**Homework plan for Biology Year 10 for 2018/19**

|  |  |  |
| --- | --- | --- |
| **Subject: Biology** | **Year Group: 10** |  |
|  |  |  |
| **Chapter and Topic** | **Outcomes** | **Homework** |
| B4.1 The blood | 1: State the main components in blood and describe their function (G4)  2: Summarise the process of blood clotting (G6)  3: Explain how red blood cells & haemoglobin transport oxygen efficiently. (G7). | **Embed**:  Blood HW questions at the end of the PPT.  Or  Kerboodle: B4.1 bump up your grade. What’s in our blood? |
| B4.2 The blood vessels | 1: State & recognise the three main types of blood vessels (G4)  2: Explain how the structure relates to the functions of blood vessels. (G6)  3: Explain in detail the importance of a double circulatory system (G7)  4. Explain how to make estimates of heart rate more accurate in terms of precise data. (G8) |  |
| B4.3 The heart | 1: Label a diagram of the heart to show all the main structures  2: Summarise the structure and function of the heart. | **Apply:**  Kerboodle: Student practical Sheep heart dissection. Students complete sheet for HW |
| B4.4 Helping the heart | 1: Describe how the heart keeps its natural rhythm.  2: Explain how artificial pacemakers work and what artificial hearts can do.  3: Evaluate some of the scientific & social arguments for and against the continued development of artificial hearts. | **Apply:**  Kerboodle: B4.4 bump up your grade - Helping the heart |
| B4.5 Breathing and gas exchange | Label a diagram of the gas exchange system to show all the main structures (G5)  2: Describe how alveoli are adapted (G6)  3: Explain the process of ventilation and gas exchange (G7)  4: Compare the differences between the composition of inhaled and exhaled air. (G8) | **Embed:**  Doddle: heart and lungs  <https://www.doddlelearn.co.uk/app/teacher/launch-content/c712d6be-b1ea-45e6-8dc3-09d63219f5e0> |
| B4.6 Tissues and organs in plants  B4.7 Transport systems in plants | Identify tissues in a cross section of a leaf (G5)  2: Explain how the structures of tissues are related to their functions (G6)  3: Apply knowledge gained from today’s lesson to explain how the tissues in a leaf are arranged to form an effective organ for photosynthesis (G7)  1: State the function of xylem and phloem tissue (G4)  2: Explain how the structure of xylem and phloem are adapted to their functions. (G6)  3: Explain why translocation is essential for a plants survival (G8) | **Embed:**  Doddle: tissues and organs in plants <https://www.doddlelearn.co.uk/app/teacher/launch-content/9532896a-2658-452a-828d-d7d1e1a8e57d> |
| B4.8 Evaporation and transpiration | 1: Describe how transpiration maintains the movement of water from roots to leaves (G5)  2: Describe how transpiration maintains the movement of water from roots to leaves (G5)  3: Explain in detail how stomata control transpiration. (G7) | **Challenge / Interleaving** / Consolidation HW and Test Prep: [Huddle Independence](file:///U:\Departments\SCIENCE\GCSE\Independence%20resources\Biology\Huddle-ks4independencebiologypdfbooklets.zip)  2. PiXL Independence \_KS4\_GCSE Biology\_Transport systems\_Booklet .pdf |
| B4.9 Factors affecting transpiration | 1: To know what is meant by transpiration.  2: Explain the effect of changing temperature, humidity, air movement and light intensity on the rate of transpiration.  3: Apply the particle model to explain in detail why temperature, humidity, light intensity and the amount of air flow affect the rate of transpiration (G8) | **Embed:**  Doddle: transport in plants  <https://www.doddlelearn.co.uk/app/teacher/launch-content/075ce78a-33b0-460b-bee2-2c85ce16f1ee> |
| TEST |  |  |
| DIRT |  | **Go Green:**  Individual outcomes |
| B5.1 Health and disease & B5.2 Pathogens and disease | 1. Explain the difference between a communicable and non-communicable disease. 2. Distinguish between different types of pathogens in terms of their features. 3. Demonstrate the methods of pathogen transmission | **Embed:**  Doddle: pathogens and disease  <https://www.doddlelearn.co.uk/app/teacher/launch-content/3a73b66c-7c74-4f57-a2bf-40047cac7d00> |
| B5.4 Viral diseases,  B5.5 Bacterial diseases,  B5.6 Diseases caused by fungi and protists | 1. Name some diseases that are caused by viruses, bacteria or fungi (G4). 2. Describe how diseases affect the infected organism (G6). 3. Explain methods used to control the pathogens (G8) | **Embed:**  Doddle: algal and protist diseases <https://www.doddlelearn.co.uk/app/teacher/launch-content/a28d77df-06ee-4470-b187-5337efcf27ec> |
| B5.3 Growing bacteria in the lab - theory | 1. State that bacteria reproduce by cell division and this is called binary fission. (G4) 2. Explain why it is important to use an uncontaminated culture to investigate bacterial growth. (G6) 3. Plan a detailed investigation to find out how a variable affects the growth of bacteria. (G8) | **Apply:**  Differentiated practical analysis on Kerboodle B5.4 Required practical: Analysing bacterial growth.  Complete the plan |
| B5.3 Growing bacteria in the lab - practical | 1. Prepare a bacterial culture on agar gel. (G4) 2. Follow the rules needed to prepare an uncontaminated culture. (G4) 3. Suggest how to measure the growth of bacteria and discuss uncertainty. (G8) |  |
| Practical analysis and revision | 1. Explain why numbers of bacteria on an agar plate will eventually stop growing. (G6) 2. Describe and explain why each safety rule is needed in order to safely prepare, incubate, and dispose of a culture. (G6) 3. Explain why it is important to use an uncontaminated culture to investigate bacterial growth. (G6) 4. Explain what is meant by exponential growth and analyse a graph showing it. (G8) | Test Revision. |
| TEST |  |  |
| DIRT |  | **Go Green:**  Individual outcomes |
| B6.1 Vaccination | State that vaccines contain dead or inactive forms of a pathogen (G4).  Explain how vaccination works (G6).  Describe what an antibody and an antigen are (G6).  Explain why, if a large proportion of the population is vaccinated, the spread of the pathogen is reduced (G8). | **Embed:**  Doddle: vaccination and medication <https://www.doddlelearn.co.uk/app/teacher/launch-content/31d04a90-5688-4a30-baf0-f416ee6bcdd1> |
| B6.2 Antibiotics and painkillers | Describe what an antibiotic is (G4)  2: Explain what is meant by antibiotic-resistant bacteria (G6)  3: Suggest a reasoned explanation for a pattern in data (G8) | **Half-term HW**  **Challenge / Interleaving** / Consolidation: [Huddle Independence](file:///U:\Departments\SCIENCE\GCSE\Independence%20resources\Biology\Huddle-ks4independencebiologypdfbooklets.zip)  3. Health, disease and medicines\_Booklet .pdf |
|  |  |  |
| B6.3 Discovering drugs | 1: Order the events that led to the production of penicillin. (G4)  2: Discuss the advantages and disadvantages of looking for new drugs from living organisms (G6)  3: Analyse data to evaluate the effectiveness of new antibiotics and make a reasoned decision which one to develop further (G8) | **Apply:**  Kerboodle: B6.1 Student calculation sheet - Determining a specific value from a graph |
| B6.3 Developing drugs | Describe what is meant by a placebo (G4)  2: Explain why each procedure in drug testing and trialling is used. (G6)  3: Critically analyse the results from a double blind trial. (G8) | **Embed:**  Doddle: drug development <https://www.doddlelearn.co.uk/app/teacher/launch-content/b2cb8eca-66e1-43e8-8950-9b2a0986dd6d> |
| B7.1 Non-communicable diseases | 1: State risk factors that are linked to an increased rate of a disease.(G4)  2: Draw conclusions from data on risk factors. (G6)  3: Explain why a correlation does not prove a causal mechanism. (G8) | **Embed:**  <https://www.proprofs.com/quiz-school/quizshow.php?title=causation-and-correlation&q=1>  Email certificate of achievement to teacher |
| B7.2 Cancer | 1: State what causes cancer and some risk factors. (G4)  2: Describe the difference between benign & malignant tumours and the problems they can cause. (G6)  3: Evaluate chemotherapy as a treatment for cancer.(G8) | **Embed:**  Doddle: cancer  <https://www.doddlelearn.co.uk/app/teacher/launch-content/b2cb8eca-66e1-43e8-8950-9b2a0986dd6d> |
| B7.3 Smoking and the risk of disease | 1: State the harmful substances found in tobacco smoke.  (G4)  2: Describe the effects of the harmful substances found in tobacco smoke (G6)  3. Suggest possible causal mechanisms to explain trends shown in data, and explain how the causal link between smoking and lung cancer was identified. (G8) | **Embed:**  Doddle: health and disease  <https://www.doddlelearn.co.uk/app/teacher/launch-content/78e9b6f3-0beb-4c6a-972d-e78f0f77ba55> |
| B7.4 Diet, exercise, and disease | 1: Describe some health problems caused by a poor diet and lack of exercise (G4).  2: Suggest measures to prevent a further rise in the number of people with type 2 diabetes (G6).  3: Suggest reasons for the correlation between exercise and health, and decide which are causal (G8). | **Embed:**  Doddle: heart disease <https://www.doddlelearn.co.uk/app/teacher/launch-content/6987ab66-3153-4a13-bf54-5785c0b006ca> |
| B7.5 Alcohol and other carcinogens | 1: Define the term carcinogen. (G4)  2: Describe the short and long term effects of drinking alcohol (G6)  3:Explain the link between ionising radiation and cancer.(G8) | **Embed:**  Kerboodle: B7 Homework: Non-communicable diseases 2 |
| Revision |  | **Apply:**  3. PiXL Independence \_KS4\_GCSE Biology\_Health, disease and medicines\_Booklet .pdf |
| TEST |  |  |
| DIRT |  | **Go Green:**  Individual outcomes |
|  |  |  |
| B8.1 Photosynthesis | 1. State the raw materials and products of photosynthesis (G3)  2: Describe the adaptations of the leaf for photosynthesis (G5)  3: Analyse how the adaptations of the leaf aid the process of photosynthesis (G7) | **Embed:**  Doddle: leaf adaptations (KS3 revision, but still pertinent) <https://www.doddlelearn.co.uk/app/teacher/launch-content/96fd29ce-3e58-4fcb-851d-dc6c05e301f1> |
| B8.2 The rate of photosynthesis | 1: Describe the effect of light intensity, temperature and carbon dioxide on the rate of photosynthesis (G4)  2: Explain what happens to the enzymes which control the rate of photosynthesis when the temperature is too high (G6)  3: Apply the light intensity and inverse square law (G8) | **Apply:**  Differentiated practical design for the required practical. Sheets for Sets 1-3 on shared. |
| Required practical: Effect of light intensity on the rate of photosynthesis | 1: Safely complete a practical to test the effect of light intensity on the rate of photosynthesis.  2: Plot a line graph of your results  3: Conclude what your results show | Consolidate: finish practical work |
| B8.3 How plants use glucose | 1: State how plants use glucose  2: Describe how plants produce proteins and lipids  3: Explain how you test leaves for starch | **Embed:**  Doddle Foundation: <https://www.doddlelearn.co.uk/app/teacher/launch-content/269290e4-d79a-47b3-86f6-9969258fb765>  Doddle Higher: <https://www.doddlelearn.co.uk/app/teacher/launch-content/650482ed-1339-4976-8c29-781b92ec1494> |
| Practical: Testing leaves for starch |  |  |
| B8.4 Making the most of photosynthesis | 1: Describe how the different factors affecting the rate of photosynthesis interact (G5)  2: Analyse how humans can manipulate the environment in which plants grow (G8) | **Challenge / Interleaving** B8: Checkpoint follow-up. Differentiated; on Kerboodle. Aiming for G8 needs a photomicrograph of a section through a leaf provided. |
| REVISION |  | **Challenge** :5. PiXL Independence \_KS4\_GCSE Biology\_Photosynthesis\_Booklet.pdf |
| TEST |  |  |
| DIRT |  | **Go Green:**  Individual outcomes |
|  |  |  |
| B9.1 Aerobic respiration | State the word equation for aerobic respiration (G4).  Write the balanced symbol equation for respiration (G6).  Explain why respiration is an exothermic reaction (G8).  Plan an investigation to include a control (G6). | **Apply:**  Kerboodle: B9.1 On Your Marks: Review (exam question analysis) |
| B9.2 The response to exercise | Design a practical experiment to measure change in heart rate with exercise (G6).  Choose the best way to display data and calculate percentage changes (G6). | **Embed:**  Doddle: respiration <https://www.doddlelearn.co.uk/app/teacher/launch-content/877dc1d3-92b6-4076-9383-8dc39b9c17a2> |
| Practical: effect of exercise on heart rate | Do the practical:  run outside if weather is good.  Do jumping jacks in the class if raining. |  |
| B9.3 Anaerobic respiration | State the word equations for anaerobic respiration in animals, plants, and microorganisms (G4).  Explain why muscles get tired during exercise (G6).  Compare and contrast aerobic and anaerobic respiration (G6).  Explain in detail why heart and breathing rate continue to be high for a period of time after exercise (G8). | **Embed:**  Doddle: respiration <https://www.doddlelearn.co.uk/app/teacher/launch-content/2736e3fa-5ea9-41ce-9c1b-509bb4847f85> |
| B9.4 Metabolism and the liver | List some metabolic reactions (G4).  Describe the role of the liver in repaying the oxygen debt (G6).  Describe how to use a respirometer to measure respiration rate (G6).  Explain the link between protein consumption and concentration of urea in urine (G8). | **Apply:**  Kerboodle: B9: Progress quiz: Respiration 2 – practice |
| TEST |  |  |
| DIRT |  | **Go Green:**  Individual outcomes |
|  |  |  |
| 10.1 Principles of homeostasis | Name some human internal conditions that are controlled (G4).  Define homeostasis (G6).  Explain why internal conditions need to be maintained (G6).  Apply knowledge of enzymes and osmosis to explain in detail why internal conditions need to be maintained (G8). |  |
| B10.2 The structure and function of the human nervous system | Describe what a neurone and a nerve are (G4).  Measure reactions times using repeats to increase accuracy (G4).  Describe how information is passed along neurons (G6).  Evaluate results in detail in order to discuss precision and accuracy (G8). | **Challenge / Interleaving** / Consolidation HW and Test Prep: [Huddle Independence](file:///U:\Departments\SCIENCE\GCSE\Independence%20resources\Biology\Huddle-ks4independencebiologypdfbooklets.zip)  4. PiXL Independence \_KS4\_GCSE Biology\_Coordination and control\_Booklet.pdf |
| B10.3 Reflex actions | Describe why reflex actions are important (G4).  Describe the events involved in a reflex action (G6).  Describe how reflex actions are fast and automatic (G6).  Explain in detail how impulses travel across a synapse (G8). |  |
| Required practical |  | **Apply:**  Doddle: Required practical <https://www.doddlelearn.co.uk/app/teacher/launch-content/901216ec-0d69-4537-b330-2e33201b8390> |
| Revision |  |  |
| Revision |  |  |
| PPE |  |  |
| PPE |  |  |