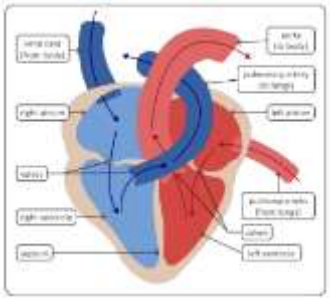
LENT TERM SCIENCE – Year 5/6 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS		
LESSON 1	**LESSON 2**	**LESSON 3**
Recap & retrieval: • The digestive system starts at the mouth and ends at the anus. (Recap Y4)	**Recall & retrieval:** • The circulatory system is the system that moves blood around the body.	**Recall & retrieval:** • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers.
Working Scientifically – Using Scientific Evidence, Communicating Results **LEARNING INTENTION:** To know that the role of the circulatory system is to transport oxygen, water and nutrients around the body. **Disciplinary Knowledge:** **Y5:** • Identify scientific evidence that has been used to support or disprove ideas • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations. **Y6:** • Identify scientific evidence that has been used to support or refute ideas or arguments. • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. **Aim:**	**Working Scientifically – Communicating Results** **LEARNING INTENTION:** To know that there are different parts of the human heart. **Disciplinary Knowledge:** **Y5:** • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations. **Y6:** • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. **Aim:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	**Working Scientifically – Using Scientific Evidence** **Investigation – Dissection** **LEARNING INTENTION:** To know that there are different parts of the human heart. **Disciplinary Knowledge:** **Y5:** • Identify scientific evidence that has been used to support or disprove ideas **Y6:** • Identify scientific evidence that has been used to support or refute ideas or arguments. **Aim:** Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Develop scientific knowledge and conceptual understanding through the human biological system.		
Key Vocabulary: **circulatory system**, body, transport, **oxygen, nutrients, water**, blood, vessels, heart	**Key Vocabulary:** **Heart, right atrium, left atrium, right ventricle, left ventricle, chambers,** muscle	**Key Vocabulary:** Atria, arteries, **ventricle**, **aorta**, **atrium**, valves, **vena cava**, septum, node, muscle, veins
Key Knowledge: **Child:** • The circulatory system is the system that moves blood around the body. • It has three parts: the heart, blood vessels and blood. **Teacher:** • Build on their learning about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function. (Y4 Recap) • The role of the circulatory system is to transport oxygen, water and nutrients around the body.	**Key Knowledge:** **Child:** • There are different parts of the human heart. • The heart is divided into four chambers. **Teacher:** • The upper two chambers are called atria (singular: atrium) and the lower two are known as ventricles (singular: ventricle). • Muscular walls, called septa or septum, divide the heart into two sides. 	**Key Knowledge:** **Child:** • The heart is a muscular organ that pumps blood around the body through the blood vessels. **Teacher:** • Dissect means to cut or separate tissues. • The main chambers of the heart can be cut open with dissecting scissors or a scalpel.

LENT TERM
SCIENCE – Year 5/6 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS

LESSON 4	LESSON 5	LESSON 6
Recall & retrieval: • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels.	**Recall & retrieval:** • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body.	**Recall & retrieval:** • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body. • The human blood consists of four different components: red blood cells, white blood cells, platelets and plasma.
Working Scientifically – Communicating Results **LEARNING INTENTION:** To know that the heart and lungs play vital roles in the circulatory system. **Disciplinary Knowledge:** **Y5:** • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations. **Y6:** • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. **Aim:** Develop scientific knowledge and conceptual understanding through the human biological system.	**Working Scientifically – Communicating Results** **LEARNING INTENTION:** To know that the human blood consists of different components. **Disciplinary Knowledge:** **Y5:** • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations. **Y6:** • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. **Aim**: Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	**Working Scientifically – Communicating Results** **LEARNING INTENTION:** To know that there are three main blood vessels. **Disciplinary Knowledge:** **Y5:** • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations. **Y6:** • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. **Aim:** Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Key Vocabulary: oxygen, carbon dioxide, **pulmonary, circulatory,** lungs**, heart**, organ	**Key Vocabulary:** **Plasma**, **white blood cells**, **red blood cells**, **platelets**, veins, arteries, cell fragments, waste, carbon dioxide, oxygen	**Key Vocabulary:** transported, **vessels, artery, vein, capillary, oxygenated, blood**, heart, lung, tissue
Key Knowledge: **Child:** • The heart and lungs play vital roles in the circulatory system. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body. • Carbon dioxide (a waste product) is collected along the way from the cells, and disposed of. **Teacher:** • Blood, the heart and the vessels through which blood is pumped around the body, together make up the cardiovascular system. • The heart pumps deoxygenated blood to the lungs, to receive oxygen, before returning to the heart. It is then pumped around the body. • Deoxygenated blood enters the right atrium through the vena cava. • It passes through a valve and into the right ventricle. From there, it is pumped through a valve into the pulmonary artery. • The pulmonary artery carries the blood to the lungs, where it absorbs oxygen. • The pulmonary veins carry the oxygenated blood back from the lungs to the left atrium. • It passes through a valve to the left ventricle and is pumped out through a valve into the aorta. • Then the blood travels to the rest of the body. • Two pathways come from the heart.	**Key Knowledge:** **Child:** • The human blood consists of four different components: red blood cells, white blood cells, platelets and plasma. • The main function of blood is to transport the things the body needs, such as oxygen, other nutrients, hormones, antibodies and heat, around the body. • It also transports carbon dioxide and other waste products for excretion. **Teacher:** • Blood is vital for carrying nutrients, oxygen and waste around the body. • There are 3 main types of blood cells: red blood cells, white blood cells and platelets • Blood is made up of cells and plasma. • An average adult has about 5 litres of blood in the body. • As well as carrying cells, nutrients, oxygen and waste, blood also helps to regulate body temperature. • Blood travels through veins and arteries. • Plasma is the yellowish liquid part of blood. It makes up about 55% of blood. It carries red blood cells, white blood cells and platelets around the body. It also helps to distribute heat.	**Key Knowledge:** **Child:** • There are three types of blood vessels – arteries, capillaries and veins. • Arteries carry oxygenated blood from the heart to the body. • Capillaries connect arteries to the veins.. • Veins move blood back to the heart, where it is pumped to the lungs and oxygenated **Teacher:** • Arteries carry oxygenated blood from the heart to the body. • Capillaries connect arteries to the veins. They deliver oxygen and other nutrients to the body's tissues and carry deoxygenated blood and waste products to the veins. • Veins move blood back to the heart, where it is pumped to the lungs and oxygenated. • Structure of arteries - Arteries have thick walls and narrow tubes, called lumen, because the blood is under high pressure as it is pumped from the heart. The arteries are also tough and flexible to withstand this pressure. • Structure of capillaries - Capillaries are tiny and have very thin walls and narrow lumen so oxygen, other nutrients and waste products

• The **pulmonary circulation** is a short loop from the heart to the lungs and back again. • The **systemic circulation** carries blood from the heart to all the other parts of the body and back again.	• Red blood cells make up about 45% of blood. Their main function is to carry oxygen from the lungs to other parts of the body and carry waste carbon dioxide from the body's tissues to the lungs so it can be excreted. • White blood cells only make up about 1% of blood. The main function of white blood cells is to fight infection and other diseases. They are part of the body's immune system. • Platelets are small cell fragments that make up less than 1% of blood. Their main function is to clump together, or clot, to stop bleeding.	can move easily between the blood and the body's tissues. • Structure of veins - Veins have thin, elastic walls and wide lumen. The walls do not need to be thick because the blood is not under high pressure. • Veins contain valves that prevent the blood from flowing backwards.

LENT TERM
SCIENCE – Year 5/6 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS

LESSON 7	LESSON 8	LESSON 9
Recap & retrieval: • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body. • The human blood consists of four different components: red blood cells, white blood cells, platelets and plasma. • There are three types of blood vessels – arteries, capillaries and veins.	**Recall & retrieval:** • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body. • The human blood consists of four different components: red blood cells, white blood cells, platelets and plasma. • There are three types of blood vessels – arteries, capillaries and veins. • Heart rate increases during exercise because the body requires more oxygen to meet its needs.	**Recall & retrieval:** • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body. • The human blood consists of four different components: red blood cells, white blood cells, platelets and plasma. • There are three types of blood vessels – arteries, capillaries and veins. • Heart rate increases during exercise because the body requires more oxygen to meet its needs. • Diet has an impact on the person's lifestyle and can affect how the body functions. • Exercise lowers blood pressure, reduces weight and strengthens muscles.
Working Scientifically - Asking enquiry questions, Observing and Measuring **Recording Data** **LEARNING INTENTION:** To know that heart rate differs before and after exercise. **Disciplinary Knowledge:** **Y5:** • Plan scientific enquiries to answer questions. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision.	**Working Scientifically – Communicating Results** **LEARNING INTENTION:** To know that diet and exercise have an impact on the heart and the body. **Disciplinary Knowledge:** **Y5:** • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations. **Y6:** • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	**Working Scientifically – Using Scientific Evidence** **LEARNING INTENTION:** To know that smoking, alcohol and drugs have an impact on the heart and the body. **Disciplinary Knowledge:** **Y5:** • Identify scientific evidence that has been used to support or disprove ideas **Y6:** • Identify scientific evidence that has been used to support or refute ideas or arguments. **Aim:**

• Record data and results using scientific diagrams and labels, classification keys, tables, bar and line graphs. **Y6:** • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. **Aim:** Develop scientific knowledge and conceptual understanding through the human biological system.	**Aim:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.
Key Vocabulary: healthy, chemicals, release, **increase**, **decrease**, **pulse**, **rate**, heartbeat, cardio vascular, radial pulse, cardial pulse, **exercise, oxygen**	**Key Vocabulary:** **nutrients**, **proteins**, **fats**, **carbohydrates**, vitamins, fibre, fats, minerals, calcium, energy, dairy, **sugars,** balanced, diet, absorbed, **exercise, salt**	**Key Vocabulary:** **lifestyle, smoking, drugs, alcohol**, nicotine, cardiac arrest, stroke, **negative, impact,** blood pressure, disease
Key Knowledge: **Child:** • Heart rate increases during exercise because the body requires more oxygen to meet its needs. • Heart rate is measured in beats per minute (bpm). • Resting heart rate is the number of times a heart beats per minute when a person is at rest. **Teacher:**	**Key Knowledge:** **Child:** • Diet has an impact on the person's lifestyle and can affect how the body functions. • Exercise lowers blood pressure, reduces weight and strengthens muscles. **Teacher:**	**Key Knowledge:** **Child:** • Smoking, drugs and alcohol can have a negative impact on the circulatory system. • Smoking can result in cancer and heart disease. • Alcohol can cause high blood pressure and increased stroke risk. **Teacher:**

• The pulse can be felt each time the arteries expand as blood is pumped through them from the heart. • It is especially noticeable where the arteries are close to the skin's surface, such as at the wrist and neck. • Heart rate increases during exercise. • Heart rate can be measured by recording the pulse at different points of the body. • A heart rate monitor can also be used to measure the pulse. • Exercise benefits your heart by lowering blood pressure, reducing weight, strengthening muscles and lowering stress.	• Some foods, especially processed foods, such as crisps, ready meals and sweets, are high in sugar, salt or saturated fat. • Too much of any of these types of foods can have harmful effects on the body. • Eating too much sugar can cause weight gain and tooth decay. It can also cause the body to retain water and raise blood pressure, which can lead to a heart attack or stroke. • Too much salt can cause the body to retain water and raise blood pressure. This can lead to an increased risk of heart disease and stroke. • Too much saturated fat can cause weight gain and increase the risk of heart disease. • Exercise helps to keep your heart healthy. The heart is a muscle and, like other muscles in your body, the more you work it, the stronger it will become. • Regular exercise makes the heart stronger so it can pump more blood each time it contracts. As more blood is pumped out with each beat, there is a lower resting heart rate. • As more blood is pumped out with each beat, there is a lower resting heart rate. • The fitter you are, the stronger your heart and the lower your resting heart rate. • Stronger heart muscle also helps the heart to recover more quickly after exercise. • The best exercises are aerobic exercises, such as running and jumping, because the muscles are working harder and require more oxygen from the blood.	• Smoking can result in cancer and heart disease. • Alcohol can cause high blood pressure and increased stroke risk. • People who drink alcohol a lot for a long time often damage important parts of their body like their brains, heart and liver. • Cigarettes contain lots of different things, including tobacco. • Tobacco can damage your lungs and heart as well as cause your body to develop deadly diseases like cancer. • Nicotine is very addictive, which is why some people find it hard to stop smoking. • E-cigarettes are battery-powered devices that create water vapour (a kind of gas). This water vapour doesn't contain tobacco but it does contain nicotine.

LENT TERM SCIENCE – Year 5/6 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS		
LESSON 10	**LESSON 11**	
Recall & retrieval: • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body. • The human blood consists of four different components: red blood cells, white blood cells, platelets and plasma. • There are three types of blood vessels – arteries, capillaries and veins. • Heart rate increases during exercise because the body requires more oxygen to meet its needs. • Diet has an impact on the person's lifestyle and can affect how the body functions. • Exercise lowers blood pressure, reduces weight and strengthens muscles. • Smoking, drugs and alcohol can have a negative impact on the circulatory system.	**Recall & retrieval:** • The circulatory system is the system that moves blood around the body. • The heart is divided into four chambers. • The heart is a muscular organ that pumps blood around the body through the blood vessels. • The heart and lungs work together to circulate re-oxygenated blood to all the cells around the body. • The human blood consists of four different components: red blood cells, white blood cells, platelets and plasma. • There are three types of blood vessels – arteries, capillaries and veins. • Heart rate increases during exercise because the body requires more oxygen to meet its needs. • Diet has an impact on the person's lifestyle and can affect how the body functions. • Exercise lowers blood pressure, reduces weight and strengthens muscles. • Smoking, drugs and alcohol can have a negative impact on the circulatory system. • Medicines and drugs can be harmful.	
Working Scientifically – Communicating Results **LEARNING INTENTION:** To know that drugs are legal and illegal and have an impact on the human body. **Disciplinary Knowledge:** **Y5:** • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations.	**Working Scientifically – Communicating Results** **LEARNING INTENTION:** To know that water and nutrients are transported within different animals, including humans. **Disciplinary Knowledge:** **Y5:** • Report and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations.	

Y6: • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. **Aim:** Develop scientific knowledge and conceptual understanding through the human biological system.	**Y6:** • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. **Aim:** Develop scientific knowledge and conceptual understanding through the human biological system.	
Key Vocabulary: depressant, diastole, **legal, illegal**, counter **drugs**, **prescribed**, harmful, alcohol, addictive, **medicone**	**Key Vocabulary:** **Water**, **nutrients**, **transported**, **organism**, oxygen, **closed circulatory system**, **open circulatory system**, blood vessels, arteries, veins, vertebrates, haemoglobin, haemocyanin, diffuse, body cavity, fluid	
Key Knowledge: **Child:** • Medicines and drugs can be harmful**.** • Drugs are legal and illegal and have an impact on the human body. • A drug is a substance that has an effect on your body to change the way you feel, think or behave **Teacher:** • Drugs include medicine, alcohol, tobacco and other substances. Some drugs can be found in everyday consumables, e.g. caffeine is in tea, coffee and energy drinks. • Drugs can cause collapsed veins and cardiac arrest. • Alcohol is a drug that can be found in drinks such as beer, cider and wine. • The drug found in cigarettes is nicotine.	**Key Knowledge:** **Child:** • Blood is a fluid within most animals that delivers oxygen and nutrients to different parts of the body. • Not all animals have a circulatory system **Teacher:** • Some animals do not have a circulatory system, therefore they do not have blood. • Blood is a fluid within most animals that delivers oxygen and nutrients to different parts of the body**.** • It can be several different colours depending on the organism.	

• Legal drugs also include alcohol and tobacco. These are **restricted drugs** – that means there is a restriction on who can use them.	• Vertebrates (mammals, amphibians, reptiles, and birds) have red-blood cells that travel through a closed circulatory system (a series of arteries and veins). • The circulatory system is considered closed because the blood is always contained within blood vessels. • Vertebrate blood is red because it has an iron-containing substance called haemoglobin. • Molluscs have an open circulatory system where blood is contained in a cavity where it surrounds and bathes the internal organs directly.	
Assessment Cumulative quiz. Retrieval practice.		