

Name: _____

Date: _____

Bill Nye the Science Guy: Respiration **KEY**

1. In your upper body there is a strong muscle called the **diaphragm**.
2. When you inhale, your diaphragm goes **down** and your lungs **fill up**.
3. When your breath in, your body gets **oxygen** from the air.
4. **Oxygen** is the same chemical that makes candles burn and iron rust.
5. We combine the oxygen with our **food** to get the energy we need to live.
6. Your **lungs** are full of tiny little passageways like sponges. These passageways allow you to take in a lot of oxygen with each breath.
7. Your lungs have as much surface area as a **tennis court**.
8. Surface area is how **spread out** something is.
9. Your lungs are full of tiny passages (sacs) called **alveoli**.
10. Your **right** lung is bigger than your **left lung**.
11. Your right lung is divided into **three (3)** parts, and your left lung divided into **two (2)** parts.
12. Why is your left lung smaller than your right lung?

There also needs to be room in your chest for your heart! Since your heart leans slightly to the left (because the heart's left side is bigger and thicker), the left lung needs to be smaller to accommodate!

13. Accumulation of **carbon dioxide** causes pain in our muscles when you are working "at a level more than your lungs can supply".

14. Cellular **respiration** occurs when our cells combine chemicals in food with oxygen to store energy in another simple chemical called **ATP** (adenosine triphosphate).

15. Your body uses **ATP** as a sort of **chemical battery**.

16. Your body **stores** energy and **lets it go (releases it)** later.

17. When you breathe in, your diaphragm **pulls down** and air **rushes into your lungs**.

18. What happens when you relax your diaphragm?

Air goes out of your lungs.

19. We have slime inside our nose and lungs called **mucus**, which traps **dust particles** and **smoke** and keeps it from **going into our lungs**.

20. Cigarettes put **tar** and **soot** into your lungs.

21. Every cell in your body does **cellular respiration**.

22. Humans **cannot** breathe underwater without special equipment, but fish can get dissolved **oxygen** from water using their **gills**.

23. **Carbon Dioxide** goes *out* of fish **back** into the water.

24. Every time you breathe in, you take in **10 quadrillion** molecules of air!

Review

What muscle causes our lungs to fill up with air?

The Diaphragm

What two materials combine to produce energy in respiration?

Food and Oxygen

What is the name of the tiny air sacs in the lungs?

Alveoli

Which lung is smaller? Left Why? To make room for the heart!

How does a smoker's lung look different from a healthy lung?

Brown, black and covered in tar and soot!

How can you keep your muscles and lungs healthy?

Exercise, not smoking, eat healthy!

What causes the pain in your legs if you exercise more than your lungs can supply?

Excess carbon dioxide which leads to lactic acid build-up in your muscles.

What is the job of ATP (adenosine triphosphate) in your cells?

ATP is the energy molecule that is produced through cellular respiration. This provides all the energy we need for all the jobs our cells have to do!

Why doesn't most dust and smoke get into our lungs?

Most dust and smoke does not enter our lungs because we have mucus in our nose and respiratory passageways that traps it!

What harmful substance from cigarettes can get into a person's lungs?

Soot, tar, and smoke.

How is respiration in fish the same as in humans?

Both fish and humans breathe in oxygen and breathe out carbon dioxide.

How is respiration in fish different than in humans?

Humans cannot breathe under water, while fish can. This is because they are able to dissolve the oxygen in the water through their gills.

Unscramble these words to write the equation for **cellular respiration**.

food + oxygen → energy + carbon dioxide + water