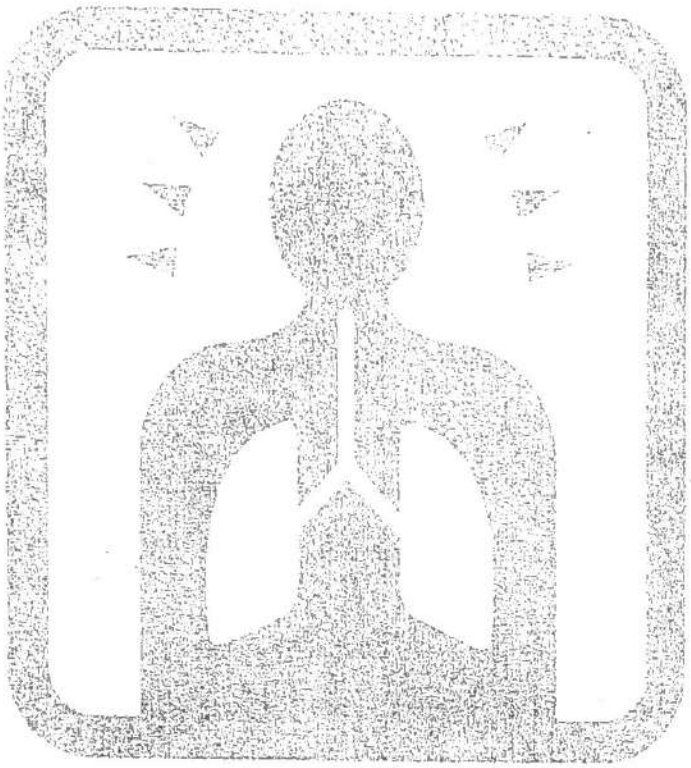
Mrs. Gilbert
Body Structures + Functions



Name _____

Days

11-20

The Respiratory System

Graded Assignments:

Movie questions (page 2)

Respiratory Worksheet (page 4)

Respiratory Project (pages 5 &6)

Inhaling/Exhaling Questions (page 10)

Respiratory Crossword (page 12)

Respiratory Disease Worksheet (page 17)

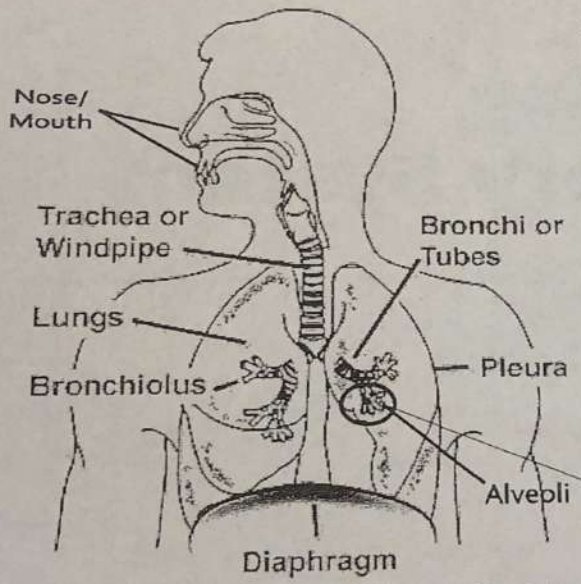
Breathing Lab (page 18)

Read for day

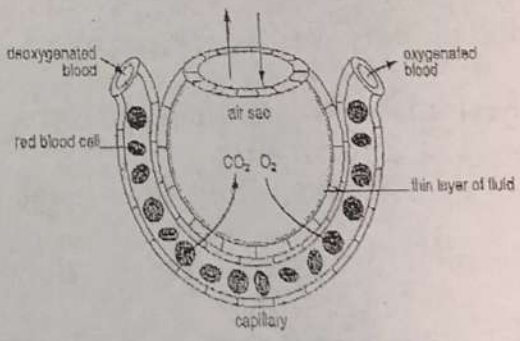
The Respiratory System

The respiratory system is the system of the body that deals with breathing. When we breathe, the body takes in the oxygen that it needs and removes the carbon dioxide that it doesn't need.

First, the body breathes in the air which is sucked in through the nose and mouth and down the trachea (windpipe). The trachea is a pipe shaped by rings of cartilage. It divides into two tubes called bronchi. These carry air into each lung. Inside the lungs the tubes divide in to smaller and smaller tubes called bronchioles. At the end of each of these tubes are small air balloons called alveoli.



Capillaries, which are small blood vessels with thin walls, are wrapped around these alveolies. The walls are so thin and close to each other that the air easily seeps through. In this way, oxygen seeps through into the bloodstream and carbon dioxide, in the bloodstream, seeps through into the alveoli. The carbon dioxide is then removed from the body when we breathe out.



The diaphragm is the muscle that controls the breathing process. As the diaphragm flattens it causes the chest to expand and air is sucked in to the lungs. When the diaphragm relaxes, the chest collapses and the air in the lungs is forced out.

Name

Respiratory

Name _____ Day _____ Date _____

Respiratory Movie Questions

look these up &

~~Answer the following questions on the movie you just saw.~~
Use the word bank to answer the questions.

exhale	muscles	diaphragm	air sacs
mouth	cilia	inhale	brain

1. When we _____ air enters the body through the nose and mouth.

2. _____ and mucous work to trap dirt and germs before we inhale.

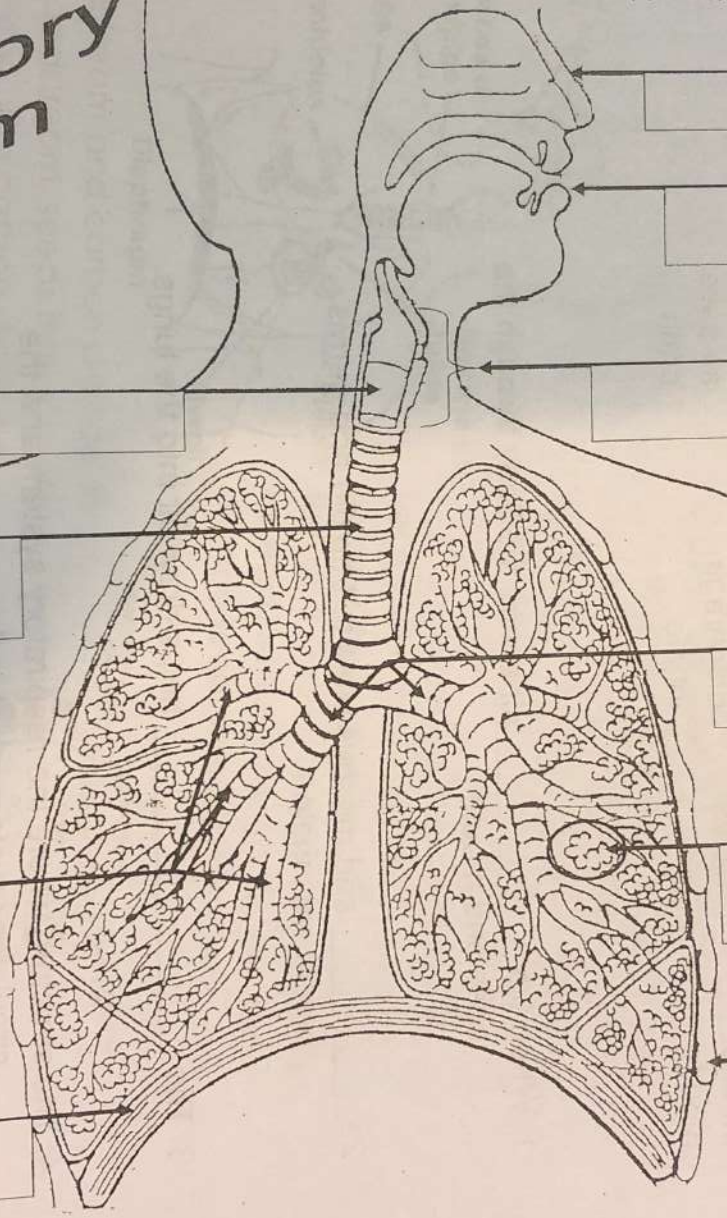
3. The _____ helps draw air into the lungs.

4. The structure where the respiratory system and the circulatory system meet is the _____.

5. The _____ controls the rate of breathing.

Refer to page 1 + label as much as possible 12

The Respiratory System



3

Name _____

Respiratory System Worksheet

Use the correct word from the word bank to fill in the

13

Name _____ Day _____ Date _____

Respiratory System Worksheet

Use the correct word from the word bank to fill in the answers to the questions and the labeling.

larynx	bronchioles	alveoli
diaphragm	pleura	bronchi
trachea	pharynx	lungs
oxygen	diaphragm	cilia

_____ 1. The tube that connects the throat and bronchi.

_____ 2. The tiny hairs that clean the air.

_____ 3. The large band of muscle that controls the size of the chest cavity.

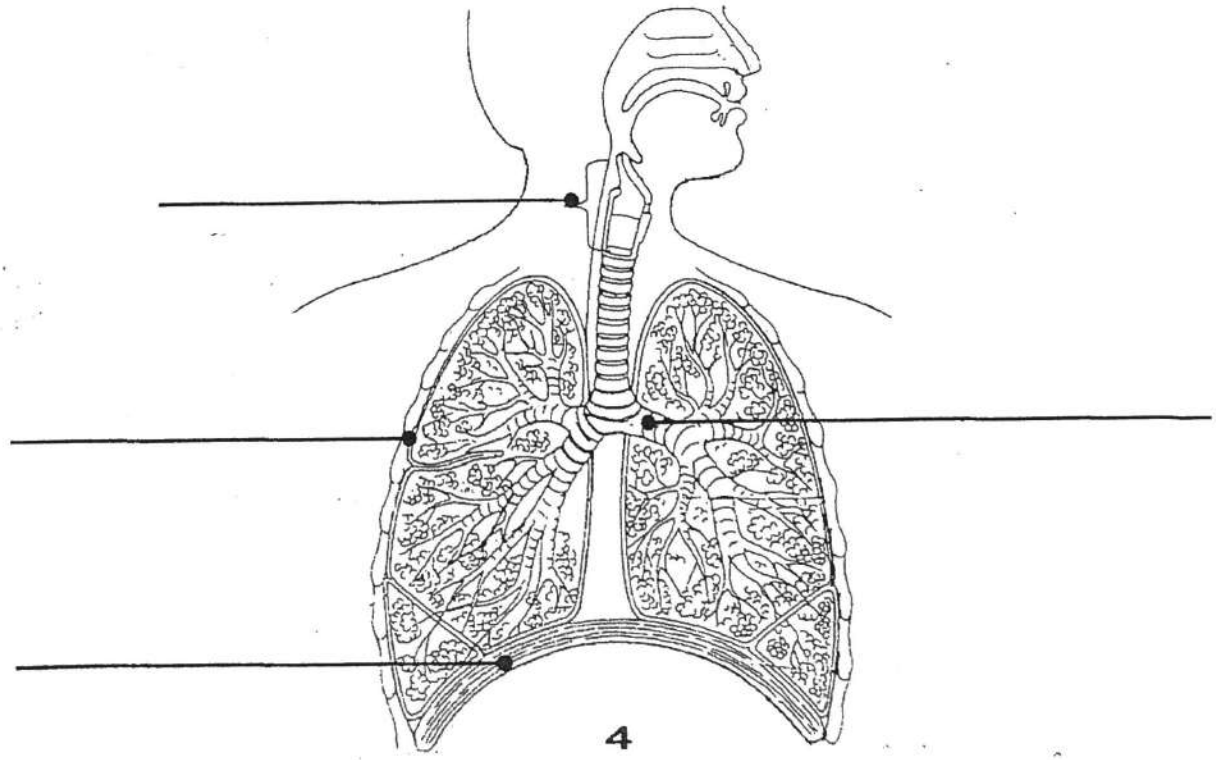
_____ 4. The two large lightweight organs of the respiratory system.

_____ 5. The many little branches of the respiratory system.

_____ 6. The part of the respiratory system that is the voicebox.

_____ 7. The grape like clusters of air sacs in the lungs.

_____ 8. What we breathe in.

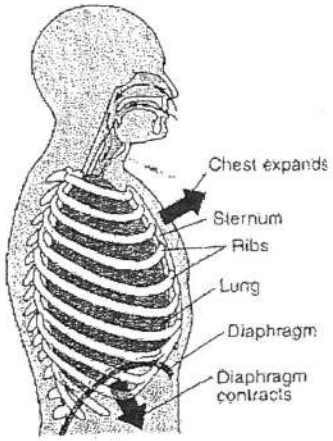


Read 14

All About Inhaling

When you're walking your dog, cleaning your room, or spiking a volleyball, you probably don't think about **inhaling** (breathing in) - you've got other things on your mind! But every time you inhale air, dozens of body parts work together to help get that air in there without you ever thinking about it.

As you breathe in, your diaphragm contracts and flattens out. This allows your lungs more room to fill up with air. "Move over, diaphragm, I'm filling up!" is what your lungs would say. And the diaphragm isn't the only part that gives your lungs the room they need. Your rib muscles also lift the ribs up and outward to give the lungs more space.



Inhalation

At the same time, you inhale air through your mouth or nose, and the air heads down your trachea, or windpipe. On the way down the windpipe, tiny hairs called **cilia** (say: **sill**-ee-uh) move gently to keep mucus and dirt out of the lungs. The air then goes through the series of branches in your lungs, through the bronchi and the bronchioles. The air finally ends up in the 600 million alveoli. As these millions of alveoli fill up with air, the lungs get bigger. You are able to feel the power of those awesome alveoli!

It's the alveoli that allow oxygen from the air to pass into your blood. All the cells in the body need oxygen every minute of the day. Oxygen passes through the walls of each alveolus into the tiny capillaries that surround it. The oxygen enters the blood in the tiny capillaries, hitching a ride on red blood cells and traveling through layers of blood vessels to the heart. The heart then sends the oxygenated (filled with oxygen) blood out to all the cells in the body.

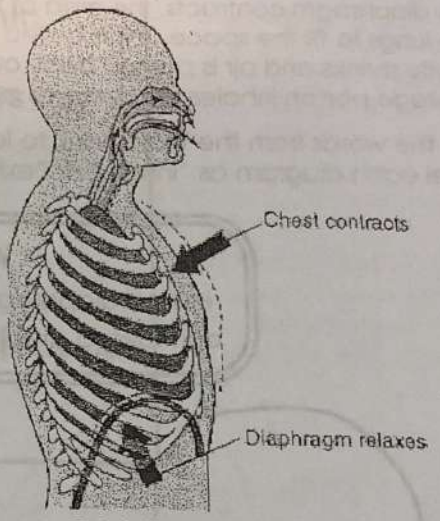
Waiting to Exhale

When it's time to exhale (br... reverse: now it's the diaphra... diaphragm relaxes and mov...

Read 14

Waiting to Exhale

When it's time to exhale (breathe out), everything happens in reverse: now it's the diaphragm's turn to say, "Move it!" Your diaphragm relaxes and moves up, pushing air out of the lungs. Your rib muscles become relaxed and your ribs move in again, creating a smaller space in your chest.



Exhalation

By now your cells have used the oxygen they need, and your blood is carrying carbon dioxide and other wastes that must leave your body. The blood comes back through the capillaries and the wastes enter the alveoli. Then you breathe them out in the reverse order of how they came in: the air goes through the bronchioles, out the bronchi, out the trachea, and finally out through your mouth or nose.

The air that you breathe out not only contains wastes and carbon dioxide, but it's warm, too! As air travels through your body, it picks up heat along the way. You can feel this heat by putting your hand in front of your mouth or nose as you breathe out. What is the temperature of the air that comes out of your mouth or nose?

With all this movement, you might be wondering why things don't get stuck as the lungs fill and empty! Luckily, your lungs are covered by two really slick special layers called **pleural membranes (pleura)** (say: **ploo**-ral **mem**-branes). These membranes are separated by a fluid that allows them to slide around easily while you inhale and exhale.

Name _____

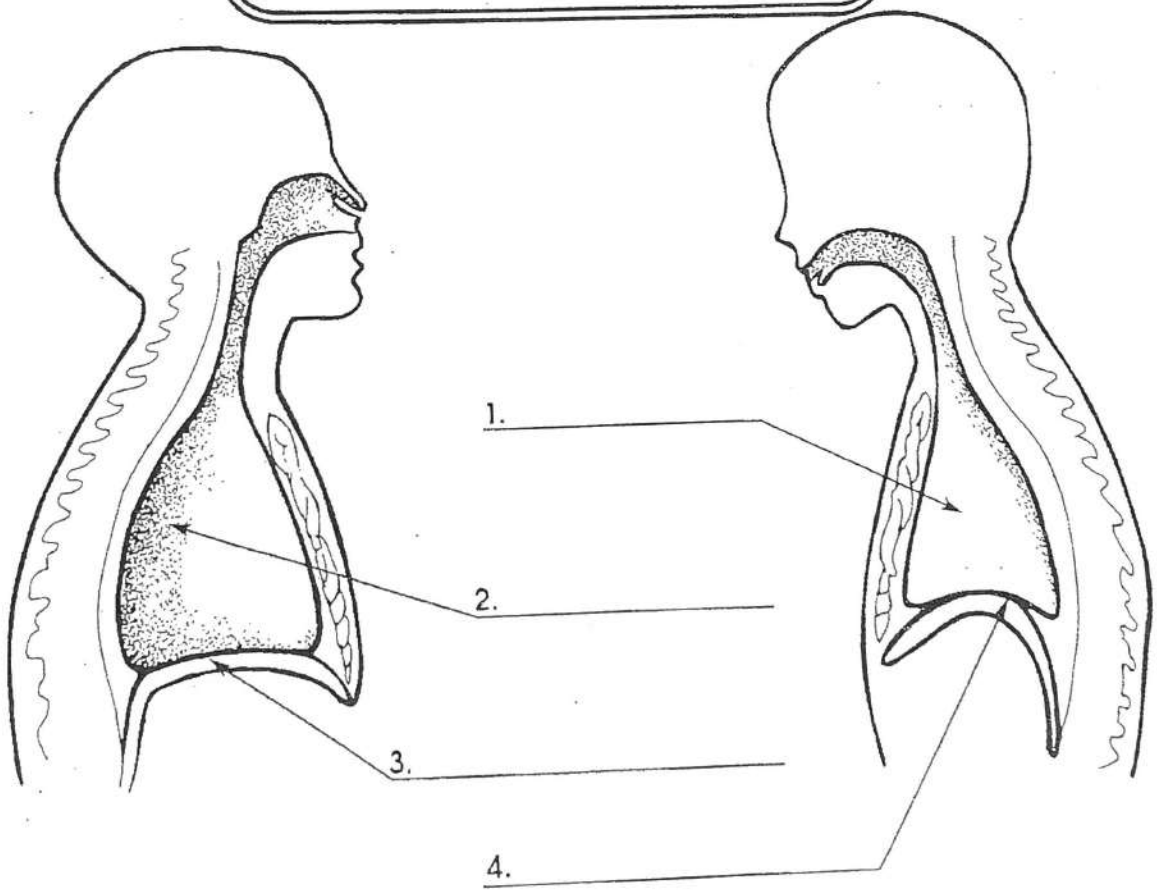
Take a Deep Breath

Movement of air in and out of the lungs is mainly due to the contracting and relaxing of a large, involuntary muscle called the diaphragm on the floor of the chest cavity. When the diaphragm contracts, the area of the chest cavity enlarges, causing air to rush into the lungs to fill the space. This is called inhaling. When the diaphragm relaxes, the chest cavity shrinks and air is pushed back out of the lungs. This is called exhaling. The average person inhales and exhales almost 20,000 times every day.

Use the words from the Word Bank to label the parts of the respiratory system. Then, label each diagram as "inhale" or "exhale." Some words will be used more than once.

Word Bank

relaxed diaphragm	inhale	lung
contracted diaphragm	exhale	



Name _____ Day _____ Date _____

Inhaling/Exhaling Questions

Write the letter of the word or phrase from the bank to answer questions 1-8

phrase/word bank:

A. relaxes and moves up
B. capillaries
C. pleura
D. breathing in
E. cilia
F. exhale
G. contracts and flattens out
H. carbon dioxide

_____1.What does inhaling mean?

_____2. What happens to your diaphragm when you inhale?

_____3. What keeps mucus and dirt out of the lungs?

_____4. What allows oxygen to pass into your blood?

_____5. What word means to breathe out?

_____6. What happens to your diaphragm when you exhale?

_____7. What is the waste product you breathe out?

_____8. What is the name of the protective layer around the lungs?

9. Name 3 parts of the respiratory system ***air passes through*** when entering the body.

_____

_____

_____

17

Name _____ Day _____ Date _____

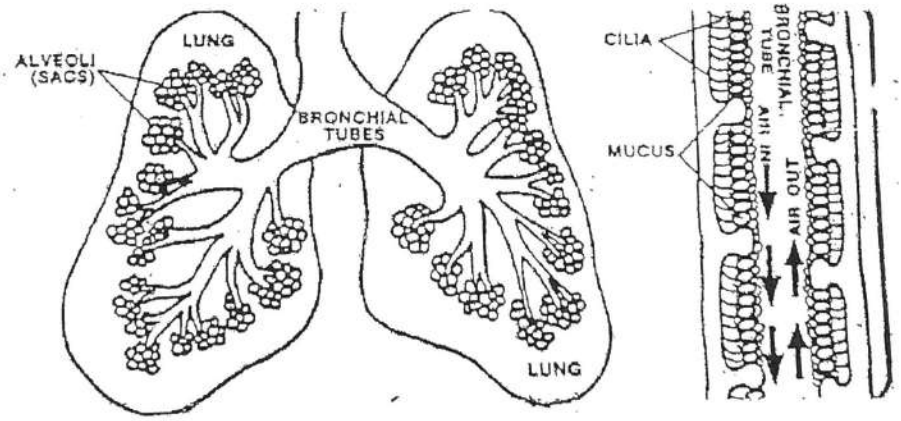
IN THE PINK

Is there anything inside your lungs? Or are they hollow inside like a balloon? The answer is that your lungs are not just hollow spaces. They are more like a sponge inside. Your lungs are filled with tubes called bronchial tubes. They start out at the bottom of your windpipe like two large tree trunks. One tube leads into each lung. Each large bronchial tube branches out into lots of smaller bronchial tubes. It's just like having an upside down tree in each lung.

The bronchial tubes lead to small groups of bubbles called air sacs. The scientific name for the air sacs is alveoli. Oxygen goes from the air sacs into your blood. It is then carried to all parts of your body.

Below the picture on the left shows you what we mean. It's called a respiratory tree.

The picture on the right shows you what it's like inside the bronchial tubes. The little hairs are called cilia. The cilia help keep dirt out of the lungs by pushing a liquid which is also inside the bronchial tubes. This liquid is called mucus. Dirt gets trapped in the mucus. The cilia and mucus work together to keep your lungs clean, pink and healthy.



Complete the sentences.

1. Oxygen is carried to all parts of your body in your ____ ____ ____ ____ D
2. Another name for alveoli is A ____ ____ S ____ ____ ____ (2 words)
3. The bronchial tubes start at the bottom of your T ____ ____ ____ ____ ____ ____
4. Dirt is kept out of your lungs by tiny hairs called C ____ ____ ____ ____
5. Air comes into your lungs through bronchial ____ U ____ ____ S
6. The cilia and mucus keep your lungs clean, pink and ____ E ____ ____ ____ ____ ____
7. All of the parts of our body that help us breathe are called the

R ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ system.

Oxygen-Carbon Dioxide Exchange

Place the statements in the correct order.

_____ heart pumps oxygen-rich blood to the body

_____ carbon dioxide moves from bronchioles to bronchi

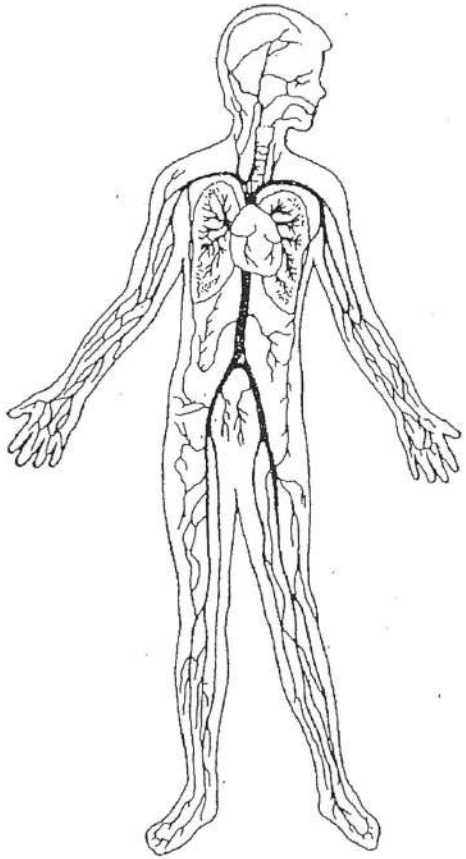
_____ air moves through the bronchi into the bronchioles

_____ blood picks up carbon dioxide from the body

_____ INHALE

_____ alveoli receive oxygen to pass to blood

_____ heart pumps carbon dioxide rich blood to the lungs



_____ nose traps germs in air

_____ oxygen passes into the blood

_____ air moves down the trachea

_____ alveoli receives carbon dioxide from the blood

_____ oxygen-rich blood flows to the heart

_____ carbon dioxide flows up the trachea

_____ EXHALE

_____ carbon dioxide flows out the nose and mouth

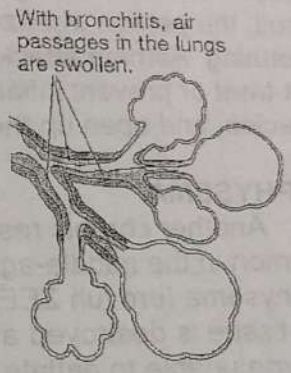
Read 19

Respiratory System Diseases

Diseases of the respiratory system may affect the nose and throat, the bronchial tubes or the lungs. Avoiding sources of infection or irritation and practicing good health habits can help prevent many respiratory diseases.

BRONCHITIS

Bronchitis (brahn KYT us) is an inflammation of the mucus membrane that lines the bronchial tubes. Thick mucus build up, causing coughing, difficulty in breathing, and a heavy feeling in the chest. Bronchitis may be caused by bacteria, viruses or irritants in the air.

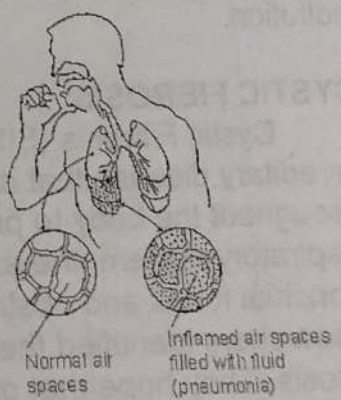


The word chronic (KRAHN ik) means that a disease is long lasting, recurs regularly and requires repeated or continuous treatment. An **acute** medical condition comes on quickly and can cause severe symptoms, but it lasts only a short time (no longer than a few weeks). Smokers and other people who are continually exposed to harmful airborne substances often develop chronic bronchitis.

Bronchitis caused by bacteria can be treated with antibiotics. However, the infection can weaken the body and lower resistance to other infections. If not treated promptly, bronchitis can persist for an extended period of time.

PNEUMONIA

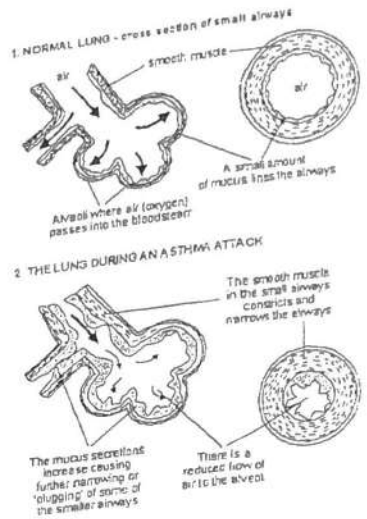
Pneumonia (nyu MOH nyuh) is an inflammation of the air sacs in the lungs. The inflammation is usually caused by infection, but it can also be caused by foreign particles that are inhaled. The air sacs fill with fluid and dead white blood cells making breathing more difficult. Symptoms of pneumonia can include shortness of breath, a high fever, chills, coughing, and chest pain. Treatment depends on the type of infection causing the inflammation. Pneumonia caused by bacteria can be treated with antibiotics. Severe pneumonia can result in death, especially among people whose bodies are already weakened by another disease.



Read 19

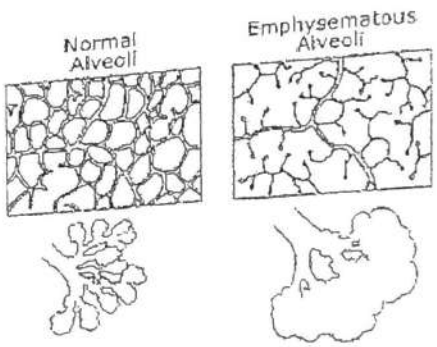
ASTHMA

Asthma (az muh) is a chronic respiratory disorder caused by inflammation and narrowing of the bronchial tubes. An asthma attack may be triggered by airborne substances, certain foods, or common bacteria and viruses that are ordinarily harmless. The reaction of the airway causes spasms, or uncontrolled contractions of the smooth muscle in the bronchial tubes. The inflamed mucus membrane lining the tubes also swells. As a result, the person wheezes, coughs, and has difficulty breathing. Asthma attacks can be relieved with drugs that treat or prevent inflammation, relax the bronchial muscles, and open up the air passages.



EMPHYSEMA

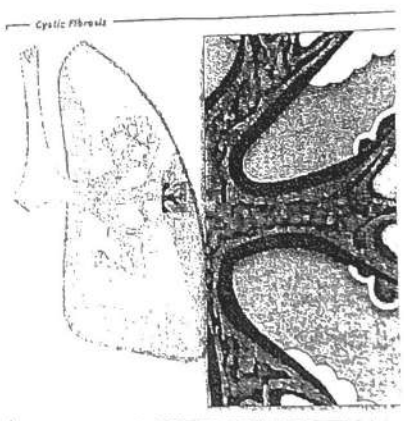
Another chronic respiratory disease, more common in the middle-aged than in older people is emphysema (em fuh ZEE muh). Emphysema is when lung tissue is destroyed and air sacs are lost. The lungs become unable to deflate fully during exhaling. Normal gas exchange between the air sacs and capillaries can not longer occur.



Emphysema is caused by long term exposure to irritants in the air- most often, cigarette smoke or air pollution. Because the lung damage is permanent, there is no cure for the disease, and it can eventually cause death. However, emphysema can be prevented by not smoking and by avoiding long term exposure to air pollution.

CYSTIC FIBROSIS

Cystic Fibrosis (SIS tik fy BROH sus) is a hereditary disease that causes mucus membranes throughout the body to produce too much mucus. In the respiratory system, the excess mucus cogs the bronchial tubes and obstructs breathing. In 1992, researchers identified the gene responsible for cystic fibrosis. They hope that genetic engineering will be able to alter the defective gene and cure the disease. Until that time, improved treatments and medication are enabling people with cystic fibrosis to live longer, more active lives.



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Respiratory Disease Notes

* Give Short Answers

	DISEASE	DEFINITION	CAUSE	TREATMENT	ETC.
1					
2					
3					
4					
5					

16

20

Name_____ Day _____ Date _____

Respiratory Diseases worksheet

Write the letter of the disease that matches the description

A. Bronchitis
B. Pneumonia
C. Cystic Fibrosis
D. Asthma
E. Emphysema

_____1. Can be prevented by not smoking

_____2. hereditary disease

_____3. can be triggered by airborne substances, foods or common bacteria and viruses

_____4. inflammation of mucous membrane lining the *bronchial tubes*

_____5. inflammation of the *air sacs* in the lungs

_____6. spasms can cause wheezing

_____7. lungs become unable to fully deflate during exhaling

_____8. excess mucus in the body