Worksheet 1.10.3 The importance of variation

1 The need for variation >

Complete the paragraph below using some of the words in the box:

Individuals within any population have differences; we say they \_\_\_\_\_\_\_\_\_\_\_. Some of these differences can provide a \_\_\_\_\_\_\_\_\_\_\_\_\_ advantage in some conditions. For example, variation in colour means that some living things are better \_\_\_\_\_\_\_\_\_\_\_\_ than others and are \_\_\_\_\_\_\_\_\_\_\_ likely to survive. Without variation, with a change in an environment, a whole population could become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. An example of this happening is the \_\_\_\_\_\_\_\_\_\_\_\_.

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| more less extinct survival vary dodo giraffe camouflaged |

2 The peppered moth story >>

The peppered moth varies in colour, with some moths appearing very light in colour and others appearing very dark in colour. Prior to the industrial revolution, there were many more pale moths than dark moths. Following the industrial revolution In the 19th century, the dark moth became more common in industrial areas such as Manchester and Birmingham.

The data shows the numbers of each type of moth captured in an industrial area over a period of time.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Time (years)** | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **Light-coloured moths** | 537 | 484 | 392 | 246 | 225 | 193 | 147 | 84 | 56 |
| **Dark-coloured moths** | 112 | 198 | 210 | 281 | 337 | 412 | 503 | 550 | 599 |

Plot a graph to show the number of each type of moth during 10 years.

3 Explaining the peppered moth data >>>

a) Describe the pattern in numbers of moths

b) Explain what could have caused the change in the number of each type of moth during the industrial revolution

c) Suggest what would be different about the graphs in a less industrial area. Explain your answer.

d) A student describes the story of the peppered moth to a friend and says, ‘the moths changed colour and more became black during the industrial revolution’. State what is wrong with this explanation and suggest how you would explain to this students more accurately.