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| **YEAR \_\_\_\_ 2023-2024\_\_\_\_\_ TERM: Autumn 2**  **‘An ambitious curriculum that meets the needs of all’**  **Medium Term Planning - Topic: Heart, Circulation & Respiration** | |
| **Curriculum Intent** | **In addition to working further on objectives from KS3 Breathing & Respiration, Health & Disease and KS4 Topic 1 Cell Structure & Transport, pupils will be taught, following National Curriculum guidelines, the following in this topic:**   * the need for transport systems in multicellular organisms, including plants * the relationship between the structure and functions of the human circulatory system * the relationship between health and disease * non-communicable diseases * the impact of lifestyle factors on the incidence of non-communicable diseases * organic compounds are used as fuels in cellular respiration to allow the other chemical reactions necessary for life * the importance of cellular respiration; the processes of aerobic and anaerobic respiration |
| **Skills/National Curriculum Links** |
| **Spiritual, moral, social, and cultural development** | **SMSC:** The impact of lifestyle factors on heart and lung diseases, transplants, blood donation  **PSHE/British Values:**  The impact of lifestyle factors on heart and lung diseases, transplants, blood donation  **Skills Builder:** Debate and discussion. |
| **Numeracy** | Calculations required in the topic include conversion between units of measurement (length) and magnification calculations. This also includes formula rearrangement using the formula magnification = size of image / size of real object, and expression of answers using standard form.  Calculation of surface area, volume, and surface area to volume ratio |
| **Literacy** | **Vocabulary Tier 2:** organ, heart, lungs, blood, vessel, respiration, artery, vein, capillary  **Vocabulary Tier 3:** haemoglobin, platelets, plasma, vena cava, aorta, atrium/atria, ventricle(s), pulmonary, stent, exothermic, oxygenated, deoxygenated, lactic acid, fermentation, aerobic, anaerobic,  **Reading:** Students are given opportunity to develop their skills in specified tasks that develop disciplinary literacy. Throughout the GCSE Biology and Combined Science course they develop their understanding of the requirements of exam questions and the key terminology in questions. In addition, they read practical methodology and translate this to actions in laboratory tasks.  **Writing:** Students construct answers independently and through class teaching. Their answers range from single word answers to the planning and writing of 6-mark “extended writing” tasks that require linking of multiple concepts from a topic. These often develop students’ ability to construct written evaluations of contrasting situations, where the use of comparative connectives are required.  **Oracy:** Students are regularly given the opportunity to practice their scientific vocabulary in class discussion, through choral response and in giving instruction to others during practical activities. |
| **Becoming future ready** | **Careers/Employability:** Opportunity for development of communication, teamwork, and manual dexterity in the completion of practical activities (Required Practicals in testing for carbohydrates, proteins and lipids and measuring the effect of pH on amylase activity) |
| **Adaptation** | Throughout this topic, quality first teaching will provide differentiation:  **By product:** Assessments have opportunities for students to achieve all grades, with structured questions and opportunities for development of extended writing for all abilities.  **By resource:** Booklets are differentiated as appropriate, with ‘foundation’ booklets produced in conjunction with class teachers for students who would benefit from additional scaffolding of resources in order to achieve their potential.  **By Intervention**: by providing different levels of supervision and support, including the specific deployment of teaching assistants within lessons.  **By Progressive Questioning:** exploring pupils’ understanding through interactive dialogue.  **By Grouping:** according to prior attainment, gender, social preference.  **By Task:**Pupils should be involved in the identification of targets which are meaningful to them and in the selection of an appropriate task from the given range.  **By Offering Optional Activities:** In class or as homework, to extend learning.  This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work. |
| **QFT/SEND Provision** |
| **Implementation**  **Curriculum Delivery** | To be able to:  2.2.2.a I can describe the structure of the human heart and lungs  2.2.2.b I can explain how the heart moves blood around the body  2.2.2.c I can explain how the natural resting heart rate is controlled, and how irregularities can be corrected  2.2.2.d I can describe the structure and function of arteries, veins and capillaries  2.2.3.a I can describe blood and identify its different components, including identifying blood cells from photographs and diagrams  2.2.3.b I can describe the functions of blood components, including adaptations to function  2.2.4.a I can describe what happens in coronary heart disease  2.2.4.b I can describe and evaluate treatments for cardiovascular diseases  2.2.4.c I know that heart valves can become faulty, and I can describe the consequences of this  4.2.1.a I can describe basic features of respiration  4.2.1.b I can describe aerobic and anaerobic respiration using word equations  4.2.1.d I can compare aerobic and anaerobic respiration  4.2.2.a I can describe what happens to heart rate, breathing rate and breath volume during exercise and why these changes occur  4.2.2.b I can explain what happens when muscles do not have enough oxygen  4.2.2.c (HT) I can explain what happens to lactic acid  4.2.3.a I can explain what metabolism is, including examples  Red denotes interleaving; aspects of knowledge covered previously. |
| **Learning Outcomes (Knowledge)** |
| **Current learning to be developed in the future within:** | Topic 4 (Heart, Circulation and Respiration), Topic 11 (Hormones and Homeostasis), Topic 12 (Reproduction and Genetic Engineering), Topic 14 (Health Issues) |
| **Assessment** | Refer to assessment maps for formative and summative assessment opportunities. |
| **Impact** | Attainment and Progress – Refer to assessment results / data review documentation. |