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1. **Describe the heart and its function**

The heart is muscle about the size of your fist it lies at the left side of the sternum**,** the inside of the heart is divided into four chambers which are the left and right atrium which at the top and the left and right ventricles which is at the bottom. The two atria act as collection chambers for blood while the ventricles collect blood from the atrium and pump them to the lungs and the body. The chambers are separated by valves which control the direction of blood flow; there are four values which are tricuspid, pulmonary, mitral and aortic valves.

Circulation begins at the right side of the heart where blood from the body comes to the right atrium which goes into the right ventricle where it is pumped to the lungs to receive oxygen once it receives oxygen it flows to the left atrium and then to the left ventricle where it is pumped to the aorta then to the rest of the body.

On the right side of the heart the tricuspid valve separates the right atrium and the right ventricle allowing blood to enter the ventricle and not flow backwards to the atrium, blood flows through the pulmonic valve to go to the lungs. On the left side the mitral valve separates the left atrium and ventricle, blood flows from the left ventricle to the aorta through the aortic valve to then rest of the body.

Arteries carry blood with oxygen and other nutrient round the body; veins take deoxygenated blood back to the heart which pumps it the lungs to be oxygenated. The heart arteries which are coronary arteries provide oxygen and nutrients to heart muscle. The right coronary artery supplies blood to the bottom and back of the heart, the left coronary artery splits into two vessels one branch supplies the front of the heart while the other supplies the left side of the heart.

An electric system transmits signals round the heart to control its pumping. The electric signal begins at the sinoatrial node (S.A node) which is located at the upper portion of the right atrium and is known as the natural pace maker of the heart the signal passes to the lower portion of the heart through the atroventricular node (AV node) which allows the atrium to to contract be before the ventricle. In the ventricle they are pathways that spread the signal round the muscle so that they contract at the same time to pump blood to the lung and round the body.

1. **Write on five congenital abnormalities of the heart**

* **Aortic valve stenosis:**Aortic valve stenosis is a serious type of congenital heart defect. In aortic valve stenosis, the aortic valve that controls the flow of blood out of the main pumping chamber of the heart (the left ventricle) to the body's main artery (the aorta) is narrowed. This affects the flow of oxygen-rich blood away from the heart, towards the rest of the body, and may result in the left ventricle muscle thickening because the pump has to work harder.
* **Coarctation of the aorta:**Coarctation of the aorta (CoA) is where the main artery (the aorta) has a narrowing, which means that less blood can flow through it.CoA can occur by itself or in combination with other types of heart defects – such as a ventricular septal defect or a type of defect known as a patent ductus arteriosus.The narrowing can be severe and will often require treatment shortly after birth.

## Patent ductus arteriosus:As a baby develops in the womb, a blood vessel called the ductus arteriosus connects the pulmonary artery directly to the aorta. The ductus arteriosus diverts blood away from the lung (which isn't working normally before birth) to the aorta.A patent ductus arteriosus is where this connection doesn't close after birth as it's supposed to. This means that extra blood is pumped into the lungs, forcing the heart and lungs to work harder.

## Pulmonary valve stenosis:Pulmonary valve stenosis is a defect where the pulmonary valve, which controls the flow of blood out of the right heart pumping chamber (the right ventricle) to the lungs, is narrower than normal. This means the right heart pump has to work harder to push blood through the narrowed valve to get to the lungs.

## Septal defects :A septal defect is where there's an abnormality in the wall (septum) between the main chambers of the heart. The two main types of septal defect are outlined below;

### Atrial septal defects:An atrial septal defect (ASD) is where there's a hole between the two collecting chambers of the heart (the left and right atria). When there's an ASD, extra blood flows through the defect into the right side of the heart, causing it to stretch and enlarge.

### Ventricular septal defects :A ventricular septal defect (VSD) is a common form of congenital heart disease. It occurs when there's a hole between the 2 pumping chambers of the heart (the left and right ventricles).This means that extra blood flows through the hole from the left to the right ventricle, due to the pressure difference between them. The extra blood goes to the lungs, causing high pressure in the lungs and a stretch on the left- sided pumping chamber. Small holes often eventually close by themselves, but larger holes need to be closed using surgery.