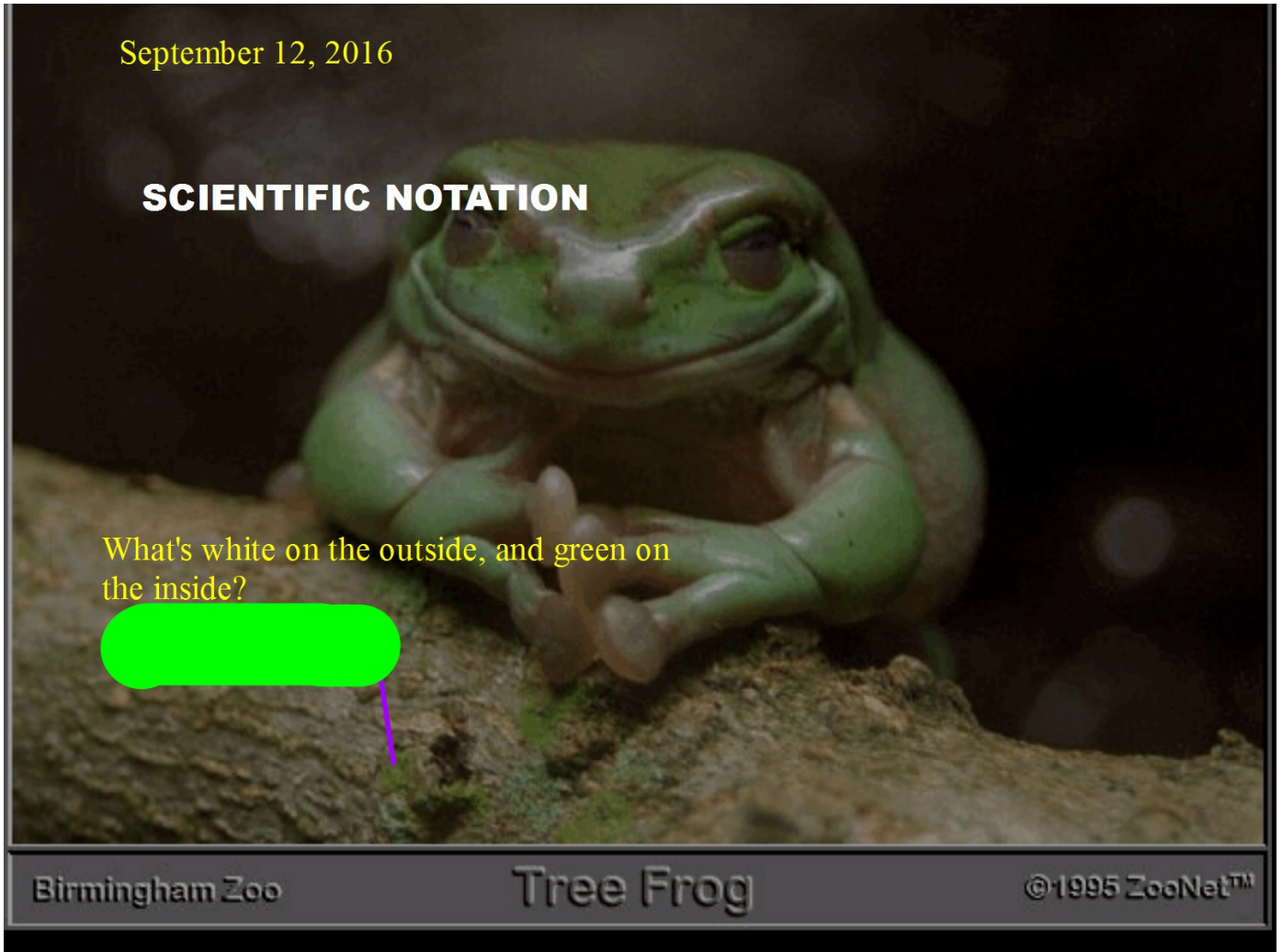


September 12, 2016

SCIENTIFIC NOTATION

What's white on the outside, and green on the inside?



Birmingham Zoo

Tree Frog

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Warm - Up

1) Which has the same value as 15^4 ?

a) 4×15

b) 4_{15}

c) $15 + 15 + 15 + 15$

d) $15 \times 15 \times 15 \times 15$

SCIENTIFIC NOTATION

A long time ago, in a galaxy far far away, some crazy scientist type people decided to come up with a way to write large numbers without all those nasty zeroes. Today, scientists are still trying to understand why they did this.....

Our journey begins....into scientific notation....right now....
no, not later...i said right now.....push the right arrow....

SCIENTIFIC NOTATION

Here's our really big number:

1,234,000,000,000,000,000,000,000,000,000

I can't even say this number....

1,2304000 1.2304×10^7

Ok, now put a decimal point behind the first number.

No, not that one, the first number..on the left...yeah, the 1.

Next, count all of the numbers behind it. all of them (not just the ones you want to)

How many are there?? 33

Lastly, you need to write 1.234×10^{33}and that number you counted it the exponent.....NEXT!!!

Now you try it!!!

$$1,546,000,000,000 = \underline{1.546 \times 10^{12}}$$

$$2,345,000 = \underline{2.345 \times 10^6}$$

$$1,000 = \underline{1 \times 10^3}$$

$$10 = \underline{1 \times 10^1}$$

$$98,000 = \underline{9.8 \times 10^4}$$

$$432 = \underline{4.32 \times 10^2}$$

$$15 = \underline{1.5 \times 10^1}$$

0.000000000005 = _____

uh - oh....better get maaco!!! I can't do this Mrs. Parra, it's too difficult.

It is not. Put your decimal point behind the first number that is not a zero. I said, after the one that is not a zero, right, the five. Now, count the number of places you moved it.

How many places?? 12

So, it would be 5×10^{-12}

And since we moved it in the opposite direction we would use what????

Your turn again!! Muhhhhhahahahahahaaahahaha

$$0.003 = \underline{3 \times 10^{-3}}$$

$$0.000045 = \underline{4.5 \times 10^{-5}}$$

$$0.0000345 = \underline{3.45 \times 10^{-5}}$$

$$0.00098 = \underline{9.8 \times 10^{-4}}$$

and lastly.....

$$0.000000000004 = \underline{4 \times 10^{-11}}$$

Icky gray!!! Must be time for standard notation time today!! I just rhymed!! I'm so good!!!

ok, so you have that number like.... 3×10^5 but you don't know what to do with it. Guess what? neither do we, but we have a cure!! We can turn it back into a real number, not an icky science number.

Now, remember which way we moved the zero with a positive exponent?? Now, to put it into standard form, we will do the opposite. Right? right!!!

So.. 3 **00000**

There you go, now on with the show!!
(I rhymed again)

Your turn again!!! I didn't rhyme this time!!

1) 4×10^6 4,000,000

2) 9.7×10^3 9700

3) 8.67×10^5 867,000

4) 1.9×10^{-2} 0.019

5) 2.01×10^{-8}

