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What is happening in each photo? Why?

DOCUMENTARY Respiration and circulation

In this unit, you will create a 3D body systems mural. To do this, you will:

- work in groups to create a mural.
- learn more about the respiratory system, including how we get oxygen from the air.
- learn more about the circulatory system, including how the heart pumps blood.
- present each part of the mural to the class as a group.

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VITAL SIGNS Hands On...

Before you start

The doctor checks our vital signs to make sure that our body systems are working properly. You can also check some of the vital signs of your classmates.

Materials

pencil, notebook, digital thermometer, clock or stopwatch

Method

1 Work with a partner. Copy and complete the table in your notebook:

	Body temperature	Pulse (beats per minute)	Respiratory rate (breaths per minute)
Your name	°C	bpm	bpm
Your partner's name	°C	bpm	bpm



- **3** Measure your partner's pulse. Place your forefinger and middle finger on your partner's wrist and count the pulsations for one minute. Write it down.
- 4 Finally, measure your partner's respiratory rate. Using the clock, count how many times they breathe in and out in one minute.
- **5** Then, it is your turn to be the patient.
- **6** Run once around the school patio and repeat the process.

Conclusions

Are your results very different from your partner's? How have the results changed after you ran?

My partner had a higher / lower body temperature than me.

My pulse was *quicker / slower* than my partner's.

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HOW DO YOU GET OXYGEN FROM THE AIR?

The **respiratory system** is a group of organs that perform respiration. **Respiration** is another way of saying 'breathing'. In respiration, we breathe in air which contains oxygen and we breathe out carbon dioxide. Our body needs oxygen to perform nutrition and give us energy.

nose

mouth

trachea

bronchi

lungs

Do you know that one of your lungs is smaller than the other? Find out why!

4 Below the lungs, there is a muscle called the **diaphragm**. This muscle helps the lungs to perform respiration. When it **contracts**, air is drawn into¹ our lungs.

2 The air passes through a tube called the **trachea**, to two large tubes called the **bronchi**.

1 Air enters our

the **mouth**

body through

and the **nose**.

3 The bronchi lead to two large organs which are responsible for breathing: the **lungs**.

- 10

On average, a child of your age takes about 1200 breaths per hour. So, how many times do you breathe in a day?

diaphragm

5 When the diaphragm **relaxes**, air is expelled from our lungs.

On average, a child age takes about 120

alveoli

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1 The bronchi divide into smaller tubes inside the **lungs**. These tubes are called **bronchioles**. Bu the end of this lesson, you will know how many bronchioles are in each lung.

bronchiole

Oxygen goes in, carbon dioxide comes out

3 In the alveoli, the **oxygen** from the air we breathe in passes into the blood. The **carbon dioxide** our body produces leaves the blood through the alveoli, and is expelled when we breathe out.

capillaries

at the end of each bronchiole. The alveoli are covered in **capillaries**. Did you know there are about 30,000 bronchioles in each lung? Each one is

2 There are tiny air

sacs called **alveoli**

The amount of air we can fit in our lungs is called our

lung capacity. Get into groups of five.

Each pupil has a balloon. Everyone takes a deep breath and blows into the balloon until they run out of air. Observe the different lung capacities.



STAGE 2

 Make a model of the respiratory system using plasticine or mixed materials, such as balloons, plastic bags, straws, cardboard rolls ...

a hair.

- Attach your model to the body outline using glue, tape or staples.
- Label each part. You can make labels using card.

'to draw into: to pull in

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IS THERE A PUMP IN YOUR BODY?

The **circulatory system** is a group of organs that performs **circulation**. This is the process by which blood is moved around the body.

Blood is like a delivery system. It carries oxygen, water and other nutrients to all the cells in the human body. It also carries carbon dioxide to the lungs, from where it is exhaled. The main organs in the circulatory system are the **heart** and the **blood vessels** (**veins**, **arteries** and **capillaries**).

If you laid out all the blood vessels in your body in a line, how long would that line be? Find out!

The **heart** is a muscular organ. Its function is to pump blood around the body through the blood vessels. It is divided into four chambers: the left and right **atriums** and left and right **ventricles**.

Arteries are blood vessels that carry blood from the heart to the rest of the body. The blood in the arteries is rich in oxygen.

> Veins are the blood vessels that carry blood back to the heart. The blood in the veins is low in oxygen and contains carbon dioxide.

Capillaries are the smallest blood vessels. They connect the veins and the arteries.

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"J**uel:** source of energy; material that is burnt to produce heat or power ²deoxygenated: with the oxygen removed ³to get rid of: to remove •oxygenated: rich in oxygen

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Complete the sentences in your notebook using the words after or before.

- **a** My pulse was quicker I ran around the school patio.
- **b** Air passes through the trachea passing into the bronchi.
- c The blood is oxygenated passing through the alveoli.
- **d** The blood is deoxygenated passing through the alveoli.

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