GCSE Review 1 – The Heart & Cardiovascular System

Basic Revision Aims:

1.1. The structure of the human heart and pulmonary & systemic circulations.
1.2. The structure of blood vessels (arteries, veins & capillaries) and how they relate to their functions.
1.3. The components of blood and how they relate to its function.

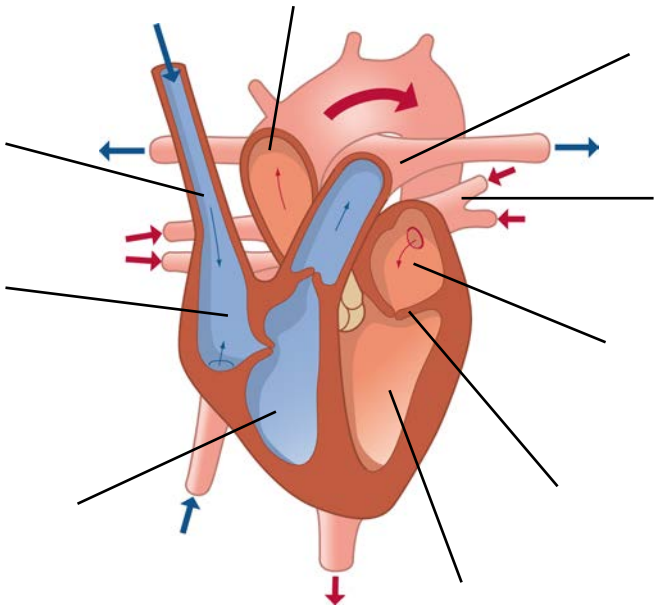
Resources

Use the GCSE Bitesize sections below and your GCSE textbook, class notes and GCSE revision guide.
https://www.bbc.co.uk/bitesize/guides/zqnsrwx/revision/1 (AQA)
https://www.bbc.co.uk/bitesize/guides/zsw3jty/revision/1 (Edexcel)

1.1.1. The Human Heart

The heart has four chambers: two …… and two ……

Label the diagram below of the human heart:



Why do the labels for the right and left sides of the heart appear on the wrong sides?

……

In the two examples below, describe the sequence of chambers, vessels and valves that the blood passes through until it leaves the heart:

Deoxygenated blood enters the heart through the vena cava from the body …

……

……

Oxygenated blood enters the heart through the pulmonary vein from the lungs …

……

……

What prevents the blood from travelling in the wrong direction in the heart? …….

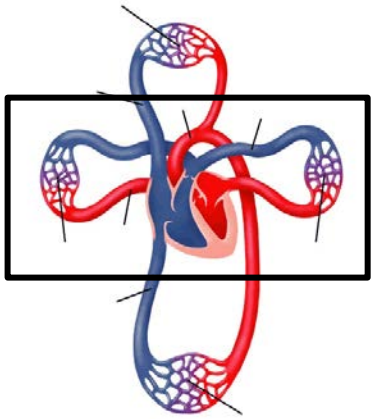
1.1.2. Circulatory Systems

Humans have a …… circulatory system that consists of two circuits.

Label the main structures in each circulatory system on the diagrams (you may need to extend some lines – sorry)

The Pulmonary Circulation

The pulmonary circulation transports …… blood to the lungs.



Describe what happens in the lungs in terms of gas exchange.

……

……

……

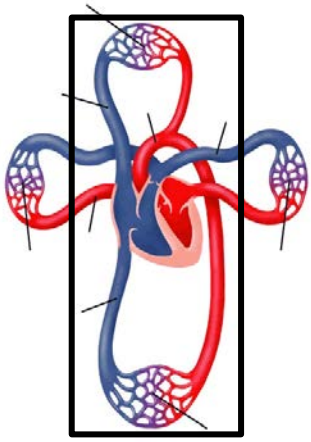
What is the level of pressure in this circulatory system? ……

Why?

1. ……

2. ……

The Systemic Circulation



What is transported **to** the body cells?

……

What is transported **away from** the body cells?

……

Why is the systemic circulation under high pressure?

……

How many times does the blood pass through the heart on one complete circulation around the body?

……

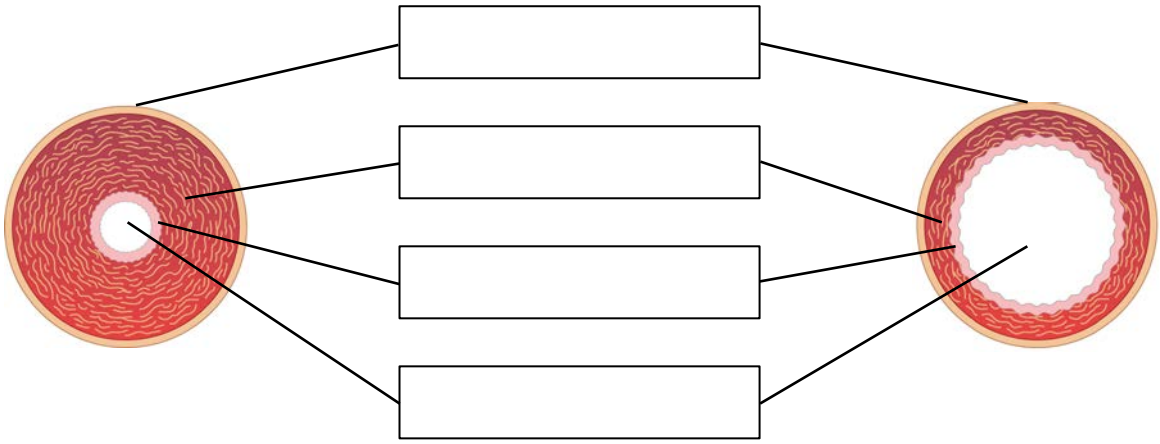
This is also why humans, and some other animals like mammals, are known to have a double circulatory system.

1.2. Blood Vessels

Blood is pumped from the heart in the ……

Blood is returned to the heart in the ……

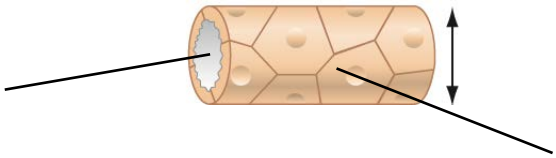
On the diagram below identify each vessel and label the structural features:



Complete the table below to compare the structure and function of arteries and veins:

Feature	**Arteries**	**Veins**
Is the blood carried **to** or **away** from the heart?		
Type of blood that is carried (oxygenated or deoxygenated)		
What is the pressure of the blood?		
Thickness of the walls		
Connective tissue content		
Size of the lumen		

On the diagram below identify the main structural features of a capillary:



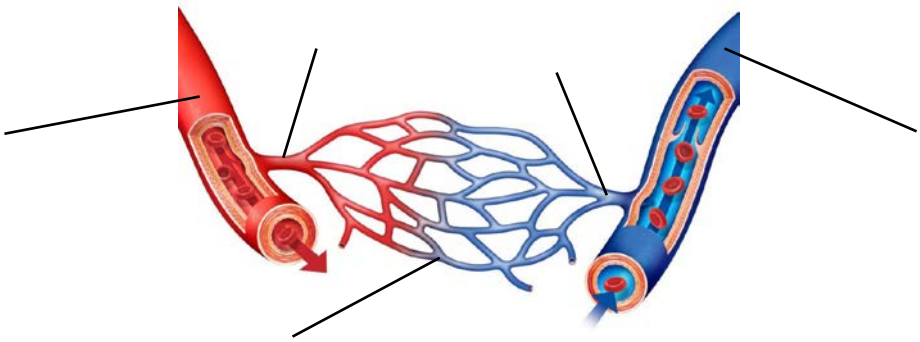
What is a key feature about the capillary vessel wall? ……

What is the role of the capillaries? ……

……

Label the diagram below to show the relationship between arteries, veins and capillaries. There are two other types of vessel that you should also be able to label.

Also, add an arrow to show the direction of blood flow through the capillaries.



Molecules can move across the walls of capillaries by ……

Describe the exchange between the blood, the tissue fluid and cells for the following molecules:

Oxygen ……

……

……

Carbon dioxide ……

……

……

Glucose ……

……

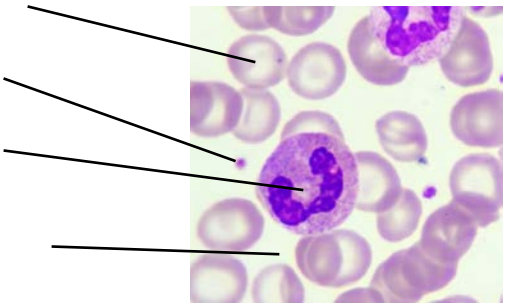
……

1.3. The Blood

There are 4 main components of blood:

- Plasma
- Red blood cells (erythrocytes)
- White blood cells
- Platelets

Identify them in the picture on the right.



Complete the table below to describe their structures / adaptations and their detailed functions:

Component	**Detailed Function(s)**
Plasma	
Red blood cells	
White blood cells	
Platelets	

Describe the 5 adaptations of red blood cells that enable them to carry out their function:

-
-
-
-
-

Well done! You have completed your first GCSE review pack to help you prepare for the first part of the A-level Biology course! In order to feel even more prepared, complete the rest of the packs! So, next is GCSE Review 2 – Cardiovascular Disease.