

The Respiratory System Review Sheet

KEY

- 1. Explain the main job/function of the respiratory system.**
Gas exchange. Oxygen in carbon dioxide out.
- 2. What are the two routes of entry for air into your lungs and what is the advantage(s) of each?**
Mouth – more air
Nose – warm clean moist air
- 3. How does the body ensure that food and liquid does not back up into the nose?**
uvula folds back to close nasal cavity
- 4. How does the body ensure that food and liquid does not travel down towards the lungs?**
epiglottis folds back to close trachea
- 5. How do we benefit from the mucus that lines the respiratory system?**
sticky – traps dust and moist so it humidifies the air
- 6. How do we benefit from the cilia that lines the respiratory system**
Lined with sticky mucus they trap dust and then beat in unison to sweep trapped dust up and out of trachea.
- 7. What is the main function of the trachea?**
To deliver air to the lungs. Ciliated cells and mucus line the trachea and filter/trap debris that may have escaped the filter in the nasal passage.
- 8. What is the function of the rings of cartilage surrounding the trachea?**
Rings of cartilage prevent the trachea from collapsing on itself and protect the trachea for injury such as an external crush.
- 9. What is another name for the trachea?**
Another name for the trachea is the wind pipe.
- 10. What is the relationship between the bronchus, the bronchi and the bronchioles?**
The bronchus are the two large branches of the trachea that carry air into the right and left lung from the trachea. Bronchi are smaller branches of the bronchus that branch out like twigs of an upside down tree. Bronchioles are the smallest branches of the respiratory tract, they move air into tiny sacs called alveoli.
- 11. What is the main function of the lungs?**
The main function of the lungs is the gas exchange of carbon dioxide and oxygen.
- 12. What is the difference between the left and right lung?**
The right lung is made up of 3 components where the left lung only has 2. Left lung houses the heart.
- 13. What is the functional unit of the lung?**
The alveoli.
- 14. What are alveoli and how do they operate?**
Alveoli are the tiny sacs at the end of the bronchioles that look like clusters of grapes. The exchange of gases between the atmosphere and the blood occurs at the alveoli because both the walls of the alveoli and the walls of the capillary net surround the alveoli are only 1 cell thick allowing for O₂ and CO₂ to pass through them.
- 15. The capillaries and alveoli work together to exchange gases. Draw a diagram depicting the flow of gases between the two.**

16. What 3 factors allow for the exchange of gases between the blood cells in the capillaries and the alveoli?

The difference in the partial pressures of oxygen and carbon dioxide result in the establishment of a diffusion gradient; thin single cells walls; and a moist membrane.

17. What is the diaphragm?

The diaphragm is a sheet of smooth muscle beneath the lungs separating the organs of the chest cavity from those of the abdominal cavity that helps move air in and out of the body.

18. Describe how the chest and diaphragm work together to move air in and out of the lungs.

While the diaphragm moves down the chest (ribs and muscles) move up and out creating a larger chest cavity creating a low pressure environment in the lungs which sucks air in through the mouth and/or nose.

While the diaphragm moves up the chest (ribs and muscles) move down and in creating a smaller chest cavity creating a high pressure environment in the lungs which pushes air out through the mouth and/or nose.

19. What is the role of carbonic acid and bicarbonate in the removal of CO₂ from the body?

Carbon dioxide is taken into the red blood cells and combined with water to form carbonic acid (this helps to keep the concentration of CO₂ low in the blood). The carbonic acid is quickly oxidized (loses a hydrogen) into bicarbonate. Bicarbonate leaves the red blood cell and flows in the blood plasma back to the lungs. Once in the lungs, the bicarbonate goes back into the red blood cell and is reduced (gains a hydrogen) back into carbonic acid. The carbonic acid decomposes into water and carbon dioxide gas which flows into the alveoli and is release when we exhale.

20. Why is exercise good for the respiratory system?

When we exercise, our brain senses the high levels of CO₂ in our blood. This triggers an increase in our rate of breathing, which works and strengthens the diaphragm (as well as heart and many other muscles). Thus our cardiovascular capacity can be improved through exercise.

