Other Bases #2

NAME_____ DATE_____

We have been studying place value in the decimal and octal systems. Transitors in computers can only have a value of 0 or 1. Inside a computer, its counts like this.
0, 1, 10, 11, 100, 101, 110, 111, 1000, ...
This is called the binary number system. Write the next 20 numbers in binary (starting with 1000).

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In base 10, the number 259 means:

(2 x **100**) + (5 x **10**) + (9 x **1**) = 259

To find the decimal equivalent of an binary number, you have to figure it out by adding and multiplying. For example,

11_2 = (1 x **2**) + (1 x **1**) = 3_{10} and

101_2 = (1x **2 x 2**) + (0 x **2**) + (1 x **1**) = _____$_{10}$

Convert these binary numbers to decimal.

1101_2 = _____

11001_2 = _____

11101_2 = _____

Note that you can also use unifix cubes. How?

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Draw the binary number $11{,}101_2$ on the back. Show how you can find its decimal equivalent.