**Circulatory System: Components of Blood – Guided Notes**

**(Outcome 21 & 27)**

***Question:*** *which blood vessel contains valves? Arteries, veins or capillaries?*

**Components of Blood**

* Humans contain an average of 4-6 Liters of blood (about 8% of body mass)
* Blood is made up of 45% blood cells and 55%

What is in plasma?

* 90% water
* 10% dissolved gas
* Salt
* Nutrients
* Enzymes
* Protein

**Plasma Proteins**

What are the three types?

* - transport fatty acids, hormones, and vitamins, regulating osmotic pressure and blood volume
* - transports fatty acids, hormones, and vitamins, fights bacterial and viral infections
* - responsible for blood clotting

**Clotting**

* Made possible by plasma proteins and cell fragments called
* When come in contact with the edge of a broken blood vessel their surface become very sticky causing a cluster of platelets to develop around the wound

platelets release a protein called , starting a series of chemical reactions

* One is thromboplastin which converts prothrombin (found in plasma) to thrombin which is an enzyme that helps convert soluble plasma fibrinogen into filaments which produce a clot

***Extension:*** *what would happen if you could not clot blood? Do you know of any diseases/disorders where this happens?*

**Red Blood Cells (RBC) – erythrocytes**

* - an iron containing protein binds with oxygen in lungs and transports the oxygen to the body tissue
* Produced in
* When the cell becomes filled with oxygen the cell nucleus and organelles are forced out
* Circulate for approximately **120 days** before being destroyed in the liver and spleen
* Most numerous blood cells present

***Extension:*** *Why do they only last 120 days?*

**White Blood Cells (WBC) – leukocytes**

* This form of blood cell is much less common than red blood cells (1000 to 1)
* White blood cells are formed in
* Can live for **days to years**
* These cells can exit capillary walls and , parasites, and bacteria
* The number of white blood cells present can increase when body is

***Extension:*** *What would happen if you did not have white blood cells?*

**How do they protect?**

* Some white blood cells are phagocyte which means that they engulf and digest bacteria
* Others react by releasing chemical histamine which increases blood flow to affected area
* are another type of white blood cell and are involved in immune response
  + produce antibodies essential for fighting infection and producing immunity to disease
  + help fight tumors and virus’