Year: 10

Topic 1.4 CIRCULATORY SYSTEM IN HUMANS

Knowledge and Understanding to be developed

This topic covers the structure and function of the circulatory system and blood in humans.
A heart dissection could be used to develop the use of a range of apparatus and instruments.
There are a number of opportunities for the development of mathematical skills using data generated within this topic. This would include the effect of exercise on heart rate. The skills developed could include: interpreting tables and diagrams; translating information between graphical and numerical form; using expressions in decimal form; finding arithmetic means.

Key Terms to be learned this topic:

Phagocyte platelet cardiac muscle

Coronary vessels arteries veins

Aorta bicuspid and tricuspid valve atria

Ventricles semi-lunar valves pulmonary

Systemic capillaries

Cardiovascular disease

Learning Objectives and Outcomes: Students should be able to :

(a) the structure of a phagocyte and a red blood cell; be able to draw and label these cells

(b) the functions of the four main parts of the blood: red cells, platelets, plasma, white cells

(c) the fact that the heart is made of muscle which contracts to pump blood around the body

(d) the role of the coronary vessels in supplying the heart muscle with blood

(e) the flow of blood to the organs through arteries and return to the heart through veins

(f) the structure of the heart: the left and right atria and ventricles, tricuspid and bicuspid valves, semi-lunar valves, pulmonary artery, pulmonary vein, aorta and vena cava and be able to label these on a diagram

(g) the passage of blood through the heart including the functions of the valves in preventing backflow of blood

(h) a double circulatory system: involving one system for the lungs – pulmonary and one for the other organs of the body – systemic

(i) the fact that in the organs blood flows through very small blood vessels called capillaries; substances needed by cells pass/diffuse out of the blood to the tissues, and substances produced by the cells pass/diffuse into the blood, through the walls of the capillaries; the thin walls of the capillaries are an advantage for diffusion; capillaries form extensive networks so that every cell is near to a capillary carrying blood

(j) risk factors for cardiovascular disease and the effects of cardiovascular disease