

# CIE Biology GCSE

## 9 - Transport in Animals

### Flashcards

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# What is the circulatory system?



# What is the circulatory system?

A series of blood vessels with a pump and valves to prevent backflow



What type of circulatory system do fish  
have?  
(Higher/Supplement)



What type of circulatory system do fish have?  
(Higher/Supplement)

Single circulatory system



# Describe a single circulatory system (Higher/Supplement)



Describe a single circulatory system  
(Higher/Supplement)

The blood only passes through the heart  
once for each full circuit of the body

Heart → Gills → Body



What type of circulatory system do mammals have?  
(Higher/Supplement)





What type of circulatory system do mammals have?  
(Higher/Supplement)

Double circulatory systems



# Describe a double circulatory system (Higher/Supplement)



Describe a double circulatory system  
(Higher/Supplement)

The blood passes through the heart  
twice per circuit

Heart → Body → Heart → Lungs



What is the advantage of a double  
circulatory system?  
(Higher/Supplement)

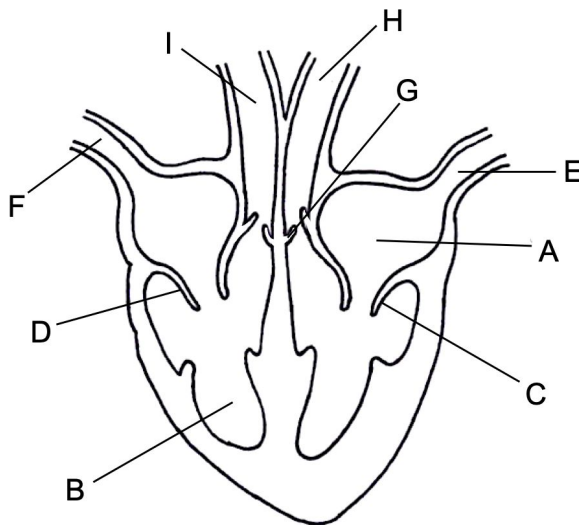


What is the advantage of a double circulatory system? **(Higher/Supplement)**

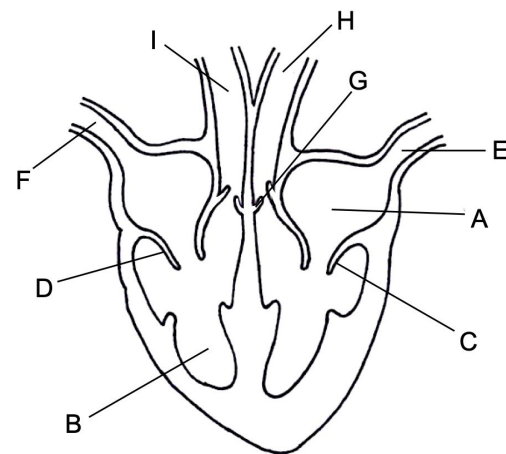
Double circulatory systems can maintain a higher blood pressure which increases the speed at which the blood flows so nutrients can be delivered and waste can be removed more quickly



# Identify the structures of the heart labelled in the diagram below



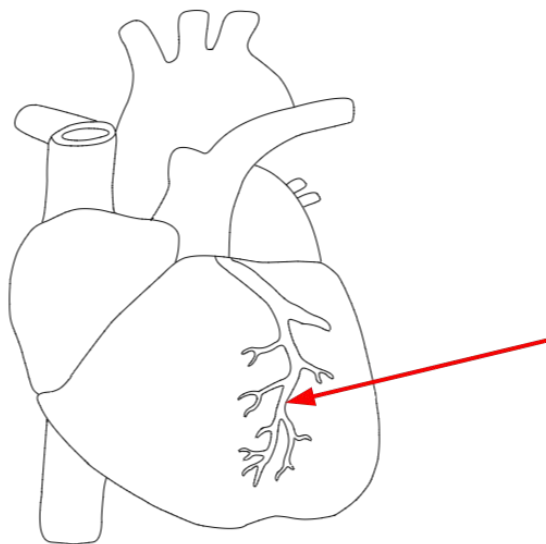
Identify the structures of the heart labelled in the diagram below



<b>A</b>	left atrium	<b>F</b>	vena cava
<b>B</b>	right ventricle	<b>G</b>	semi-lunar valve
<b>C</b>	bicuspid valve	<b>H</b>	aorta
<b>D</b>	tricuspid valve	<b>I</b>	pulmonary artery
<b>E</b>	pulmonary vein		



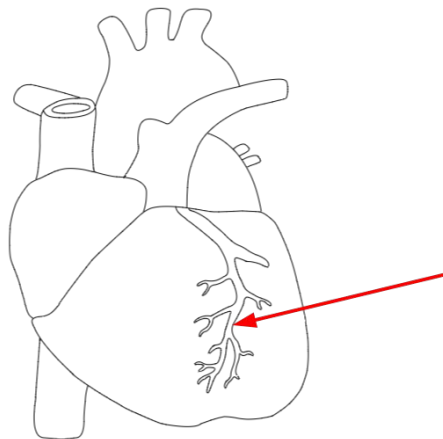
# Name this artery and state its purpose





# Name this artery and state its purpose

It is the coronary artery and it supplies the heart muscle with blood



What is the name of the wall that separates the right and left sides of the heart?



What is the name of the wall that separates the right and left sides of the heart?

The septum



What type of muscle is the heart made of?



What type of muscle is the heart made of?

Cardiac muscle



Why is the wall of the left ventricle  
thicker than the wall of the right  
ventricle?  
(Higher/Supplement)



Why is the wall of the left ventricle thicker than the wall of the right ventricle? (Higher/Supplement)

The left ventricle has to pump blood a further distance around the whole body so the blood needs to be under a higher pressure



Why do the ventricles have thicker walls than the atria?  
(Higher/Supplement)





## Why do the ventricles have thicker walls than the atria? (Higher/Supplement)

The ventricles need to pump blood at a higher pressure to pump it out and round the body and to the lungs whereas the atria only need to pump the blood into the ventricles (a shorter distance) so do not need to generate as high of a pressure



What is the difference in function between veins, arteries and capillaries?



What is the difference in function between veins, arteries and capillaries?

**Arteries** carry blood **away** from the heart

**Veins** carry blood towards (**into**) the heart

**Capillaries** flow close to tissues for exchange



# Why is the septum important? (Higher/Supplement)

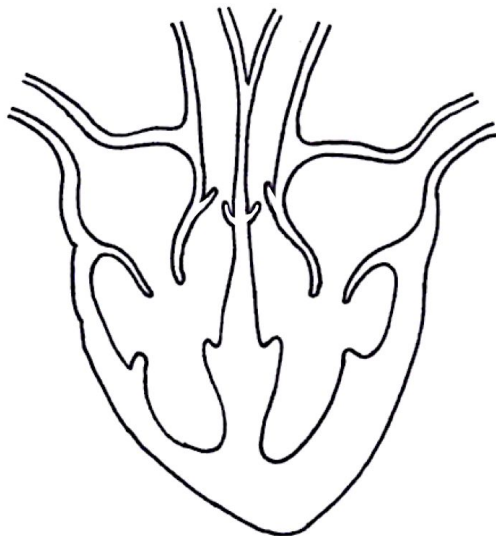


Why is the septum important? (Higher/Supplement)

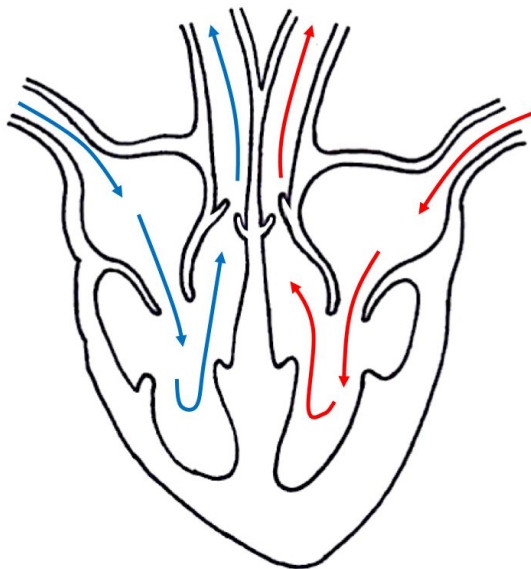
It separates the oxygenated blood from the deoxygenated blood



# Show the direction of blood flow through the heart on the diagram below



Show the direction of blood flow through the heart on the diagram below



Describe the blood flow through the right side of the heart





## Describe the blood flow through the right side of the heart

- Deoxygenated blood flows into the right atrium from the vena cava
- This blood passes through the right AV valve into the right ventricle
- The blood is then pumped out of the heart to the lungs through the right SL valve and into the pulmonary artery



Describe the blood flow through the left side of the heart



## Describe the blood flow through the left side of the heart

- Blood enters into the left atrium from the pulmonary vein
- The blood is then pumped through the left AV valve into the left ventricle
- The blood is then pumped out through the left SL valve and into the aorta

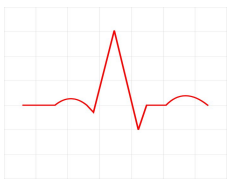


Give 3 ways of measuring the activity of the heart



Give 3 ways of measuring the activity of the heart

ECG



Pulse rate

Listening to the sounds of the valves



State the effect of physical exercise on heart rate



State the effect of physical exercise on heart rate

Physical exercise increases heart rate



Explain the effect of physical exercise on  
heart rate  
(Higher/Supplement)





# Explain the effect of physical exercise on heart rate (Higher/Supplement)

- Muscular contraction requires energy from respiration
- More respiration requires more oxygen and more carbon dioxide
- Heart pumps faster to provide more oxygen to the muscles for respiration and to remove the carbon dioxide quickly



# What is coronary heart disease (CHD)?



What is coronary heart disease (CHD)?

When the artery providing the heart tissue with blood (the coronary artery) becomes blocked



Give 6 common risk factors for coronary heart disease



# Give 6 common risk factors for coronary heart disease

- Smoking
- Poor diet
- Lack of exercise
- Stress
- Genetic predisposition
- Gender



How can coronary heart disease be prevented by altering lifestyle choices?  
(Higher/Supplement)



## How can coronary heart disease be prevented by altering lifestyle choices? (Higher/Supplement)

- Exercise regularly
- Control diet:
  - Eat less saturated fats
  - Eat more fruit and vegetables
  - Eat less salty foods
  - Stop smoking/drinking



What treatment options are available for  
people with cardiovascular disease?  
(Higher/Supplement)





What treatment options are available for people with cardiovascular disease? (Higher/Supplement)

Drug treatment

Surgery



What drugs are used to treat  
cardiovascular disease?  
(Higher/Supplement)



What drugs are used to treat cardiovascular disease? (Higher/Supplement)

Aspirin (prevents blood clots from forming that can block the blood vessels)



What surgical procedures can be used to  
treat cardiovascular disease?  
(Higher/Supplement)



What surgical procedures can be used to treat cardiovascular disease? (Higher/Supplement)

- Stents
- Angioplasty
- By-pass



# What do stents do? (Higher/Supplement)



What do stents do? (Higher/Supplement)

They are small tubes that are inserted into blood vessels that help to keep them open



# What is angioplasty? (Higher/Supplement)





What is angioplasty? (Higher/Supplement)

The temporary insertion of a small balloon into an artery to keep it open



# What is a coronary by-pass? (Higher/Supplement)



What is a coronary by-pass? (Higher/Supplement)

A surgical procedure used to divert the flow of blood around a blocked artery

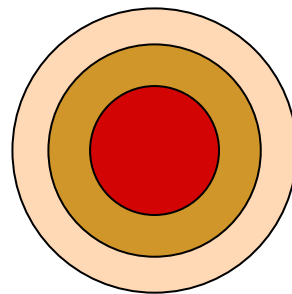


# Describe the structure of arteries



## Describe the structure of arteries

They have thick walls made of muscle and elastic tissue and a small lumen to transport blood under high pressure

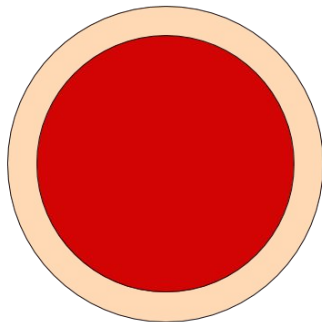


# Describe the structure of capillaries



## Describe the structure of capillaries

They have thin walls about one cell thick to allow for the easy exchange of substances at the tissues.



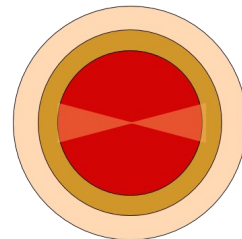
# Describe the structure of veins





## Describe the structure of veins

Veins have less muscle and elastic tissue than arteries and they have a larger lumen as the blood is at lower pressure, they also have valves to prevent backflow

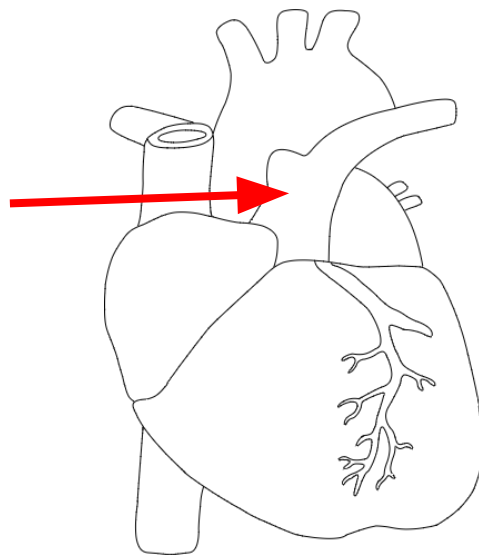


Name the artery that supplies the lungs  
with blood



Name the artery that supplies the lungs with blood

The pulmonary artery



Name the vein that takes blood away  
from the lungs



Name the vein that takes blood away from the lungs

The pulmonary vein

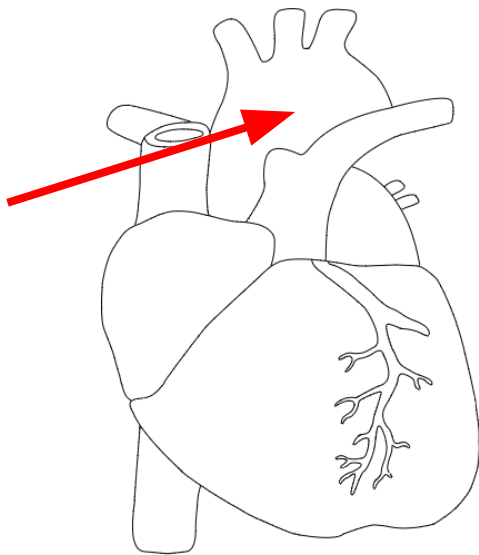


Name the main artery that takes blood away from the heart



Name the main artery that takes blood away from the heart

The aorta



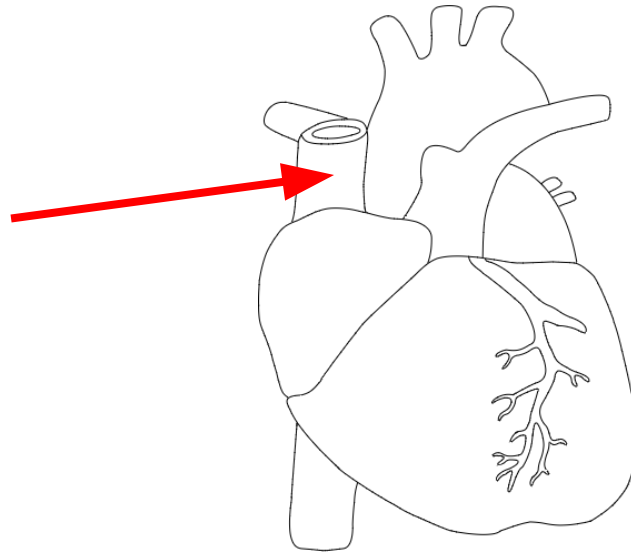
Name the main vein that takes blood to the heart





Name the main vein that takes blood away from the heart

The vena cava



Name the main artery that takes blood to the kidneys



Name the main artery that takes blood to the kidneys

The renal artery



Name the main vein that takes blood away from the kidneys



Name the main vein that takes blood away from the kidneys

The renal vein



# What is the function of arterioles? (Higher/Supplement)



What is the function of arterioles?

(Higher/Supplement)

They are vessels that are narrower than arteries and connect them to capillaries



# What is the function of venules? (Higher/Supplement)





What is the function of venules?

(Higher/Supplement)

They are vessels that are wider than capillaries and connect them to veins



# What are shunt vessels? (Higher/Supplement)



## What are shunt vessels? (Higher/Supplement)

Small blood vessels that can change size are used to control the amount of blood that flows to a certain area



# What is the lymphatic system? (Higher/Supplement)



## What is the lymphatic system? (Higher/Supplement)

A system of vessels and lymph nodes that are involved in returning tissue fluid to the blood and in immunity



# Name 4 components of the blood

- Red blood cells
- White blood cells
- Platelets
- Plasma

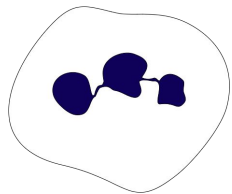


Name 2 types of white blood cell  
(Higher/Supplement)

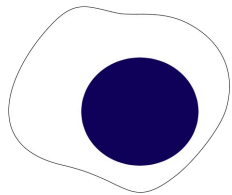


Name 2 types of white blood cell  
(Higher/Supplement)

Phagocyte

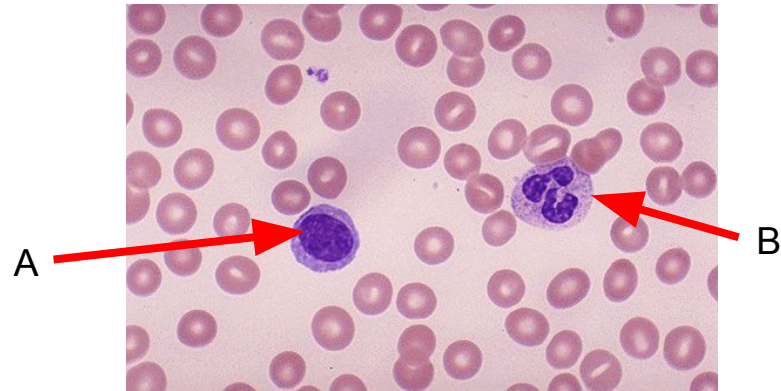


Lymphocyte





# Identify cell A and cell B



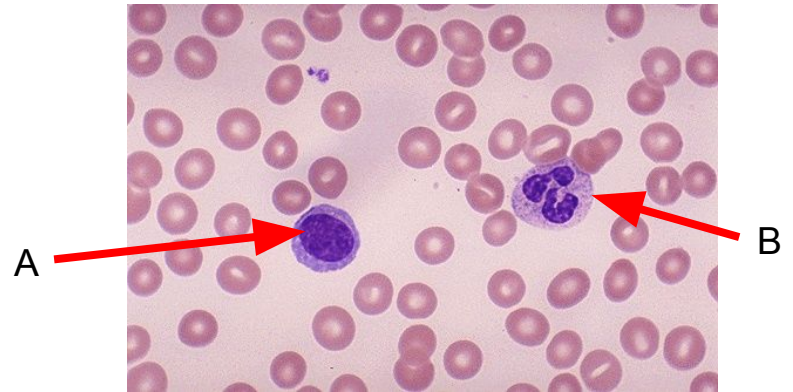
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Identify cell A and cell B

A - Lymphocyte

B - Phagocyte



The University of Utah Eccles Health Sciences Library Internet  
Pathology Laboratory



# What is the function of platelets?



What is the function of platelets?

They are used in forming blood clots



# What is the purpose of blood clotting? (Higher/Supplement)



# What is the purpose of blood clotting?

(Higher/Supplement)

- Preventing excess blood loss
- Preventing the entry of pathogens through wounds



# Describe the process of blood clotting (Higher/Supplement)



## Describe the process of blood clotting (Higher/Supplement)

Blood clotting is a process used to stop bleeding from damaged blood vessels by creating a mesh by converting fibrinogen to fibrin





# What is the function of red blood cells?



What is the function of red blood cells?

Transporting oxygen to tissues using  
haemoglobin



State 2 functions of white blood cells



## State 2 functions of white blood cells

- Producing specific antibodies
- Phagocytosis (engulfing pathogens)



# What is the function of plasma?



What is the function of plasma?

Transporting substances like ions, soluble nutrients, hormones and carbon dioxide in the blood



# Describe the transfer of nutrients at capillaries

## (Higher/Supplement)



Describe the transfer of nutrients at capillaries  
(Higher/Supplement)

Transporting substances like ions,  
soluble nutrients, hormones and carbon  
dioxide in the blood

