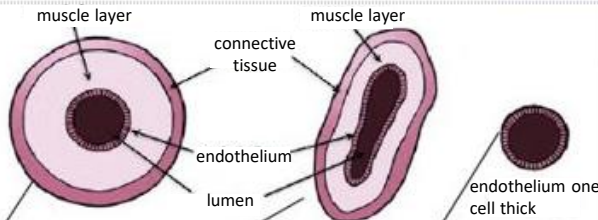


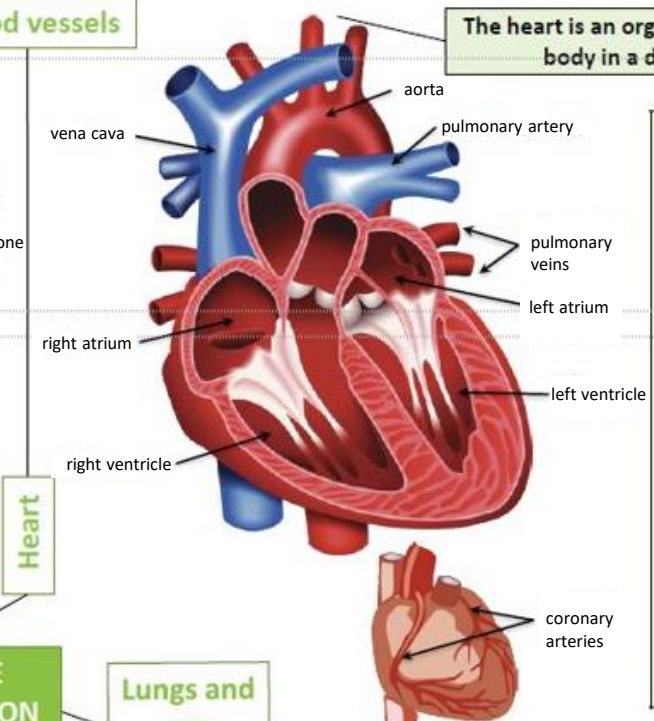
The heart and blood L11-15

Blood vessels

The heart is an organ that pumps blood around the body in a double circulatory system



Artery	Vein	Capillary
Carry blood away from the heart	Carry blood to the heart	Connects arteries and veins
Thick muscular walls, small lumen, carry blood under high pressure, carry oxygenated blood (except for the pulmonary artery).	Thin walls, large lumen, carry blood under low pressure, have valves to stop flow in the wrong direction, carry deoxygenated blood (except for the pulmonary vein).	One cell thick to allow diffusion, Carry blood under very low pressure.



Different structure in the heart have different functions		
Right ventricle	Pumps blood to the lungs where gas exchange takes place.	
Left ventricle	Pumps blood around the rest of the body.	
Pacemaker (in the right atrium)	Controls the natural resting heart rate. Artificial electrical pacemakers can be fitted to correct irregularities.	
Coronary arteries	Carry oxygenated blood to the cardiac muscle.	
Heart valves	Prevent blood in the heart from flowing in the wrong direction.	

Heart

Blood

Blood is a tissue consisting of plasma, in which blood cells, white blood cells and platelets are suspended

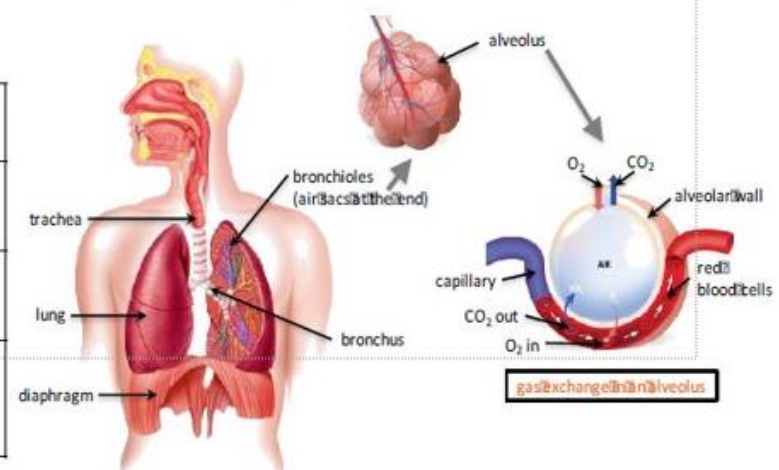
AQA GCSE ORGANISATION part 2

Lungs and gas exchange

The heart pumps low oxygen/high carbon dioxide blood to the lungs

Plasma (55%)	Pale yellow fluid	Transports CO ₂ , hormones and waste.
Red blood cells (45%)	Carries oxygen	Large surface area, no nucleus, full of haemoglobin.
White blood cells (<1%)	Part of the immune system	Some produce antibodies, others surround and engulf pathogens.
Platelets (<1%)	Fragments of cells	Clump together to form blood clots.

Trachea	Carries air to/from the lungs	Rings of cartilage protect the airway.
Bronchioles	Carries air to/from the air sacs (alveoli)	Splits into multiple pathways to reach all the air sacs.
Alveoli	Site of gas exchange in the lungs	Maximises surface area for efficient gas exchange.
Capillaries	Allows gas exchange between into/out of blood	Oxygen diffuses into the blood and carbon dioxide diffuses out.





Heart failure can be treated with a transplant or artificial heart.

Faulty heart valves	Coronary heart disease (CHD)	Disease
Valves don't open or close properly	A build up for fatty substances in the coronary arteries (atherosclerosis)	Cause
Blood can leak or flow in the wrong direction	Oxygenated blood cannot get to the cardiac muscle	Effect
Biological valve transplant or a mechanical valve can be inserted	Stents: inserted into the blocked artery to open it up. Statins: lower harmful cholesterol	Treatment