


Science 9-Biology

Worksheet 8-1—Respiration & How We Breathe



20

No pen or pencil

No Textbook

Name _____

Due Date _____

Show Me Hand In

Correct and Hand In Again By _____

Read pages 151-157 of SP to help you answer the following questions:

1. Name 4 gases contained in air: _____,
 _____ and _____.
2. What are two types of **solid** particles sometimes found in air? _____

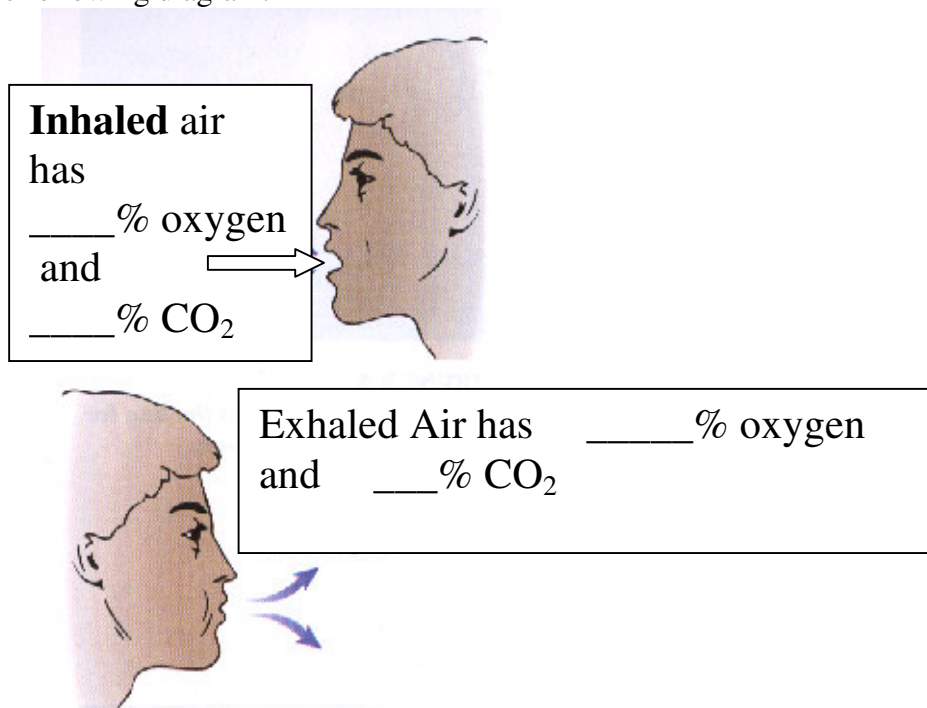
3. What else is sometimes in the air in the Okanagan during hot, dry summers? _____
4. The only gas you really **need** from air is _____.
5. Your **respiratory system** consist of organs and tissues that _____

6. Your body uses _____ to release the energy stored in food molecules like glucose.
7. The name of the process by which your cells release energy from food is called
 _____.
8. Write the word equation for **cellular respiration**:

9. What three things are formed during cellular respiration? _____
 _____ and _____

10. Where does cellular respiration take place? _____
11. Three organs that help your body get rid of excess water are the _____,
_____ and _____.
12. What is meant by **excretion**? _____

13. **Carbon dioxide** formed by cellular respiration in the cells moves from the cells to the _____ which carries it to the _____, where it is breathed out of the body.
14. Fill in the following diagram:



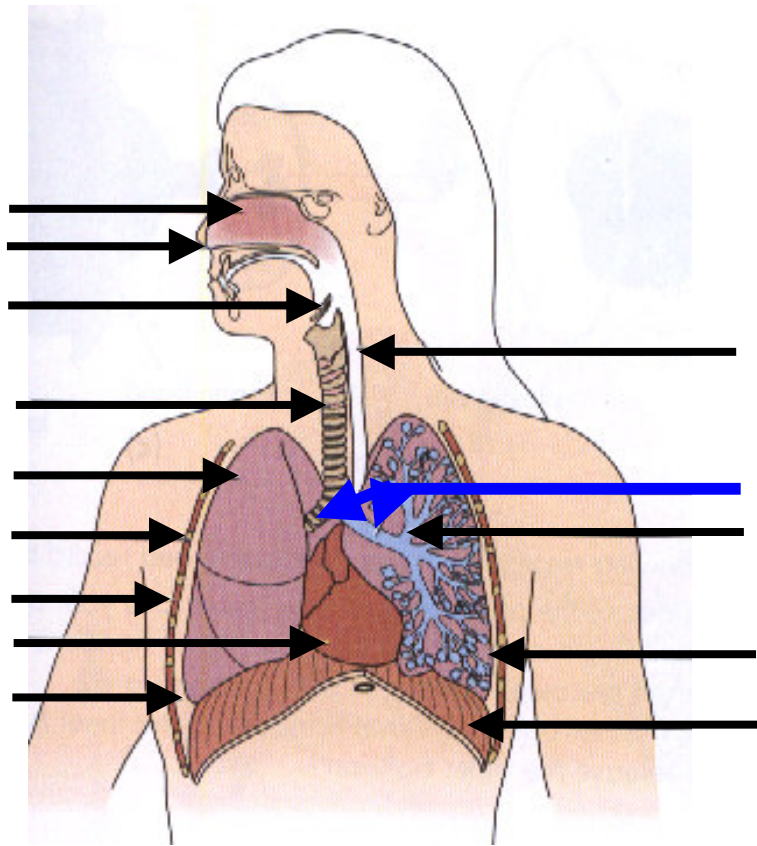
15. When you are very active, you need more energy, so the rate of cellular respiration _____ creases. More of the gas _____ is used up and more of the gas _____ is produced.

16. Define **breathing rate**: _____

17. Your nervous system monitors which **gas** (*oxygen or CO₂*) _____ in your bloodstream.
18. When the level of carbon dioxide in your blood is high, your nervous system responds by _____creasing your breathing rate. Is this usually conscious or automatic? _____
19. Your breathing rate returns to normal when the level of _____ in the blood returns to a lower level.
20. When a person breathes in a paper bag, each breath contains a little less _____ and a little more _____. This causes the level of _____ to build up in the blood. The nervous system monitors this and _____ceases the breathing rate. Was this effect actually observed when bag breathing was done in class? _____. Sometimes for various reasons, a person may **hyperventilate** (ie. Breathe too fast for a long time) . After doing this the person loses too much CO₂ and has a level of O₂ which is too high. This could cause the person to “black out”. Suggest a quick treatment for **hyperventilation**.

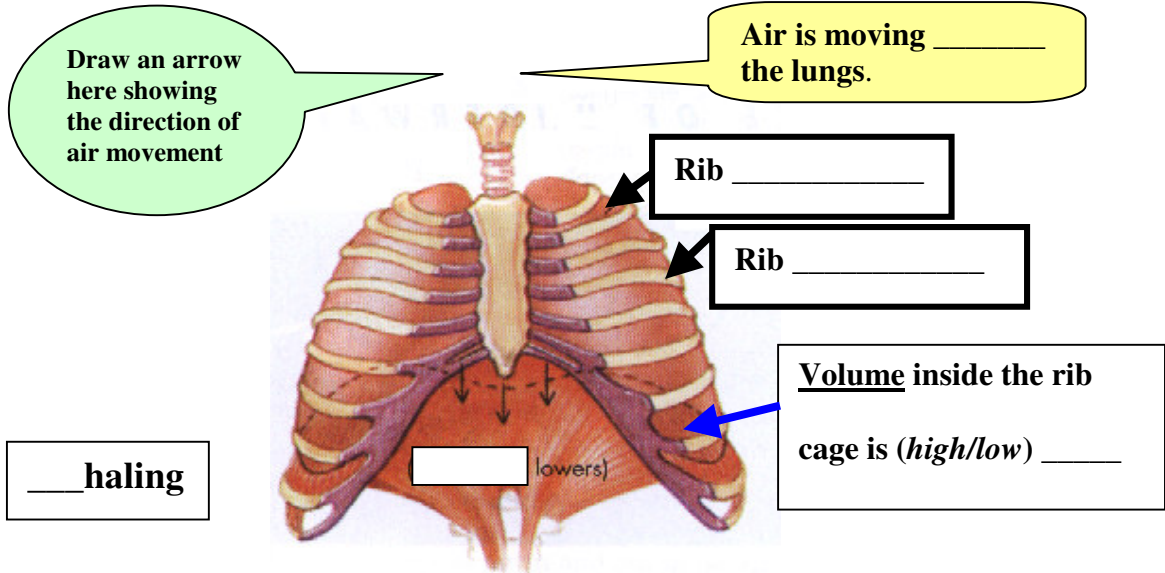
21. What is another term for “thoracic cavity”? _____
22. Spongy organs that receive the air you inhale are the _____.
23. Tiny hollow air sacs in the lungs are called _____ (singular _____)
24. The large sealed space in the upper part of your body is called the _____.
25. Your **rib cage** is made of rib _____ and _____.
26. The dome shaped muscle at the bottom of the chest cavity is called the _____

27. Label the following diagram:

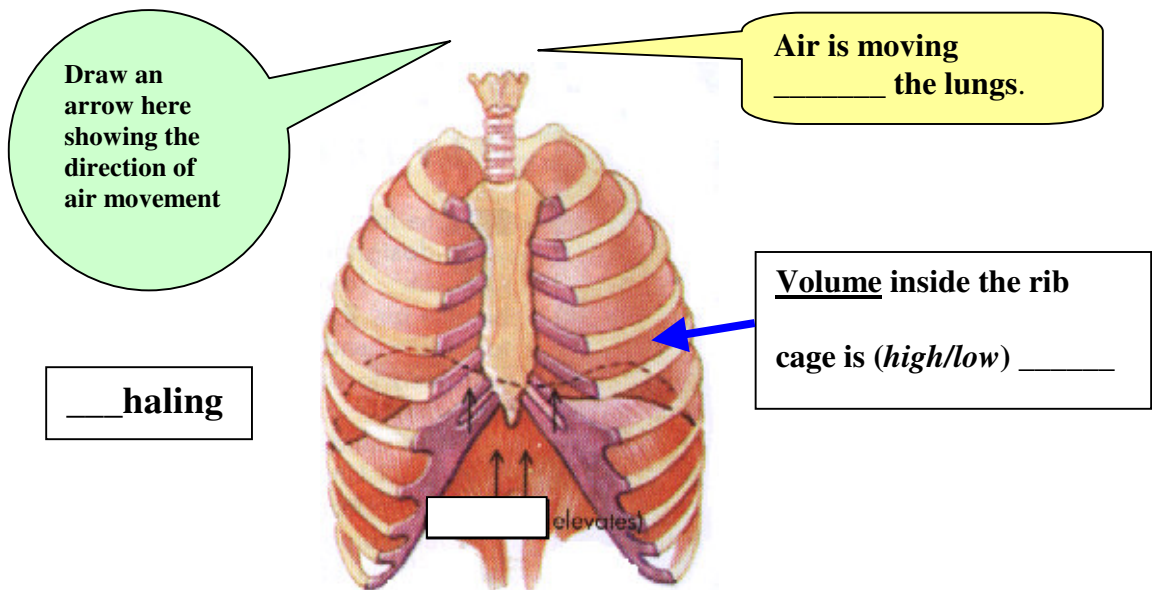


28. If you haven't done so already, see the "lung model" and go the science 9 web page (<http://sd67.bc.ca/teachers/dcolgur> then click "Science 9-Colgur" then click "Biology"). Scroll down until, in the right hand column, you see the words "lung animation" Click that, scroll down then click "View a working respiratory system". Watch the animation for a couple of minutes and make sure you understand what's going on! Let someone else see it or log off.
29. When you contract the muscles of your rib cage, it pulls the ribs _____ward. This tends to make the volume of the chest cavity _____er. When your diaphragm muscle contracts, it pulls the diaphragm _____ward. This also tends to _____crease the volume inside your chest cavity. When the volume of a sealed region is increased, that leaves a partially empty space called a partial _____. Air then rushes (into/out of) _____your lungs to fill that "empty space" or _____.

30. On the following diagram, where the muscles pull the rib cage outward and the muscles of the diaphragm are contracted, pulling it downward, the volume inside the chest cavity is (high/low) _____. With a labeled arrow, show the direction of air (is it into or out of the lungs?) _____ the lungs.



31. On the following diagram, where the rib muscles relax, the rib cage moves inward and the muscles of the diaphragm are relaxed, letting it move upward, the volume inside the chest cavity is (high/low) _____. With a labeled arrow, show the direction of air (is it into or out of the lungs?) _____ the lungs.



32. Explain why our lungs don't collapse when we exhale. (see page 157)
33. If a person receives a knife wound or bullet hole in the chest cavity, do you think the person would be able to breathe normally or not? _____
Fully explain your answer.
34. If a person gets food in the trachea, the rib cage still expands and the diaphragm still moves downward when they try to inhale. Explain why this attempt to breathe does not work properly.
35. When singers do exercises to increase their ability to sing longer notes and with higher volume, which muscles do you think they are strengthening? _____

36. Read the following:

A choking victim can't speak or breathe and needs your help immediately. Follow these steps to help a choking victim:

- 1. From behind, wrap your arms around the victim's waist.*
- 2. Make a fist and place the thumb side of your fist against the victim's upper abdomen, below the ribcage and above the navel.*
- 3. Grasp your fist with your other hand and press into their upper abdomen with a quick upward thrust. Do not squeeze the ribcage; confine the force of the thrust to your hands.*
- 4. Repeat until object is expelled.*

Doing the above is called the _____ maneuver. It causes the diaphragm to move _____ ward and _____ crease the volume in the chest cavity. This forces air _____ ward in the trachea to dislodge whatever is blocking it.