Year 9 Autumn 2 SoW and homework plan

Chapter and Topic	Lesson	Outcomes	Suggested activities/resources	Homework
8	Osmosis	• To define and compare diffusion and osmosis • To predict what happens to plant and animal cells when placed in different solutions • To evaluate why plant and animal cells behave differently.	1. Place piece of potato in salty water and pure water. Compare 'floppiness' after 2. Define diffusion, osmosis, partially permeable membrane 3. **Higher only:** hypertonic, hypotonic and isotonic solutions. Give diagrams and get students to describe the movement of water 4. Compare animal and plant cells in each solution. Can model the action of a cell wall by blowing up a balloon in a cardboard box.	
9	Osmosis required practical	• Set up an investigation to show osmosis in different concentrations of sugar solution (Ribena) • Analyse results through drawing a graph and identifying isotonic concentration.		**Challenge** Draw a graph of the results of the osmosis experiment and identify the isotonic concentration.
10	Active transport	• Describe how active transport works • Explain the importance of active transport in cells • Analyse the similarities and differences between active transport, diffusion and osmosis	Acting out of the process: • Row of people to make up the cell membrane • One person to be the protein molecule • People to be the molecules (6 inside the cell, 2 outside) • One person to be the energy supplier Examples of active transport e.g. glucose absorption in the small intestine, absorption of mineral ions from the soil into the root hair cell Summary table of diffusion, osmosis and active transport	

11	SA:vol	• Calculate surface area • Calculate volume • Compare surface area:volume ratio of different sized object • Apply the idea of surface area:volume ratio to whether diffusion will be fast enough to transport materials in animals of different sizes	1. Maths calculations of SA:vol. Use cubes from maths 2. Practical: diffusion of hydrochloric acid into agar cubes 3. Demonstration of the lungs to show why there are alveoli to increase surface area	**Independent work:** Explain how the lungs are adapted for efficient gas exchange.
B2 Cell division	Cell division	• **State** the purpose of mitosis • **Describe** how cells divide • **Explain** the need for mitosis	https://www.youtube.com/watch?v=f-ldPgEfAHI&t=7s **Keywords**: Chromosomes Duplicate Spindle fibres Equator (middle) of the cell Cytokinesis (cytoplasm divides) Cell cycle and cancer: https://www.youtube.com/watch?v=lpAa4TWjHQ4 1. What causes cancer? 2. What things happen during interphase of the cell cycle? 3. What percentage of a cell's life is spent in interphase? 4. What is mitosis? 5. What is a cell checkpoint? 6. What types of cells does chemotherapy target?	
	Growth and differentiation and stem cells	• Describe how cell differentiation varies in animals and plants	Teacher input on what differentiation is. BBC bitesize to look at plant cloning. Stem cells:	

		• Describe how plant clones are produced through tissue • Describe the functions of stem cells in embryos, adult stem cells and plants • Explain how treatment with stem cells may be used to treat people with different medical conditions	https://www.youtube.com/results?search_query=stem+cell+story+at+Euro+Stem+Cell+site Video on the introduction of stem cells. Round the room laminates of stem cells – see shared.	
	Stem cell dilemmas	• Recall the definition of a stem cell • Understand some of the risks, benefits, social and ethical issues regarding use of stem cells in medicine	1. Recall the definition of stem cells 2. Debate activity – see shared area 3. Summarise reasons for an against the use of stem cells 4.	Use kerboodle to explain the process of therapeutic cloning