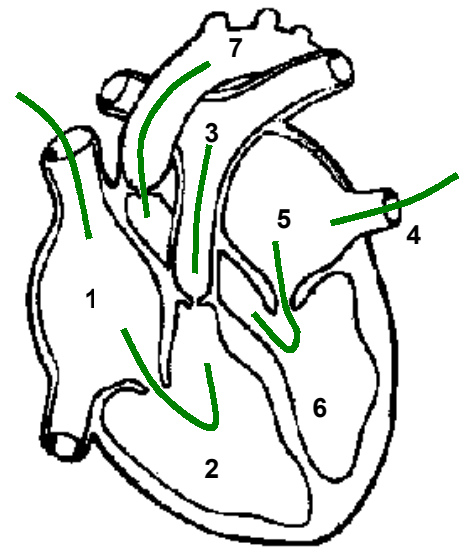


YEAR 12 BIOLOGY: HEART STRUCTRE

Name _____

1. On the diagram below: i) put heads on the arrows to show the direction of blood flow ii) name the numbered parts of the heart iii) colour the right side of the heart blue and the left side red. [4marks]

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. _____



2. Which chambers of the heart have the thicker walls?

[1mark]

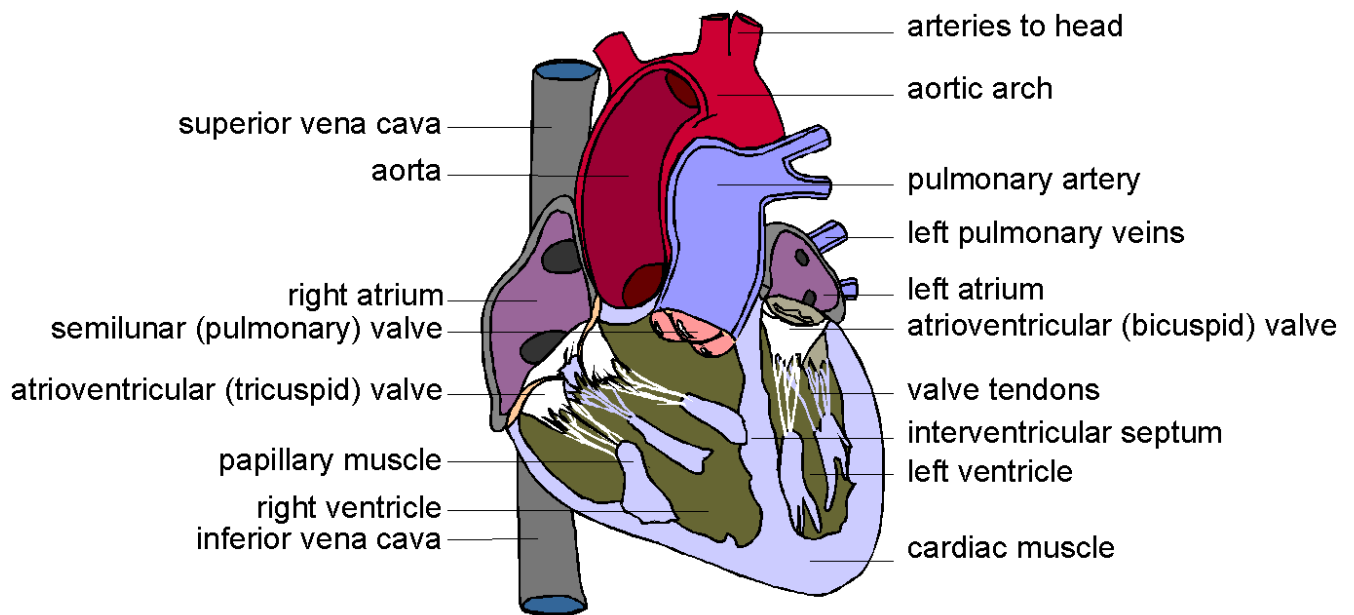
3. Relate the thickness of the chambers to their functions. [2marks]

4. What is the function of the valves? Label the valves on the diagram above [2 marks]

5. What is the type of muscle that makes up the walls of the heart? Why is it so special, and how does it maintain a constant blood supply? [3 marks]

6. Trace the pathway a drop of blood would take from the time it leaves the aorta, to the time it returns to the left ventricle ready to leave the aorta again, describing the chambers and vessels [4marks]

The Heart



The human heart has four chambers: two thin-walled atria on top, which receive blood, and two thick-walled ventricles underneath, which pump blood. Veins carry blood into the atria and arteries carry blood away from the ventricles. Between the atria and the ventricles are atrioventricular valves, which prevent back-flow of blood from the ventricles to the atria. The left valve has two flaps and is called the bicuspid (or mitral) valve, while the right valve has 3 flaps and is called the tricuspid valve. The valves are held in place by valve tendons (“heart strings”) attached to papillary muscles, which contract at the same time as the ventricles, holding the valves closed. There are also two semi-lunar valves in the arteries (the only examples of valves in arteries) called the pulmonary and aortic valves.

The left and right halves of the heart are separated by the inter-ventricular septum. The walls of the right ventricle are 3 times thinner than on the left and it produces less force and pressure in the blood. This is partly because the blood has less far to go (the lungs are right next to the heart), but also because a lower pressure in the pulmonary circulation means that less fluid passes from the capillaries to the alveoli.

The heart is made of cardiac muscle, composed of cells called myocytes. When myocytes receive an electrical impulse they contract together, causing a heartbeat. Since myocytes are constantly active, they have a great requirement for oxygen, so are fed by numerous capillaries from two coronary arteries. These arise from the aorta as it leaves the heart. Blood returns via the coronary sinus, which drains directly into the right atrium.