

**Autumn One: Science**

**Animals including Humans – Blood and the Circulatory System**

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| **What should I already know?** | **Diagram - The Circulatory System** |
| * the function of the skeleton and the purpose of muscles;
* the basic parts of the digestive system and the functions of organs in this system;
* the different types of teeth in humans and their functions;
* the life cycle of a human and how we change as we grow and develop;
* the basic needs of animals for survival (water, food, air);
* the importance of exercise, hygiene and a balanced diet.
 | * The right **atrium** collects the **deoxygenated** blood from the body, **via** the **vena cava**. It sends the blood to the right **ventricle**.
* The right **ventricle pumps** the **deoxygenated** blood to the **lungs**. Here the blood picks up **oxygen** and disposes of **carbon dioxide**.
* The **lungs** send **oxygenated** blood back to the left **atrium** which pumps it to the left **ventricle.**
* The left **ventricle** pumps the blood to the rest of the body, **via** the **aorta**.
* The **heart** is composed of  **four** chambers; **the right** atrium, **the right** ventricle,

 the left **atrium** and the left **ventricle**.How often your heart pumps is called your pulse. |
| **Scientific Learning** |
| What is the **Circulatory System**? | * The **circulatory system** is made of the **heart**, **lungs** and **blood vessels**
* **Arteries** carry **oxygenated** blood from the **heart** to the rest of the body.
* **Veins** carry **deoxygenated** blood from the body to the **heart**.
* **Nutrients, oxygen** and **carbon dioxide** are exchanged **via** the **capillaries**.
 |
| Choices that can harm the **circulatory system.** | * Some choices, such as smoking and drinking alcohol can be harmful to our health.
* Tobacco can cause short-term effects such as shortness of breath, difficulty sleeping and loss of taste and long-term effects such as lung disease, cancer and death.
* Alcohol can cause short-term effects such as addiction and loss of control and long-term.
* Effects such as **organ** damage, cancer and death.
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| Why is **exercise** so important? | **Exercise** can:* tone our **muscles** and reduce fat;
* increase fitness;
* make you feel physically and mentally healthier;
* strengthen the **heart;**
* improve your **lung** function;
* improve your skin.
 | **What I should know by the end of the unit?** |
| * How my **pulse** changes with exercise and the most efficient way of presenting this data.
* The four parts of my **blood** and the job of each of these parts.
* The names of the four **chambers** of the **heart** and how they work..
* How blood travels around my body.
* The effect **exercise** has on my **heart**.
* The effect food, drugs and alcohol have on my body.
* The way in which water and nutrients are transported around my body.
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| Key Vocabulary |
| **Aorta:** the main [**artery**](https://www.collinsdictionary.com/dictionary/english/artery) through which blood leaves your **heart** beforeit [flows](https://www.collinsdictionary.com/dictionary/english/flow) through the [rest](https://www.collinsdictionary.com/dictionary/english/rest) of your body. | **Nutrients:** substances that [help](https://www.collinsdictionary.com/dictionary/english/help) plants and animals to grow |
| **Arteries:** a [tube](https://www.collinsdictionary.com/dictionary/english/tube) in your body that carries **oxygenated** blood from your **heart** to the [rest](https://www.collinsdictionary.com/dictionary/english/rest) of your body | **Organ:** a part of your body that has a particular purpose |
| **Atrium**: one of the chambers in the **heart** | **Oxygen:** a colourless gas that plants and animals need to survive |
| **Blood vessels**: the [narrow](https://www.collinsdictionary.com/dictionary/english/narrow) [tubes](https://www.collinsdictionary.com/dictionary/english/tube) through which your blood flows. **arteries**, **veins** and **capillaries** are **blood vessels** | **Oxygenated:** blood that contains **oxygen** |
| **Capillaries:** [tiny](https://www.collinsdictionary.com/dictionary/english/tiny) **blood vessels** in your body | **Pulse**: the regular [beating](https://www.collinsdictionary.com/dictionary/english/beating) of blood through your body. How fast or slow your **pulse** is depends on the activity you are doing |
| **Carbon dioxide**: a gas produced by animals and people breathing out | **Respiration**: process of respiring; breathing |
| **Circulatory system**: the system responsible for circulating blood through the body, that supplies **nutrients** and **oxygen** to the body and removes waste products such as **carbon dioxide** | **Veins:** a [tube](https://www.collinsdictionary.com/dictionary/english/tube) in your body that carries **deoxygenated** blood to your **heart** from the [rest](https://www.collinsdictionary.com/dictionary/english/rest) of your body |
| **Deoxygenated blood:** blood that does not contain **oxygen** | **Vena cava:** a large **vein** through which **deoxygenated** bloodreaches your **heart** from the body |
| **Heart:** the **organ** in your [chest](https://www.collinsdictionary.com/dictionary/english/chest) that [**pumps**](https://www.collinsdictionary.com/dictionary/english/pump) the blood around your body | **Ventilation**: the exchange of air between the lungs and the atmosphere so that **oxygen** can be exchanged for **carbon dioxide** |
| **Lungs:** Two organs inside your chest that fill with air when you breathe in. They oxygenate the blood and remove CO2 from it | **Ventricle:** one of the chambers in the **heart** |



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**Pre-Unit Quiz**

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| **Question 1:** The heart, blood vessels and lungs make up the… | Start of unit: | End of unit: |
| digestive system |  |  |
| circulatory system |  |  |
| skeletal system |  |  |
| muscular system |  |  |

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| **Question 2:** Which one of these is not an organ? | Start of unit: | End of unit: |
| Heart |  |  |
| Lungs |  |  |
| Blood |  |  |

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| **Question 3:** The most effective way to show the change in pulse rate over time is by using a... | Start of unit: | End of unit: |
| picture |  |  |
| bar chart |  |  |
| pie chart |  |  |
| line graph |  |  |

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| **Question 4:** You are investigating which exercise yields the highest heart rate. How can you ensure a fair test? Tick **two**. | Start of unit: | End of unit: |
| treat everybody the same |  |  |
| measure the same subject’s pulse before, during and after each exercise. |  |  |
| ensure the starting heart rate is the same before each exercise |  |  |
| complete each exercise without resting in between. |  |  |

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| **Question 5:** The veins carry ………….. blood. | Start of unit: | End of unit: |
| deoxygenated |  |  |
| oxygenated |  |  |
| blue |  |  |

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| **Question 6:** Which **two** activities would increase pulse rate the most? | Start of unit: | End of unit: |
| reading a book |  |  |
| playing football |  |  |
| drinking water |  |  |
| going for a walk |  |  |

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| **Question 7:** Which of these can harm our bodies? Tick **two**. | Start of unit: | End of unit: |
| smoking |  |  |
| all drugs |  |  |
| alcohol |  |  |
| exercise |  |  |
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| **Question 8:** The function of the blood is to provide the body with… (tick **three**) | Start of unit: | End of unit: |
| nutrients |  |  |
| water |  |  |
| carbon dioxide |  |  |
| oxygen |  |  |

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| **Question 9:** Arteries, veins and capillaries are examples of… | Start of unit: | End of unit: |
| blood |  |  |
| blood vessels |  |  |
| blood types |  |  |
| nutrients |  |  |

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| **Question 10:** Explain each of these four processes. |
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| 2. |  |
| 3. |  |
| 4. |  |