# Maths skills – M2.5 Using logarithms

## Teacher answers

### Quiz

**1.** You’re doing an experiment where a bacterium divides every 30 minutes under standard conditions. There were 10 bacteria in your starting culture. You want to plot the bacterial growth rate over a period of 4 hours and take measurements every half an hour.

Work out the sequence of numbers, complete the table below and plot two graphs, one of which should be a logarithmic graph.

|  |  |  |
| --- | --- | --- |
| **Time (min)** | **Number of bacteria** | **Log of the number of bacteria** |
| 0 | 10 | 1 |
| 30 | 20 | 1.3 |
| 60 | 40 | 1.6 |
| 90 | 80 | 1.9 |
| 120 | 160 | 2.2 |
| 150 | 320 | 2.5 |
| 180 | 640 | 2.8 |
| 210 | 1280 | 3.1 |
| 240 | 2560 | 3.4 |

**2.** To represent the following animals on a bar chart and their densities in a woodland, you would need to take the log of the number of animals in each category.

Complete the table for the following:

|  |  |  |
| --- | --- | --- |
| **Animal** | **Number of animals in 100 m2** | **Log of the number of animals** |
| Earthworm | 50,000 | 4.7 |
| Beetle | 2,000 | 3.3 |
| Mouse | 750 | 2.9 |
| Fox | 12 | 1.1 |
| Deer | 3 | 0.5 |

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