



Bits and Bytes

Exercise Sheet

The following three questions relate to dials that have 10 different states (0-9).

Exercise 1: Given a machine that used 4 dials, how many different numbers could we represent?

Exercise 2: If we wanted to represent 123 different colours, each encoded as a different number, how many dials do we need?

Exercise 3: If we used numbers to represent each letter of the alphabet, how many dials would we need to store a single letter?

Exercise 4: How many different numbers can we represent using 3 bits?

Exercise 5: How many different numbers can we represent using 4 bits?

Exercise 6: How many different numbers can we represent using 5 bits?

Exercise 7: How many kB are there in 4GB?

Exercise 8: How many MiB are there in 1TiB?

Exercise 9: Which is bigger, 1 MB or 1 MiB?

Exercise 10: If it took 256 bytes to store one picture, and we wanted to send 40 pictures, how many bytes would be required? Use the most appropriate prefix in your answer.

Exercise 11: What decimal number is equal to the binary number 1101?

Exercise 12: What decimal number is equal to the binary number 101010?