

Finish filling out the following tables for base 10 and base 2 number systems:

Base 10:

				100	10	1
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Example: (we'll do together in class):

Base 2 (binary):

						8	4	2	1
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Example: (we'll do together in class):

Convert the following binary (base 2) numbers to base 10:

$11 =$

$1011 =$

$11011 =$

Convert the following base 10 numbers to binary:

$20 =$

$83 =$

$400 =$

Perform the following addition problems in binary:

$$\begin{array}{r} 111 \\ +10 \\ \hline \end{array}$$

$$\begin{array}{r} 10101 \\ +1111 \\ \hline \end{array}$$

$$\begin{array}{r} 11011 \\ +10110 \\ \hline \end{array}$$

Use this space to check your answer for one of the above problems by converting all three binary numbers into base 10 (the two numbers you are adding and the result), then adding the top two, then checking that you got the same answer:

Perform the following subtraction problems in binary:

$$\begin{array}{r} 111 \\ -11 \\ \hline \end{array}$$

$$\begin{array}{r} 101 \\ -11 \\ \hline \end{array}$$

$$\begin{array}{r} 10101 \\ -1011 \\ \hline \end{array}$$

Use this space to check your answer for one of the above problems by converting all three binary numbers into base 10, then subtracting, then checking that you got the same answer:

Challenge: Do the following multiplication problem in binary, then convert to base 10 and check your answer.

$$\begin{array}{r} 1011 \\ \times 11 \\ \hline \end{array}$$