

The Heart - Key

- 1 What is the name of the central region of the thorax? The central region of the thorax is the mediastinum.
- 2 About how much of the heart is to the left of the mid-sternal line? Two-thirds of the heart is to the left.
- 3 Where is the location of the apex of the heart? The apex of the heart is located to the left at the fifth intercostal space.

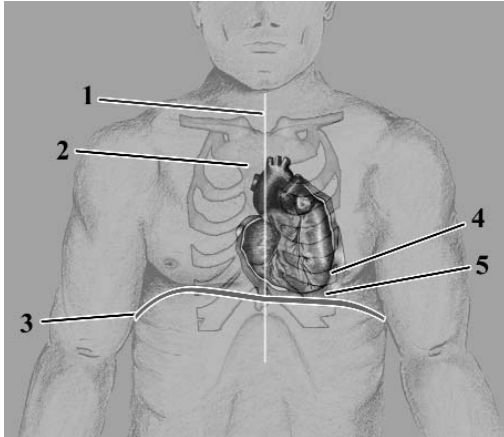


Figure 23.1

- 4 In reference to **Figure 23.1**, identify #1 - #5.
 1 Mid-sternal line 4 5th rib
 2 Sternum 5 Fifth intercostal space
 3 Diaphragm

COVERINGS OF THE HEART

- 5 What is the name of the covering of the heart? The heart is covered by the pericardium, or pericardial sac.
- 6 What is the function of the fibrous layer of the pericardium? The fibrous pericardium functions to protect the heart and to anchor the heart inferiorly to the pericardium and superiorly to the heart's vessels.
- 7 What is the name of the inner layer of the pericardium? The inner layer of the pericardium is a serous membrane called the parietal layer of the pericardium.
- 8 What is the name of the serous membrane on the surface of the heart? The surface of the heart called the visceral layer, or epicardium.
- 9 What forms the pericardial cavity? The two portions of the serous membrane, the visceral and parietal layers form the pericardial cavity.
- 10 What is the function of the serous membrane? The serous membrane produces and maintains the serous fluid in the pericardial cavity.

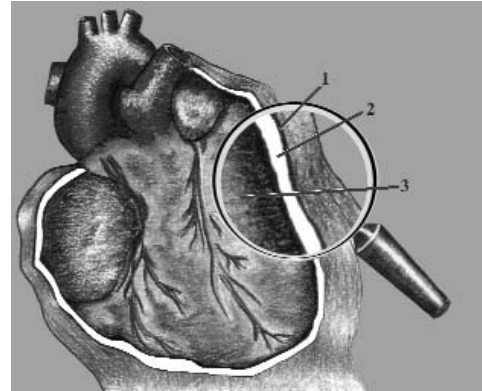


Figure 23.2

- 11 In reference to **Figure 23.2**, identify #1 - #3.
 1 Pericardium 3 Epicardium
 2 Pericardial cavity

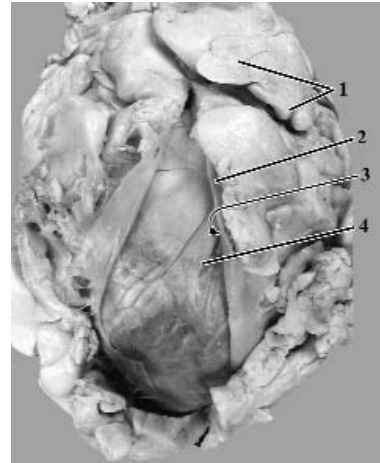


Figure 23.3

- 12 In reference to **Figure 23.3**, identify #1 - #4.
 1 Adipose 3 Pericardial cavity
 2 Pericardium 4 Epicardium

GROSS ANATOMY OF THE HEART

- 13 What is the name of the upper chambers of the heart? The two upper chambers are called atria.
- 14 What is the name of the lower chambers of the heart? The two lower chambers are called ventricles.
- 15 What divides the right and the left chambers of the heart? A longitudinal partition, which consists of the interatrial and interventricular septa, divides the heart into right and left sides.
- 16 What is the function of the right side of the heart? The right side is responsible for receiving blood low in oxygen from the body (systemic circuit) and pumping it to the lungs (pulmonary circuit) where oxygenation occurs.
- 17 What is the function of the left side of the heart? The left side is responsible for receiving oxygenated blood from the lungs (pulmonary circuit) and pumping it to the body (systemic circuit).
- 18 What is the name of the muscle of the heart? The muscle of the heart is called the myocardium.
- 19 What is an auricle of the heart? The myocardium of each atrium is called an auricle.

20 Which side of the heart is thicker? Left Why? The increased thickness of the left ventricle is due to its increased work load of pushing blood through the systemic circuit.

Valves of the Heart

- 21 Where are the atrioventricular valves located? The atrioventricular valves are located between the atria and ventricles.
- 22 What are the names of the right and the left atrioventricular valves? The AV valves are the tricuspid on the right side and the mitral (or bicuspid) on the left side.
- 23 What is the function of the atrioventricular valves? The atrioventricular valves prevent blood return back into the atria.
- 24 What is the name of the exiting vessel from the right ventricle? The pulmonary trunk leaves the right ventricle.
- 25 What is the name of the exiting vessel from the left ventricle? The aorta leaves the left ventricle.
- 26 What is the name of the valve located at the base of each exiting vessel? Valves, the pulmonary valve and aortic valve (or semilunar valves), are located at the bases of the pulmonary trunk and aorta, respectively.
- 27 What is the function of the aortic and pulmonary valves? The pulmonary and aortic valves (semilunar valves) prevent the return of blood into the ventricles.

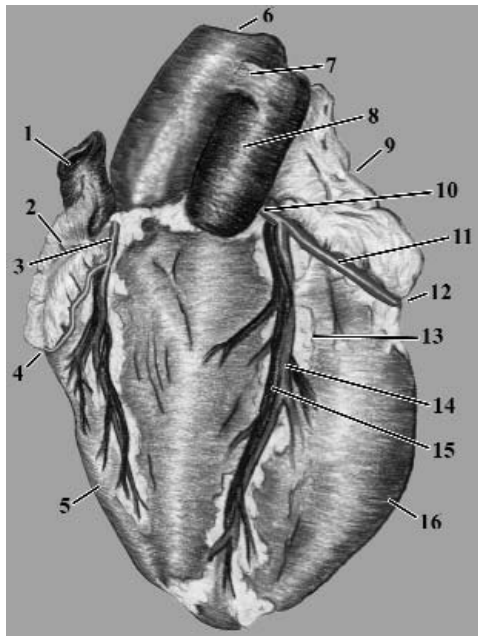


Figure 23.4

- 28 In reference to **Figure 23.4**, identify #1 - #16.
- | | |
|-------------------------|-------------------------------------|
| 1 Superior vena cava | 9 Left atrium |
| 2 Right atrium | 10 Left coronary artery |
| 3 Right coronary artery | 11 Circumflex artery |
| 4 Right AV groove | 12 Left AV groove |
| 5 Right ventricle | 13 Anterior interventricular sulcus |
| 6 Aorta | 14 Anterior interventricular artery |
| 7 Ligamentum arteriosum | 15 Great cardiac vein |
| 8 Pulmonary trunk | 16 Left ventricle |

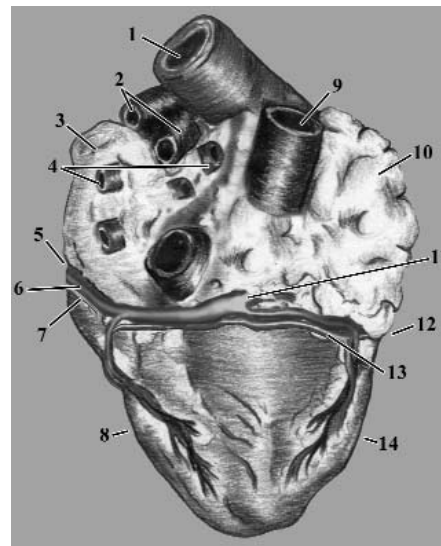


Figure 23.5

- 29 In reference to **Figure 23.5**, identify #1 - #14.
- | | |
|----------------------|--------------------------|
| 1 Aorta | 8 Left ventricle |
| 2 Pulmonary arteries | 9 Superior vena cava |
| 3 Left atrium | 10 Right atrium |
| 4 Pulmonary veins | 11 Coronary sinus |
| 5 Left AV groove | 12 Right AV groove |
| 6 Great cardiac vein | 13 Right coronary artery |
| 7 Circumflex artery | 14 Right ventricle |

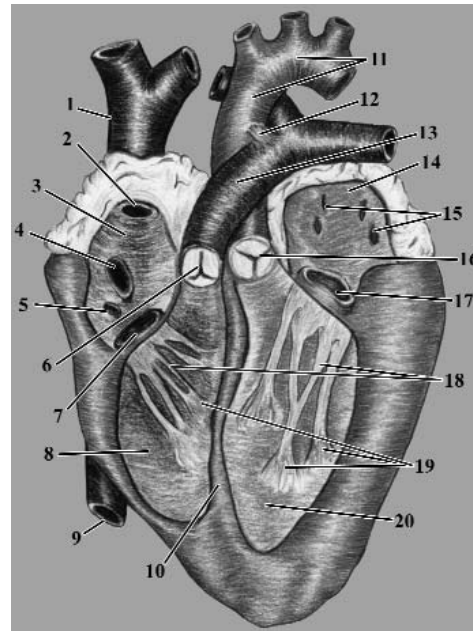


Figure 23.6

- 30 In reference to **Figure 23.6**, identify #1 - #20.
- | | |
|------------------------------|--------------------------|
| 1 Superior vena cava | 11 Aorta |
| 2 Opening-superior vena cava | 12 Ligamentum arteriosum |
| 3 Right atrium | 13 Pulmonary trunk |
| 4 Opening-inferior vena cava | 14 Left atrium |
| 5 Opening-coronary sinus | 15 Pulmonary veins |
| 6 Pulmonary valve | 16 Aortic valve |
| 7 Tricuspid valve | 17 Mitral valve |
| 8 Right ventricle | 18 Chordae tendineae |
| 9 Inferior vena cava | 19 Papillary muscles |
| 10 Interventricular septum | 20 Left ventricle |

- 31 The right atrium receives blood from the general body circulation (systemic circulation) and from the heart muscle itself (coronary circulation).
- 32 The superior vena cava returns blood from the body regions superior to the heart.
- 33 The inferior vena cava returns blood from the body regions inferior to the heart.
- 34 The coronary sinus returns blood from the muscle of the heart.
- 35 What is the function of the tricuspid valve? The tricuspid valve prevents the flow of blood from the right ventricle back into the right atrium.
- 36 What is the function of the right ventricle? The right ventricle functions to eject blood through the pulmonary (semilunar) valve into the pulmonary trunk.
- 37 What is the function of the pulmonary valve? The closure of the valve during ventricular relaxation prevents the return of blood back into the right ventricle.
- 38 What is the function of the pulmonary trunk? The pulmonary trunk routes blood from the right ventricle toward the lungs for gas exchange.
- 39 The left atrium receives blood from the pulmonary veins.
- 40 The pulmonary veins carry oxygen-rich blood from the lungs to the left atrium.
- 41 What is the function of the mitral (bicuspid) valve? The mitral valve prevents the flow of blood from the ventricle back into the atrium.
- 42 What is the function of the left ventricle? The left ventricle functions to eject blood through the aortic (semilunar) valve into the aorta.
- 43 What is the function of the aortic (semilunar) valve? The closure of the valve during ventricular relaxation prevents the return of blood back into the ventricle.
- 44 What vessel exits the heart to feed the systemic circuit? The aorta is the artery that routes oxygen rich blood from the left ventricle into systemic circulation
- 45 What is the ligamentum arteriosum? The ligamentum arteriosum is the remnant of the ductus arteriosus.
- 46 What are the chordae tendineae? The chordae tendineae attach the cusps of the atrioventricular valves (tricuspid and bicuspid) to the papillary muscles.
- 47 What are the papillary muscles? The papillary muscles are extensions of the ventricular myocardium that attach to the chordae tendineae.

ROUTE OF BLOOD FLOW THROUGH THE HEART

Right Side of the Heart

- 48 Blood low in oxygen enters the right atrium from the superior and inferior cavae and the coronary sinus.
- 49 Blood leaves the right atrium by way of the tricuspid valve and enters the right ventricle.
- 50 Blood leaves the right ventricle by way of the pulmonary valve and enters the pulmonary trunk.
- 51 The pulmonary trunk directs blood into the pulmonary circuit of the lungs for gas exchange.

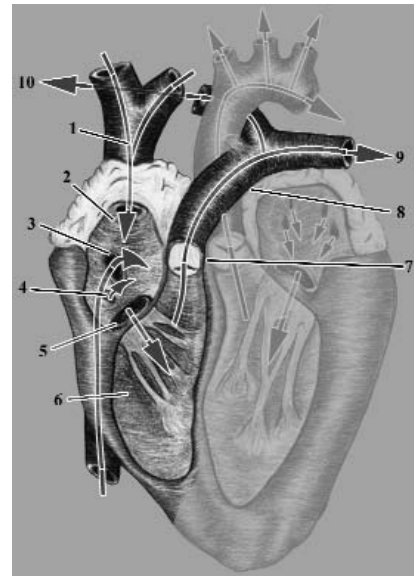


Figure 23.7

- 52 In reference to **Figure 23.7**, identify #1 - #10.
- | | |
|-----------------------------|----------------------------------|
| 1 <u>Superior vena cava</u> | 6 <u>Right ventricle</u> |
| 2 <u>Right atrium</u> | 7 <u>Pulmonary valve</u> |
| 3 <u>Inferior vena cava</u> | 8 <u>Pulmonary trunk</u> |
| 4 <u>Coronary sinus</u> | 9 <u>Left pulmonary artery</u> |
| 5 <u>Tricuspid valve</u> | 10 <u>Right pulmonary artery</u> |
- Left Side of the Heart**
- 53 Oxygen rich blood enters the left atrium from the right and left pulmonary veins.
- 54 Blood leaves the left atrium by way of the mitral, or bicuspid valve and enters the left ventricle.
- 55 Blood leaves the left ventricle by way of the aortic valve and enters the aorta.
- 56 The aorta directs blood into the systemic circuit of the body.

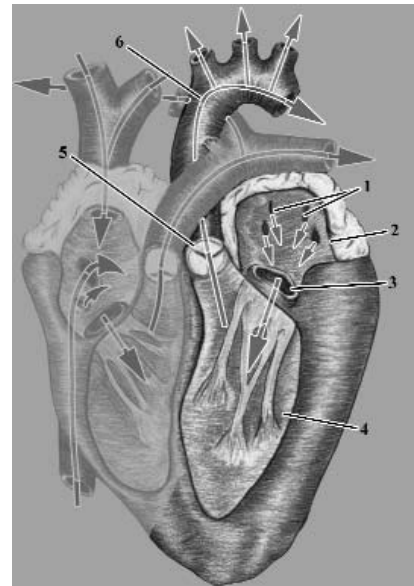


Figure 23.8

- 57 In reference to **Figure 23.8**, identify #1 - #6.
- | | |
|----------------------------------|-------------------------|
| 1 <u>Pulmonary veins</u> | 4 <u>Left ventricle</u> |
| 2 <u>Left atrium</u> | 5 <u>Aortic valve</u> |
| 3 <u>Mitral (bicuspid) valve</u> | 6 <u>Aorta</u> |

CORONARY CIRCULATION

Arteries

- 58 Oxygen rich blood leaves the aorta and enters the two coronary arteries, the right and left coronary arteries.
- 59 What are the aortic sinuses? The aortic sinuses are small dilations located opposite each cusp of the aortic (semilunar) valve.
- 60 Which sinuses give rise to the coronary arteries? The right anterior and the left anterior, give rise to the right and left coronary arteries, respectively.

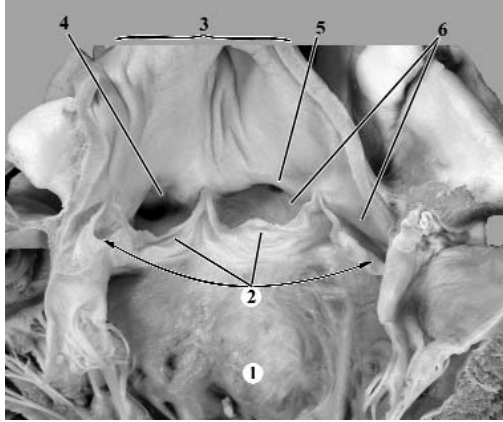


Figure 23.9

- 61 In reference to **Figure 23.9**, identify #1 - #6.
 1 Left ventricle 4 Right coronary artery
 2 Aortic valve 5 Left coronary artery
 3 Aorta 6 Aortic sinuses

Right Coronary Artery

- 62 The right coronary artery follows the right atrioventricular sulcus to the posterior interventricular sulcus.
- 63 At the posterior interventricular sulcus, the right coronary artery continues as the posterior interventricular artery.
- 64 At the margin of the right ventricle, a branch called the right marginal artery is formed from the right coronary artery.

Left coronary artery

- 65 The left coronary artery branches into the circumflex artery and the anterior interventricular artery.

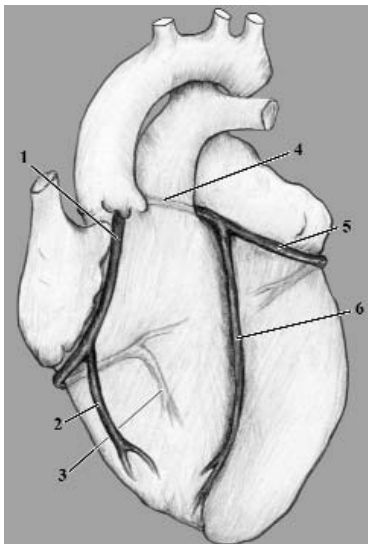


Figure 23.10

- 66 In reference to **Figure 23.10**, identify #1 - #6.
 1 Right coronary artery 4 Left coronary artery
 2 Marginal artery 5 Circumflex artery
 3 Post.interventricular artery 6 Ant. interventricular artery

Veins

- 67 The three major veins that enter the coronary sinus are the: the (1) great cardiac vein, the (2) middle cardiac vein, and the (3) small cardiac vein.
- 68 What is the coronary sinus? The coronary sinus is a large thin walled vein that receives venous return from the three major veins.

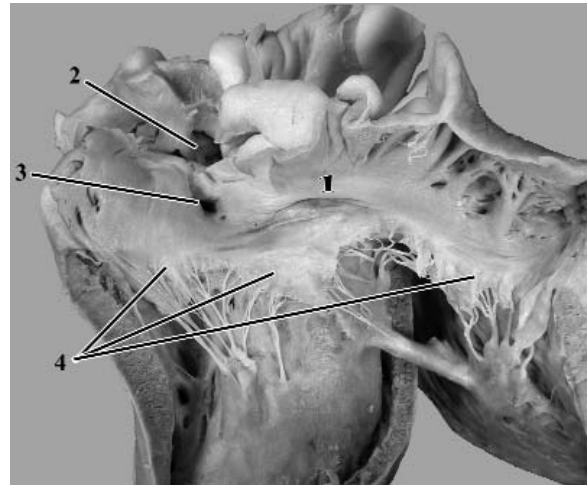


Figure 23.11

- 69 In reference to **Figure 23.11**, identify #1 - #4.
 1 Right atrium 3 Coronary sinus
 2 Inferior vena cava 4 Tricuspid valve

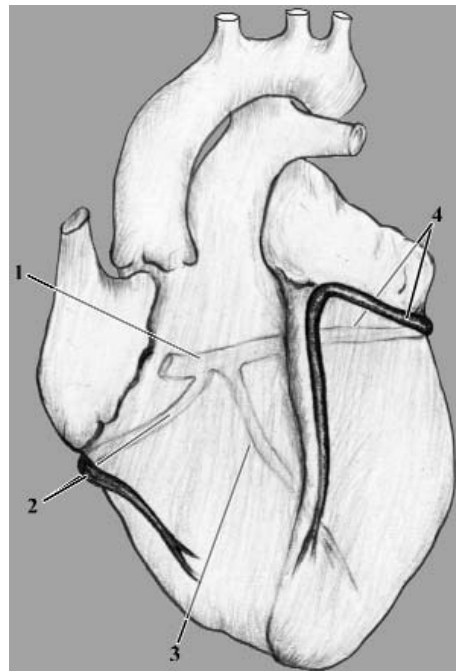


Figure 23.12

- 70 In reference to **Figure 23.12**, identify #1 - #4.
 1 Coronary sinus 3 Middle cardiac vein
 2 Small cardiac vein 4 Great cardiac vein