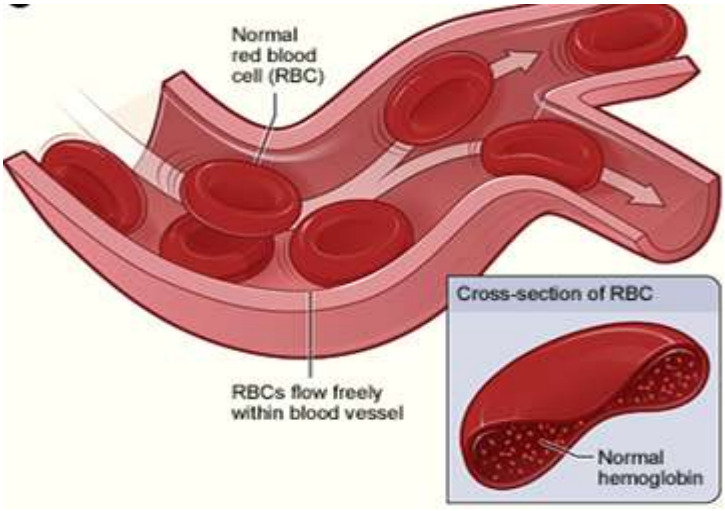
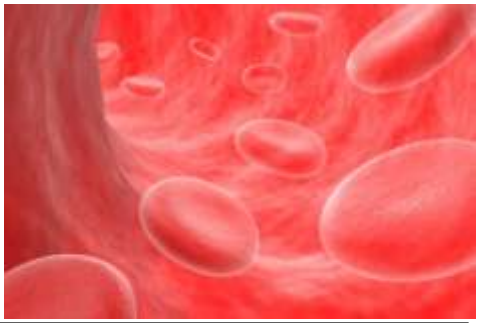
Blood and blood in defence

Read and remember the learning outcomes on page 108 & 110. Take a look at page 23 in the syllabus, number 7.2.3.





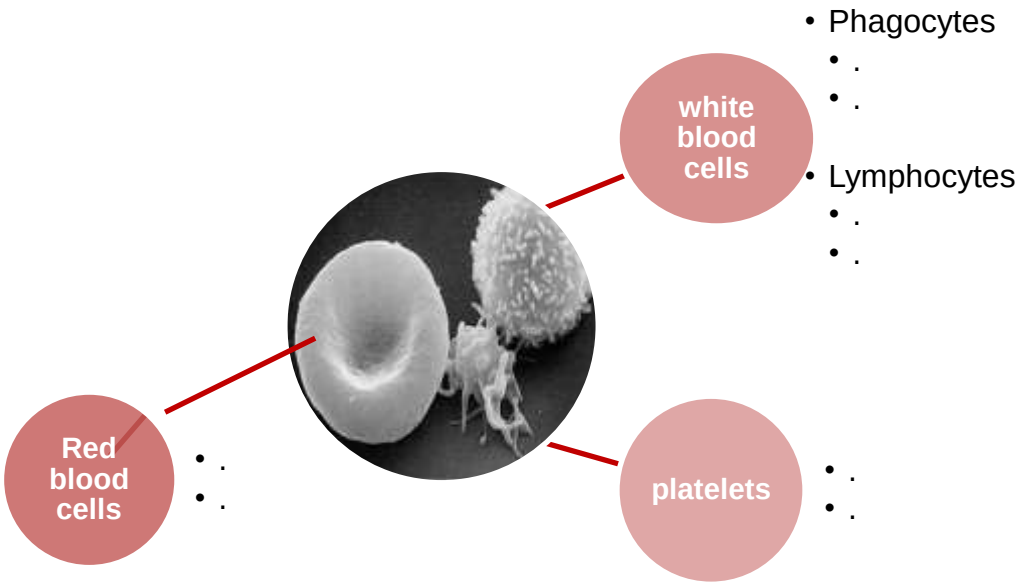
These are some images to show how red blood cells travel through blood vessels. Available from:
http://www.nhlbi.nih.gov/health/dci/Diseases/Sca/SCA_WhatIs.html
http://www.topnews.in/healthcare/content/-21042blood-surge-brain-region-doesn-t-always-match-neural-activity

Visit this link to see what blood is and what it consists of. Make notes.
http://www.youtube.com/watch?v=CRh_dAzXuoU

Substances carried in plasma	From	To
Amino acids	Small intestine	Sites of growth and repair
Carbon dioxide	Respiring tissue	Lungs
Glucose	Small intestine	All tissues
Heat	Liver and muscles	All tissues
Hormones e.g. insulin	Endocrine glands e.g. pancreas	Target organ e.g. liver
Urea	Liver	Kidneys

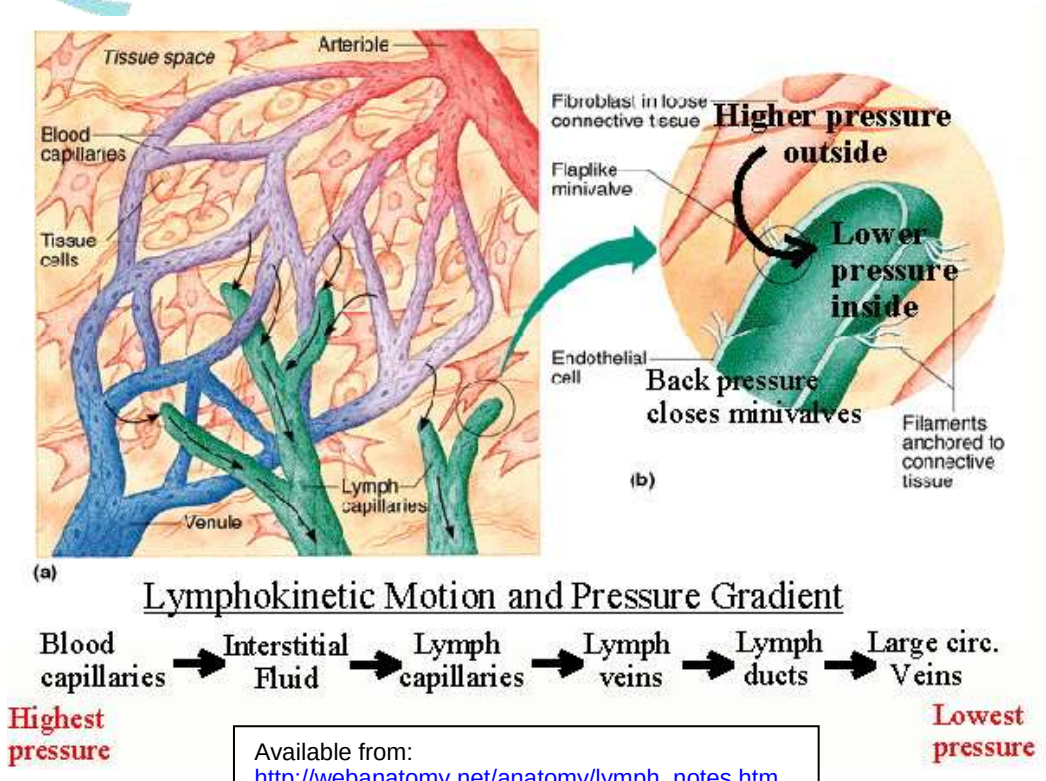
Activity

Do the summary questions on page 109 and 111.
Question 1 can be done using the diagram below…
Name the characteristics of each type of cell.



Lymph and tissue fluid

Read and remember the learning outcomes on page 112. Take a look at page 23 in the syllabus, number 7.2.3.



Available from:
http://webanatomy.net/anatomy/lymph_notes.htm

Activity

Have a look at these links on the lymphatic system. Make notes of important information.

Video - http://www.youtube.com/watch?v=EbPPu2nOMPU&feature=related

Written information about understanding the whole of the lymph system
(Scroll down the page…)
http://www.lymphomation.org/lymphatic.htm

Do the summary questions on page 113 and 114.

Do the exam-style questions on page 114 – 115.

Respiration

Read and remember the learning outcomes on page 116. Take a look at page 23 and 24 in the syllabus, number 8, 8.1 and 8.2.
Respiration is discussed on page 19 to 25 in the recommended book, IGCSE Biology by D G Mackean.

Respiration is the release of energy from food substances/nutrient molecules in cells.

Aerobic respiration is the breakdown of glucose in the presence of oxygen to release energy.

Anaerobic respiration is the breakdown of glucose in the absence of oxygen to release energy.

glucose + oxygen --► water + carbon dioxide + energy

$C_6H_{12}O_6 + 6O_2$ --► $6H_2O + 6CO_2$ + ATP/energy

In muscles:

glucose --► lactic acid + energy
$C_6H_{12}O_6$ --► $2C_3H_6O_3$ + ATP/energy

In yeast:

glucose --► ethanol + carbon dioxide + energy
$C_6H_{12}O_6$ --► $2C_3H_5OH + 2CO_2$ + ATP/energy

Activity

Do the summary questions on page 117.

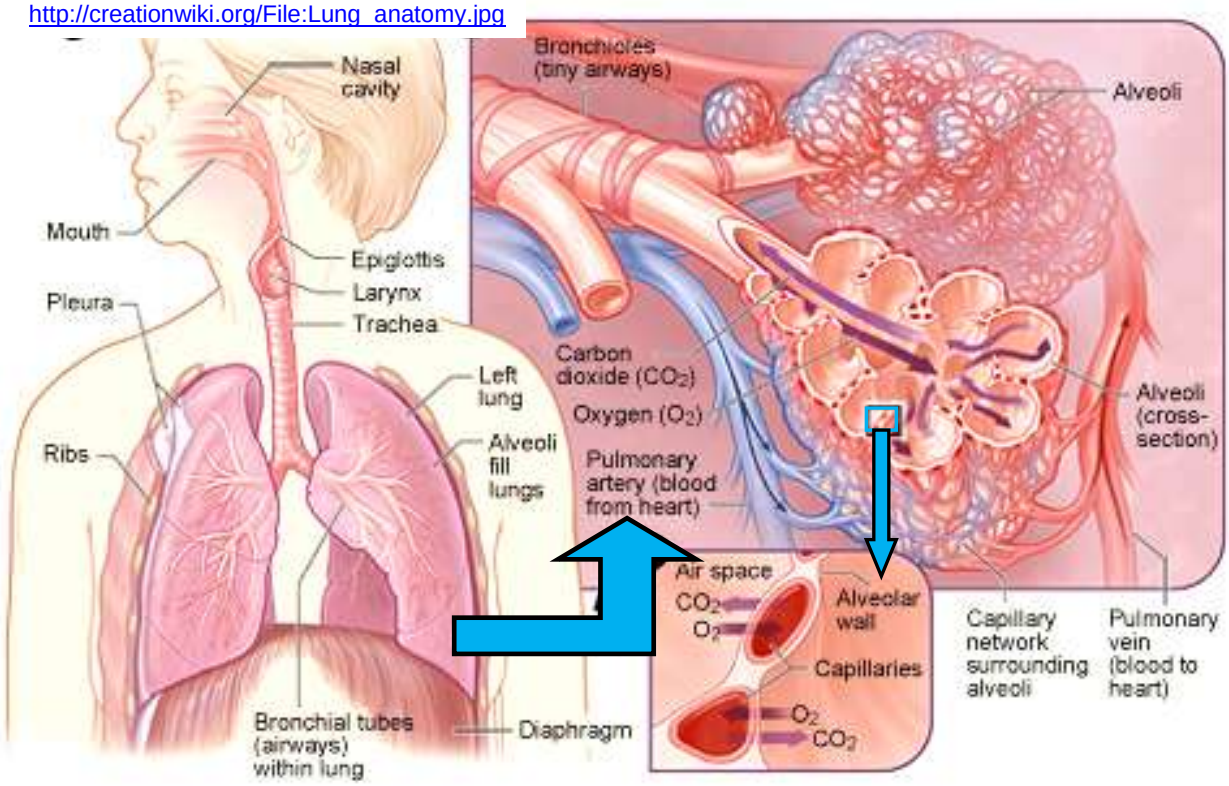
Remember to look at the examiner notes.

Take a look at the link below on respiration and its processes. All you need to do is scroll down the page to read the interesting information and have a look at the figures, graphs and diagrams:
http://www.hcc.bcu.ac.uk/physiology/respiration2005.htm

Gas exchange system and gas exchange

Read and remember the learning outcomes on page 118 & 120. Take a look at page 24 in the syllabus, number 8.3.
Gas exchange is discussed on page 126 in the recommended book, IGCSE Biology by D G Mackean.

Available from:
http://creationwiki.org/File:Lung_anatomy.jpg



To see a microscopic picture of alveoli, please visit the below links:
http://visualsunlimited.photoshelter.com/image/I0000QWu7z6H2VpA
http://visualsunlimited.photoshelter.com/image/I0000tOCJ.aEbgeQ
http://visualsunlimited.photoshelter.com/image/I0000QMcM0mjl_4E

Watch this video link on gas exchange.
http://www.youtube.com/watch?v=DoSTehS7iq8

Watch this sketched video link on gas exchange in the alveoli.
http://www.tutorvista.com/biology/gas-exchange-in-humans

The practical experiment on page 120 illustrates the fact that there is more carbon dioxide in expired air, than in inhaled air.
Look at this video link to find some different ideas on how you can do this experiment:
http://www.youtube.com/watch?v=zD0SJUfsN94

Take note...
Make sure you know and understand what is discussed in the spread from page 118—121.

You need to be able to draw and label a simple diagram on the respiratory system. See the diagram on page 118. (The heart does not have to be drawn)

Explain the process of gas exchange...
Describing all the functions of the words in bold on this spread is important.

Make sure you know the table on inspired and expired air on page 120.

The process of gas exchange at the alveolus is described on page 121. Know and be able to explain the process. You also need to be able to draw the sketch.

What are the features of gas exchange surfaces? Name and explain them...

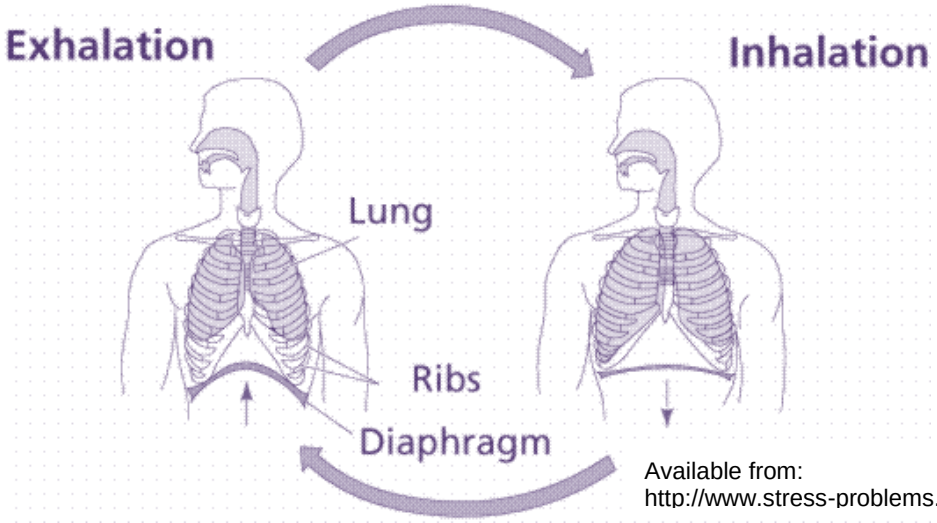
Activity

Draw a simple diagram of the gas exchange system and label it. Leave enough space around the sketch to make all your notes and use this as study notes.

Do the summary questions on page 119 and 121.

Breathing

Read and remember the learning outcomes on page 122. Take a look at page 24 in the syllabus, number 8.3.
Breathing is discussed on page 123 to 130 in the recommended book, IGCSE Biology by D G Mackean.



Available from:
http://www.stress-problems.com/?p=99

Do the practical on page 122, with regard to how the chest operates during breathing.
Here is some extra information with regard to this practical:
http://www.tutorvista.com/content/biology/biology-iv/respiration-animals/breathing-mechanism.php

Activity

Make sure you know how the breathing process and the cleaning of air works.

Do the summary questions on page 123.

Rate and depth of breathing

Read and remember the learning outcomes on page 124. Take a look at page 24 in the syllabus, number 8.3.

Do the practical activity explained on page 124. It investigates the effect of exercise on breathing rate…

Visit the link to a presentation on the effect exercise has on breathing and the body in general…
http://www.slideshare.net/griggans/02-effect-of-exercise-on-breathing

What is the effect of tobacco smoke on the respiratory system?

Chemical	Effects on respiratory system	Effects on other systems
Carbon monoxide **(enter blood)**	This is a poisonous gas that combines with haemoglobin in red blood cells. This prevents them from transporting oxygen.	It increases the risk of atherosclerosis and thrombosis, which in turn can cause coronary heart disease.
Nicotine **(enter blood)**	Nicotine is addictive and results in the continuation of smoking, therefore it exposes the lungs to harmful chemicals on a regular basis.	• It raises the blood pressure and heart rate. • Causes thrombosis and can lead to stroke • Stimulates the brain • Can pass to an unborn fetus, resulting in the reduction of the birth weight of the baby.
Smoke particles **(DON'T enter blood, stay in lungs)**	These irritate the air passage that causes inflammation and an increase in mucus production that can result in chronic bronchitis. Coughing and the presence of particles in the alveoli can lead to emphysema.	
Tar **(DOESN'T enter blood, stays in the lungs)**	Tar is a carcinogen, which means it increases the risk of lung cancer. Lines in the air passage, increasing mucus production and the paralysing and damaging of the cilia can cause bronchitis.	

Activity

See the examiner block on the top of page 125…
Summarise the effect of exercise on the body in terms of: muscles, heart, lungs, body temperature and blood glucose (body temperature and blood glucose is discussed in unit 11).

Do the summary questions on page 125.