# B2 Topic 2 Revision tracker

## BIOLOGY

| Learning objectives<br>I can: | I can do this very well | I can do this quite well | I need to do more work on this |
|---|---|---|---|
| **2.1** Recall that respiration is a process used by all living organisms that release the energy in organic molecules | | | |
| **2.2** Explain how the human circulatory system facilitates respiration including:<br>**a** glucose and oxygen diffuses from capillaries into respiring cells | | | |
| **b** carbon dioxide diffuses from respiring cells into capillaries | | | |
| **2.3** Define diffusion as the movement of particles from an area of high concentration to an area of lower concentration | | | |
| **2.4** Demonstrate an understanding of how aerobic respiration uses oxygen to release energy from glucose and how this process can be modelled using the word equation for aerobic respiration | | | |
| **HSW 3** Describe how phenomena are explained using scientific models | | | |
| **2.5** Investigate the effect of exercise on breathing rate and heart rate | | | |
| **2.6** Explain why heart rate and breathing rate increase with exercise | | | |
| **2.7** Calculate heart rate, stroke volume and cardiac output, using the equation cardiac output = stroke volume x heart rate | | | |
| **2.8** Demonstrate an understanding of why, during vigorous exercise, muscle cells may not receive sufficient oxygen for their energy requirements and so start to respire anaerobically | | | |
| **2.9** Demonstrate an understanding of how anaerobic respiration releases energy from glucose and how this process can be modelled using the word equation for anaerobic respiration | | | |
| **2.10** Recall that the process of anaerobic respiration releases less energy than aerobic respiration | | | |
| **2.11** Describe how a build-up of lactic acid requires extra oxygen to break it down. This is called excess post-exercise oxygen consumption or EPOC (formerly known as oxygen debt) | | | |
| **2.12** Explain why heart rate and breathing rate remain high after exercise | | | |
| **HSW 11** Present information, develop an argument and draw a conclusion, using scientific, technical and mathematical language | | | |
| **2.13** Describe how the structure of the leaf is adapted for photosynthesis, including:<br>**a** large surface area | | | |
| **b** contains chlorophyll in chloroplasts to absorb light | | | |
| **c** stomata for gas exchange (carbon dioxide, oxygen and water vapour) | | | |
| **2.14** Demonstrate an understanding of how photosynthesis uses light energy to produce glucose and how this process can be modelled using the word equation for photosynthesis | | | |
| **HSW 3** Describe how phenomena are explained using scientific theories and ideas | | | |
| **2.16** Investigate how factors, including the effect of light intensity, $CO_2$ concentration or temperature, affect the rate of photosynthesis | | | |
| **2.15** Demonstrate an understanding of how limiting factors affect the rate of photosynthesis, including:<br>**a** light intensity | | | |
| **b** $CO_2$ concentration | | | |
| **c** temperature | | | |
| **HSW 11** Present information using scientific conventions and | | | |

| | | | |
|---|---|---|---|
| symbols | | | |
| **2.17** Explain how the loss of water vapour from leaves drives transpiration | | | |
| **2.18** Explain how water, glucose and mineral salts are transported through a plant, including:<br>**a** mineral uptake in roots by active transport | | | |
| **b** the role of xylem and vessels | | | |
| **2.19** Describe how root hair cells are adapted to take up water by osmosis | | | |
| **2.20** Define osmosis as the movement of water molecules from an area of higher concentration of water to an area of lower concentration of water through a partially permeable membrane | | | |
| **HSW 2** Describe how data is used by scientists to provide evidence that increases our scientific understanding | | | |
| **2.21** Investigate osmosis | | | |
| **2.22** Investigate the relationship between organisms and their environment using fieldwork techniques | | | |
| **2.23** Investigate the distribution of organisms in an ecosystem, using sampling techniques, including:<br>**a** pooters | | | |
| **b** sweep nets/pond nets | | | |
| **c** pitfall traps | | | |
| **d** quadrats<br>and measure environmental factors, including: | | | |
| **e** temperature | | | |
| **f** light intensity | | | |
| **g** pH | | | |
| **HSW 5** Plan to test a scientific idea, answer a scientific question, or solve a scientific problem by controlling relevant variables | | | |