The function of the respiratory system is to bring oxygen into the body and eliminate carbon dioxide from the body. All of the organs and tissues that function in the exchange of gases make up the respiratory system. A breath of air enters the respiratory system through the nose or mouth. Air is made up of many gases. About 21 percent of air is oxygen gas. Respiration or ventilation is the process of gas exchange in living organisms, by taking air in (inhalation) and taking air out (exhalation).

The journey of air begins at the nose and mouth. Hairs in your nose filter dust and particles out of the air. Mucous membranes that line the nasal cavity moisten and warm the air. From the nose, air passes through a muscular tube in the upper throat called the pharynx, which serves as a passageway for both food and air. The air continues on through another passageway for air, called the larynx, or voice box, located in the neck. A flap of tissue, the epiglottis, covers the opening to the larynx when you swallow food and liquids, preventing food and liquids from passing into your lungs. From the larynx, the air passes into the trachea, a long, straight tube in the thoracic cavity (chest cavity) about 10 to 12cm long. The trachea, or windpipe, divides into two smaller tubes, the bronchi, which lead to the lungs. Within the lung, the bronchi divide into smaller and smaller tubes called bronchioles. The smallest bronchioles end in clusters of air sacs called alveoli. Each alveolus is surrounded by a rich blood supply. Within these capillaries gas exchange takes place.
The alveoli are well-suited for gas exchange. Alveolar walls are very thin, composed of a single layer of cells surrounded by a network of capillaries. This allows gases to diffuse faster into the blood. The walls are also moist covered in a watery fluid to ease the diffusion of oxygen. There are about 300 million alveoli in each human lung, their total surface area is about 70m² (about half the size of a tennis court). A large surface area means that the gas exchange is more efficient as there is more opportunity for diffusion to take place.

The lungs are a vital organ in our body, a spongy organ that is surrounded by a double membrane called the pleura. It does not contain any muscles, so they cannot expand and contract on their own. Instead your diaphragm and rib muscles work together to move air in and out of your lungs. The diaphragm is a band of muscles located below your lungs. During inhalation the diaphragm contracts by moving down allowing the lungs to increase in size. The opposite occurs during exhalation; the diaphragm relaxes and moves back upwards, this will decrease the size of the lungs pushing air outside the body.

Each day we breathe about 20,000 times. All of this breathing couldn't happen without help from the respiratory system. So it is important to take care of your respiratory system by maintaining fitness, avoiding smoking, and reduce exposure to polluted areas.

**Key words**

- respiratory system
- exhalation
- pharynx
- thoracic cavity
- capillaries
- Respiration
- pleura
- larynx
- bronchi
- diaphragm
- ventilation
- Mucous membranes
- epiglottis
- bronchioles
- diaphragm
- diffusion
- inhalation
- nasal cavity
- trachea
- alveoli
- surface area
A. Write one or more sentences to answer the following questions

1. What is the function of the respiratory system?
   _______________________________________________________________
   _______________________________________________________________

2. What relationship exists between oxygen gas and air?
   _______________________________________________________________
   _______________________________________________________________

3. How does the epiglottis prevent choking?
   _______________________________________________________________
   _______________________________________________________________

4. Describe the adaptations that enable the alveoli to do its functions?
   _______________________________________________________________
   _______________________________________________________________

B. In the space provided, write the letter of the description that best matches the term or phrase.

   ____ 1. Diaphragm  a. air passes from the nose into this muscular tube in the upper throat
   ____ 2. Pharynx  b. the two smaller tubes into which the trachea divides
   ____ 3. Alveoli  c. muscle at the base of the rib that is involved in respiration
   ____ 4. Thoracic cavity  d. air sacs in lungs that are surrounded by
C. The figure illustrates the parts of the respiratory system. Label the following parts of this system: alveoli, bronchi, bronchioles, capillaries, larynx, lung, pharynx, and trachea.

D. Circle the letter of the word that best completes the sentence.

1. The function of nasal hair is to ...
   a. Warm air entering the respiratory system.
   b. Expel waste gases.
   c. Filter foreign particles from incoming air.
   d. Both (a) and (b)

2. The respiratory system consists of which of the following structures and organs?
   a. kidneys, urinary bladder, and ureters
   b. brain and spinal cord
   c. lungs and respiratory passages

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capillaries

5. bronchi
e. body cavity in which the lungs are held
d. blood, blood vessels, and heart

3. The site(s) of gas exchange in the lungs is ...
   a. the bronchi.  c. the bronchioles.
   b. the alveoli.  d. All of the above

E. Use the words in the box below to fill in the flow chart to describe the path that the air takes from the environment into the alveoli.

Bronchial Tubes - Bronchial Tubes – Trachea - Voice box - Mouth
Alveoli – Alveoli – Lung – Lung – Capillaries – Capillaries - Pharynx
F. Study the following steps in the path of air through the respiratory system. Determine the order in which the steps take place, beginning with air entering the body. Write the number of each step in the space provided.

_____ 1. Air enters the alveoli.
_____ 2. Air enters the pharynx and then the larynx.
_____ 3. Air enters the bronchi.
_____ 4. Oxygen enters the capillaries.
_____ 5. Air enters the trachea.
_____ 6. Air enters the nose or mouth.
_____ 7. Air enters the bronchioles.

G. Complete each statement by writing the correct term or phrase in the space provided.

1. The double membrane that surrounds the lungs to protect it is called the ________________.

2. Inhalation is caused by the diaphragm and the muscles in the rib cage ________________.

3. The ________________ is located on top of the mouth. It moistens and warms the air entering the body.