tissue surrounded by capillaries where oxygen is exchanged for carbon dioxide.
 - « 300 million in the average adult lung allowing for large intake of oxygen.
- > **Lungs**
 - Primary organs of the Respiratory System
 - "pulmo"- prefix that means "of the lungs"
 - Located on both sides of the heart
 - Elastic tissue that expands & contracts as you inhale & exhale.
- > **Diaphragm**
 - Dome shaped muscle located at the base of the lungs.



Feb 12-7:56 PM

Path of Respiration

nasal passage --> pharynx -->
larynx --> trachea --> bronchi -->
bronchioles --> alveoli
--> diaphragm



Feb 12-8:31 PM



May 15-8:43 PM

Warm Up

- 1.) Which organ is responsible for directing the air into the right and left lung?
- 2.) What is found inside the trachea to catch foreign material and keep air moist?

Feb 15-7:56 AM

Warm Up

- 1.) What do you think is happening inside of you when you breathe in and out?
- 2.) What role do you think the diaphragm plays in your breathing?
- 3.) What happens to the air as it enters your respiratory system?

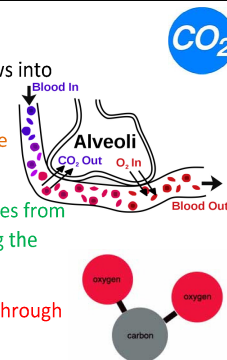
Feb 18-8:12 AM



May 15-8:41 PM

The Gas Exchange Process

- > Carbon dioxide/Oxygen rich blood flows into capillaries surrounding the alveoli.
- > Oxygen moves from the alveoli into the capillaries surrounding the alveoli.
- > At the same time, Carbon dioxide moves from the capillaries into the alveoli replacing the Oxygen.
- > The Oxygen rich blood is then carried through the arteries back to the heart.
- > The Carbon dioxide is then expelled from the lungs as the lungs deflate.



Feb 12-8:59 PM

Breathing

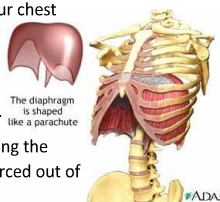
Inhalation

- Rib muscles contract lifting the chest wall up and out.
- Diaphragm contracts & moves downward increasing the size of the chest cavity & decreasing the pressure within the cavity.
- The pressure of air is now higher than your chest forcing air into your chest cavity.



Exhalation

- Rib muscles relax lowering the chest wall.
- Diaphragm relaxes & moves upward forcing the lungs to flatten & carbon dioxide to be forced out of the lungs.

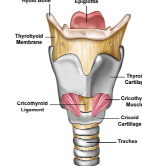
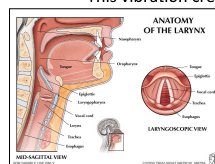


Feb 12-9:02 PM

Speaking

Larynx: voice box

- **Vocal cords:** folds of connective tissue that stretch across the opening of the larynx.
 - « Muscles make the vocal cords contract narrowing the opening.
 - « Air rushes through the opening.
 - « The movement of the vocal cords makes the air vibrate.
 - « This vibration creates a sound, your voice.



Feb 12-9:09 PM

Respiratory Review Games

<http://www.lung.ca/children/games/>

Mar 19-8:09 AM

Warm Up

- 1.) How might one calculate their breathing rate?
- 2.) What types of activities might cause a change in your breathing rate?
- 3.) How might someone completing a lab or research communicate their data?

Feb 18-11:43 AM

Respiration at High Elevations

This clip shows the effect that elevation has on mountain climbers and how it can lead to oxygen deprivation.



Apr 4-3:41 PM

How tall is Mt. Everest?

9 km above sea level

Why is breathing so hard at the top of Mt. Everest? How does your body compensate?

Less oxygen in the air, Creates more RBCs.

The higher you climb the _____ oxygen there is.

less

If you don't get enough oxygen in your body, you could suffer from what?

Altitude Sickness

Apr 4-3:45 PM

BREATHING RATE LAB



- You will measure your breathing rate and use the data to create a pictograph.
- You will count the number of breaths you take at rest, after 25 jumping jacks, after hopping for 1 minute, and after resting for 1 minute.
- For every 2 breaths you will draw 1 set of lungs.



May 15-9:35 PM

WARM UP

- 1.) We breathe out more carbon dioxide than we take in. Explain why that is possible.
- 2.) What types of things can damage your lungs or affect your breathing?
- 3.) Why do people start smoking?
- 4.) What are some diseases caused by smoking?

Feb 18-8:32 AM

Videos from the CDC on Smoking

-Terrie's Ad: In this video you will see first hand the effects that smoking can have on a person's body

CDC_Tips from Former Smokers - Terrie's Ad_(360p).flv


-Jessica's Asthma Ad: In this video you will see how second hand smoke can affect children who are around smokers

CDC_Tips from Former Smokers - Jessica's Asthma Ad_(360p).flv

Feb 18-8:50 AM

• Respiratory diseases


- > Bronchitis
 - Bronchial passages within the lungs narrow & then become clogged with mucus.
- > Emphysema
 - Alveoli within the lungs become damaged or destroyed preventing the effective exchange of oxygen & carbon dioxide.
- > Lung cancer
 - Uncontrolled growth of lung cells that produce tumors that prevent the lung from operating effectively.
- > Atherosclerosis
 - Speeds up the buildup of fatty material within arteries & veins.




Feb 18-8:20 AM

What are some types of cancer caused by tobacco products?


Cancer of the mouth, lip, gum, throat, stomach, kidney, lungs



Normal Lungs



Lungs damaged by cigarettes



Mouth Cancer

Apr 4-3:49 PM

Review Questions

- 1.) What is the path that air takes when you inhale, starting with the nose?
- 2.) What is the definition of respiration and where does it occur?
- 3.) Review: What is the most abundant gas in the atmosphere? The second most abundant? What percentages are each of those?




Apr 17-7:55 AM

(Empty box)

Feb 12-9:12 PM

Let's Try Some Riddles!!

I am part of the air.
I enter your lungs when you breathe in.
Your body needs me.
What am I?

Apr 12-2:47 PM

Now it's your turn!

You are to create a riddle about the respiratory system or any of the systems we have covered so far in class.

Give 3 clues in the same layout as the example given. Your 4th line should ask the question "Who/What Am I?"

You will be sharing them with the class!

Apr 12-2:46 PM



Mar 18-3:39 PM