# End of Unit Quiz – Unit 2.6 Data representation

1. What is meant by a bit?

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1. What is the highest value that can be represented by a nibble?

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1. How many bits are there in a byte?

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1. How many bytes do 12bits make?

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1. How many megabytes are there in 3 gigabytes?

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1. Convert the following 8-bit binary values into their denary (base 10) equivalent. You must show your working out.
   1. 00110111

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* 1. 10101111

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* 1. 11010110

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1. Convert the following denary (base 10) values into their 8-bit binary equivalent. You **must** show your working out.
   1. 31

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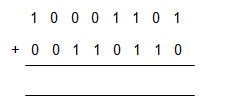
* 1. 104

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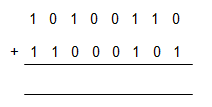
* 1. 210

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* 1. Add the following two 8-bit binary values.



* 1. Add the following two 8-bit binary values.



* 1. An overflow error can occur when adding two 8-bit binary values. What is meant by an overflow error?

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* 1. A logical shift instruction moves each bit in the binary value left or right. What is the new value of **00101100** when a logic shift right by two is performed?

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**bi**. What is the new value of **00011100** when a logic shift left by three is performed?

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**bii**. Convert the new binary value into its denary (base-10) equivalent.

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* 1. The number 84 could be represented as either a denary value or a hexadecimal value.If 84 is represented as a hexadecimal, calculate its denary value.

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* 1. If 84 is represented as a denary, calculate its hexadecimal value.

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* 1. Why do people use hexadecimal values to represent numbers stored in computers?

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* 1. Convert the following binary values into hexadecimal representation.
     1. 00111100

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* + 1. 10100101

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* + 1. 11101111

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* 1. Convert the following hexadecimal values into binary representation.
     1. 98

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* + 1. E7

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* + 1. BE

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1. Why is a check digit used?

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1. What is meant by the term **character set**?

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1. What does ASCII stand for?

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1. Why would Extended ASCII be used?

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1. What is meant by Unicode?

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1. What is meant by a Pixel?

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1. How many colours can be represented in an image with 8 bits? You **must** show your working out.

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1. Why is metadata included in a file?

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1. How does the resolution of an image affect the size of the file?

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1. Sampling intervals and other factors affect the size of a sound file and the quality of its playback. What is meant by a bit rate?

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1. How can sound be sampled and stored in digital form?

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* 1. Compression is often used to reduce the size of files before sending them electronically. What is **one** advantage for compressing files in this way?

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* 1. What is meant by lossy compression?

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* 1. What is meant by loseless compression?

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