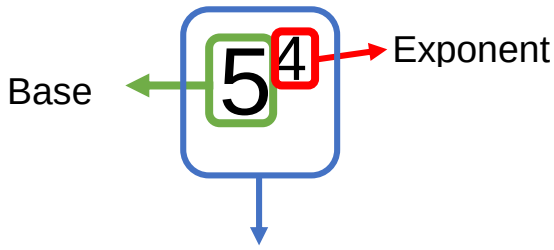
Cognitive Credit Cards for Exponents and Expanded Notation

<table>
<tr>
<td> 
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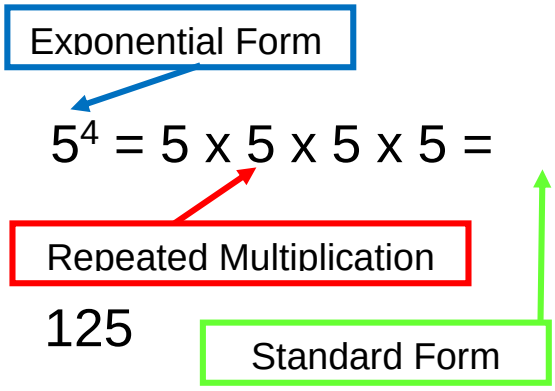
<td> 
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<td><u>Base</u>: The number that repeats while being multiplied.

<u>Exponent</u>: Shows the number of times the base repeats.</td>
<td>Write 6^3 in expanded form (repeated multiplication)

6^3 = <u>6 x 6 x 6</u></td>
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<tr>
<td>Evaluate 3^5
(write in standard form)

$3^5 = 3 \times 3 \times 3 \times 3 \times 3 =$ <u>243</u></td>
<td>Evaluate 7^0
(write in standard form)

7^0 = 1</td>
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<tr>
<td>Write 64 as a power of 2.

A power of 2 means the <u>base is 2</u>.

<u>Hint</u>: Use a calculator to figure out how many times you need to multiply 2 to get 64.

64 = 2 x 2 x 2 x 2 x 2 x 2 = <u>2^6</u></td>
<td>Write 64 as a power of 2, a power of 4 and a power of 8.

<u>Hint</u>: Your bases will be 2, 4 and 8.

64 = 2 x 2 x 2 x 2 x 2 x 2 = <u>2^6</u>

64 = 4 x 4 x 4 = <u>4^3</u>

64 = 8 x 8 = <u>8^2</u></td>
</tr>
</table>

Example: 29 093. 61

hundred millions	ten millions	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones	• decimal (and)	tenths	hundredths	thousandths	ten thousandths
10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0		10^{-1}	10^{-2}	10^{-3}	10^{-4}
				2	9	0	9	3	.	6	1		

Expanded notation :

$= 2 \times 10000 + 9 \times 1000 + 0 \times 100 + 9 \times 10 + 3 \times 1 + 6 \times 0.1 + 1 \times 0.01$

Expanded notation using powers of 10:

$= 2 \times 10^4 + 9 \times 10^3 + 0 \times 10^2 + 9 \times 10^1 + 3 \times 10^0 + 6 \times 10^{-1} + 1 \times 10^{-2}$