30.3 The Heart and Circulation

Functions of the Circulatory System

- transporting blood, gases, nutrients
- collecting waste materials
- maintaining body temperature
The circulatory system moves blood to all parts of the body.

- Circulatory system includes
  - heart
  - blood vessels
  - blood
KEY CONCEPT

The heart is a muscular pump that moves the blood through two pathways.
The heart is made up of cardiac muscle.

The heart has four chambers:
- 2 atria: right & left atrium (upper collecting chambers)
- 2 ventricles: right & left ventricles (lower pumping chambers)
• The heart is divided into two sides by the **septum**
  – Right side = pumps **deoxygenated** blood to lungs
  – Left side = pumps **oxygenated** blood to body

• One-way **valves** separate chambers and prevent backflow of blood.

**Diagram:**
- Pulmonary valve
- Aortic valve
- Right atrium
- Mitral valve
- Left atrium
- Septum
- Right ventricle
- Left ventricle
The heart pumps blood through two main pathways.

- Pulmonary circulation occurs between the heart and the lungs.
- Systemic circulation occurs between the heart and the rest of the body.
• Blood flows through the heart in a specific pathway.

Blood Flow through the Heart:  
http://www.youtube.com/watch?v=mH0QTWzU-xl
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Blood flow through the heart

Superior / Inferior Vena Cava
  (biggest veins)
  ➔ right atrium
  ➔ right ventricle
  ➔ pulmonary artery
  ➔ to the lungs (pick up O₂)
  ➔ pulmonary vein
  ➔ left atrium
  ➔ left ventricle
  ➔ aorta
    (biggest artery)
  ➔ to the rest of the body

Deoxygenated blood

Oxygenated blood
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The Circulation of the Blood

Red = blood rich in oxygen, low in carbon dioxide

Blue = blood low in oxygen, rich in carbon dioxide