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

**Task 1 Describe one-bit colour**

In the box below give a description of what one-bit colour is and how it can be used to make an image.

**Task 2 Numbers of bits**

1. How many bits are in a byte?
2. What is meant by the following terms?

* nibble
* kilobyte
* gigabyte
* terabyte

1. Why might a kilobyte (kilo generally means 1000) not actually be 1000 bytes? – it is 1024…but why?

**Task 3: Combinations of a Nibble**

1. How many combinations of 1’s and 0’s can you make from four bits? 1010 is one combination, 1100 is another etc.

|  |  |  |  |
| --- | --- | --- | --- |
| **Denary**  **(base 10)** | **Binary**  **(Base 2)** | **Denary**  **(base 10)** | **Binary**  **(Base 2)** |
| 0 | 0000 | 8 |  |
| 1 |  | 9 |  |
| 2 |  | 10 |  |
| 3 |  | 11 |  |
| 4 |  | 12 |  |
| 5 |  | 13 |  |
| 6 |  | 14 |  |
| 7 |  | 15 | 1111 |

1. If 0000 = 0 (in denary – base 10) and 1111 = 15 in denary (base 10), can you figure out the denary equivalents of each of the other combinations?