**How Computers Use 1s and 0s to Represent Data – Answers**

Task 1:

One-bit colour using a single digit that can have a value of 0 and 1 to represent a colour. This means the colour can only be black or white.

Task 2:

1. 8
2. Nibble = 4bits

Kilobyte = 1024 bytes or 1024 x 8 bits

Megabyte = 1024 kilobytes or 1024 x 1024 x 8 bits

Gigabyte = 1024 megabytes or 1024 x 1024 x 1024 x 8 bits

Terabyte – 1024 gigabytes or 1024 x 1024 x 1024 x 1024 x 8 bits

1. The 1024 is the closest value to 1000 that you can represent with binary values when they are all set to 1.

Task 3:

1. You can represent every combination from 0000 to 1111. Therefore you have 16 possible combinations, 0000, 0001, 0010, 0011, 0100, 0101, 0110, 0111, 1000, 1001, 1010, 1011, 1100, 1101, 1110, 1111

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| --- | --- | --- | --- |
| **Denary**  **(base 10)** | **Binary**  **(Base 2)** | **Denary**  **(base 10)** | **Binary**  **(Base 2)** |
| 0 | 0000 | 8 | 1000 |
| 1 | 0001 | 9 | 1001 |
| 2 | 0010 | 10 | 1010 |
| 3 | 0011 | 11 | 1011 |
| 4 | 0100 | 12 | 1100 |
| 5 | 0101 | 13 | 1101 |
| 6 | 0110 | 14 | 1110 |
| 7 | 0111 | 15 | 1111 |