Science – summer term – circulatory system.

Key objectives for this topic:

- Know the parts of the circulatory system
- Know the structure of the heart
- Know the components of blood and what they do
- Describe the functions of the heart, blood vessels and blood

Session 1: Know the parts of the circulatory system/understand key vocabulary

Use a dictionary or the internet to find definitions for these key terms we will be using in this topic

Term	Definition/meaning
Heart	
Artery	
Vein	
Deoxygenated	
Oxygenated	
Atrium	
Vena cava	
Aorta	
Ventricle	

Try to learn how to spell these keywords as you will need to use them throughout the topic.

Session 2: Know that the heart pumps blood around our body and that the speed the heart pumps at depends on what our bodies are doing. Investigating the effect of exercise on your heart rate.

Task: practical session. You will need another person to help you with this task.

Aim: to investigate the effect different exercises have on your heart rate.

Method:

1) Record your resting pulse. This is your heart beat when you are sat quietly. You can find your pulse either on your wrist or your neck. Don't use your thumb to find it. Once you can feel your heart beat, ask someone to time you for 6 seconds and then multiply the beats you have counted by 10 to find how many times your heart beat in a minute.

2) Spend 1 minute doing a set of exercises (sit ups, jogging on the spot, star jumps, step ups, burpees, throwing a ball to a partner for example).
3) Take your pulse again as soon as you stop exercising.
4) Once your pulse has returned to your resting rate, repeat with a different exercise. Why do you think it is important for you to wait until your heart rate has gone back to the resting rate?
5) Complete the results table after each exercise.

Results (you can change the exercise)

Exercise	Starting heart rate	Heart rate after exercise	Difference
Sit ups			
Jogging on the spot			
Star jumps			
Step ups			
Burpees			
Throwing a ball			

Discussion – What do your results show? Why do you think this is? Did all of the exercises have the same effect on your heart? If not, why not?

Extension: try and get other members of your family involved. Can you notice anything about resting pulse rates? Are the effects of exercise the same for everyone?

Session 3: Understand the structure of the heart.

Task: know the parts of the human heart and begin to understand how blood flows within the heart.

Outcome: completed diagram showing the parts of the heart.

Extension: when we return to school, we will look at a sheep's heart which has a similar structure. Depending on supplies, you may be able to get one from Tesco/Morrisons or the butchers (the ones we use in school come from Tesco as people do eat heart).

Research the structure of the human heart. Possible site to look at: http://www.tenalpscommunicate.com/clients/siemens/humanbodyOnline/#pages/cvs/info-cvs-heart

Alternatively, I have set books for you to look at on getepic.com.

Information needed: **How the Heart Beats**

How does the heart beat? Before each beat, your heart fills with blood. Then its muscle contracts to squirt the blood along. When the heart contracts, it squeezes — try squeezing your hand into a fist. That's sort of like what your heart does so it can squirt out the blood. Your heart does this all day and all night, all the time. The heart is one hard worker!

Parts of the Heart

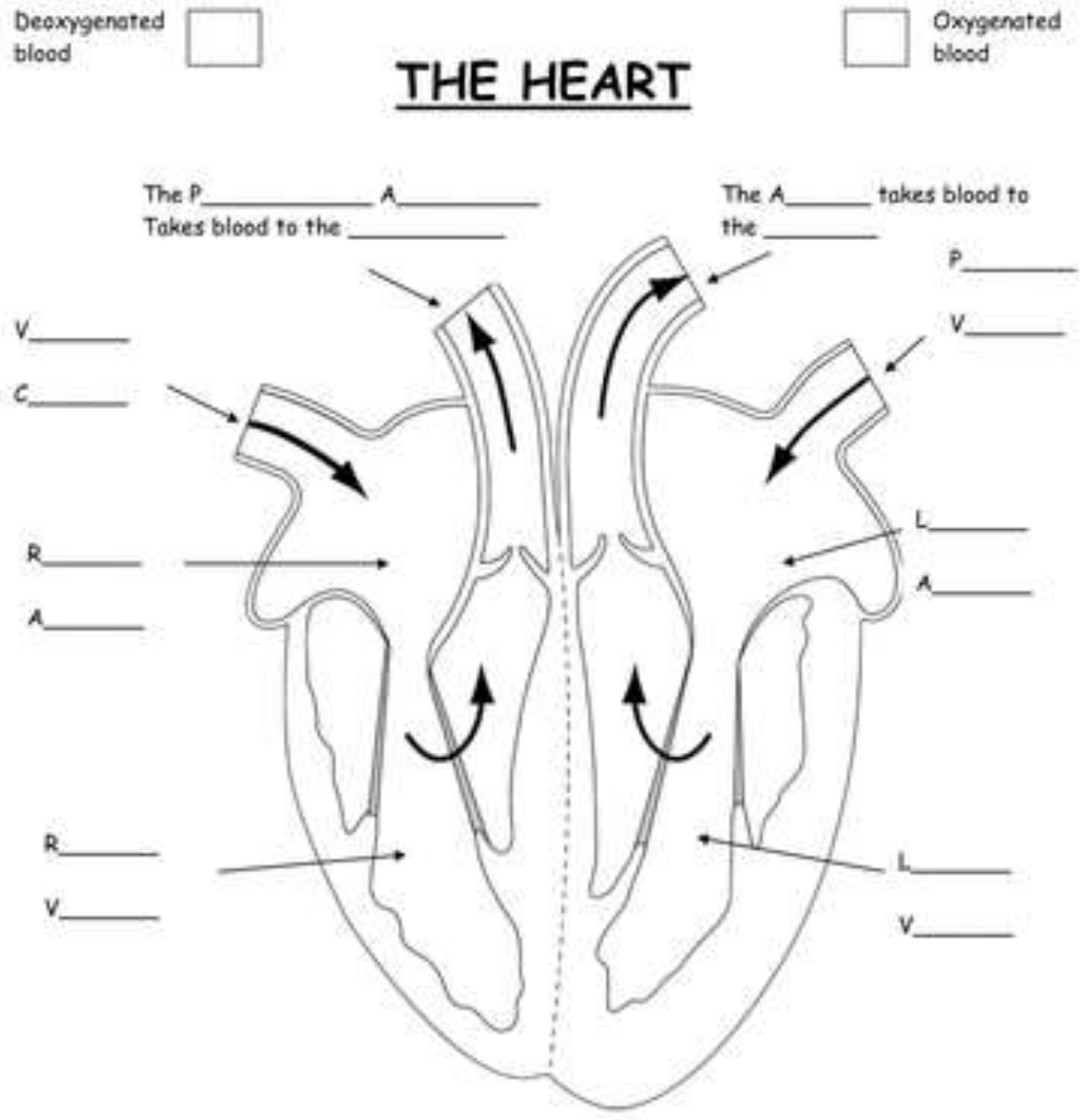
The heart is made up of four different blood-filled areas, and each of these areas is called a chamber. There are two chambers on each side of the heart. One chamber is on the top and one chamber is on the bottom. The two chambers on top are called the **atria** (say: AY-tree-uh). If you're talking only about one, call it an **atrium**. The atria are the chambers that fill with the blood returning to the heart from the body and lungs. The heart has a left atrium and a right atrium.
The two chambers on the bottom are called the **ventricles** (say: VEN-trih-kulz). The heart has a left ventricle and a right ventricle. Their job is to squirt out the blood to the body and lungs. Running down the middle of the heart is a thick wall of muscle called the **septum** (say: SEP-tum). The septum's job is to separate the left side and the right side of the heart.

The atria and ventricles work as a team — the atria fill with blood, then dump it into the ventricles. The ventricles then squeeze, pumping blood out of the heart. While the ventricles are squeezing, the atria refill and get ready for the next contraction. So when the blood gets pumped, how does it know which way to go?

Well, your blood relies on four special valves inside the heart. A valve lets something in and keeps it there by closing — think of walking through a door. The door shuts behind you and keeps you from going backward.

Two of the heart valves are the **mitral** (say: MY-trul) **valve** and the **tricuspid** (say: try-KUS-pid) **valve**. They let blood flow from the atria to the ventricles. The other two are called the **aortic** (say: ay-OR-tik) **valve** and **pulmonary** (say: PUL-muh-ner-ee) **valve**, and they're in charge of controlling the flow as the blood leaves the heart. These valves all work to keep the blood flowing forward. They open up to let the blood move ahead, then they close quickly to keep the blood from flowing backward.

Complete this diagram:



The heart is made out of _____ Muscle.
It is a double _____ that squeezes the blood around the _____ and to the _____. The _____ side pumps blood to the lungs to pick up _____. The _____ side pumps blood around the rest of the body.

RIGHT, LEFT, CARDIAC, BODY, PUMP, LUNGS, OXYGEN

Session 4: Understand what the circulatory system is.

Task: to research the parts of the circulatory system and demonstrate this knowledge by making a model of the system.

Possible websites:

https://www.bbc.co.uk/bitesize/clips/zncg9j6

https://www.bbc.co.uk/teach/class-clips-video/science-ks2-how-our-circulatory-system-keeps-us-alive/zhf76v4

Outcome: some form of model showing the human circulatory system. Make sure you name the different parts and which parts have oxygenated and deoxygenated blood.

Session 5: understand the parts of blood.

Task: know what your blood is made up of. Understand the parts and explain their function.

https://www.bbc.co.uk/bitesize/topics/zwdr6yc/articles/zqv4cwx

Produce your own model of blood and explain what the different parts represent.

For help read this: https://www.risingstars-uk.com/blog/may-2018/a-bloody-investigation

You can make up your own version – it doesn't need to contain the same items as in this investigation. Take a picture of your final blood sample and explain the different components.

← This was my "blood". It contained these things – can you work out what they would be representing:

LR blood contents	What they represent
Strawberry juice with added red star shaped icing decorations	
Orange juice	
White mini marshmallows	
Rice Krispies	
Sugar	

Session 6: understand the blood flow around your body.

Task: Imagine you are a red blood cell. You are travelling around a human body. Describe your journey. What are you travelling in? What are you carrying? What route are you taking?

Watch this video to help you:

https://www.youtube.com/watch?v=-s5iCoCaofc