2.9 Scientific Notation

Go to http://en.wikipedia.org/wiki/Scientific_notation . Read the introduction and the section titled "Normalized Notation".

Using the expression $a \times 10^b$, where a is any real number and b is an integer, complete the following:

Activity 1 - Circle all values that could be used for a in normalized scientific notation.

6.28	314	-10.4	7.32	13
-4.98	5.12	44	-235	7.99
90	-3.00	897	5	102

Activity 2 - Circle all values that can be used for b in normalized scientific notation.

6.2	3	10	-7.32	-1
4	-5	4.2	2.35	17
9	3.4	8	5.09	102

Activity 3 - Circle all the expressions that are expressed in normalized scientific notation.

6.28 x 10^5	314 x 10^{-2}	-10.4 x 10^8	7.32 x $10^{2.5}$	13 x $10^{-0.8}$
-4.98 x 10^3	5.12 x $10^{0.09}$	44 x 10^7	-235 x 10^{-6}	7.99 x 10^{15}
90 x 10^{-2}	-3.00 x $10^{8.25}$	897 x 10^1	5 x 10^{-5}	102 x 10^2

Class Notes – Write each expression in decimal form.

LP#1 7.00×10^4 =	5.00×10^6 =	8×10^2 =
LP#2 7.21×10^4 =	5.89×10^6 =	8.1×10^2 =
LP#3 7.00×10^{-4} =	5.00×10^{-6} =	8×10^{-2} =
LP#4 7.21×10^{-4} =	5.89×10^{-6} =	8.1×10^{-2} =

Lesson 2.9

Explain the pattern that you see above in relation to exponents being positive.

Explain the pattern that you see above in relation to exponents being negative.

Class Notes – Express each number using scientific notation.

LP#5 534,000	6,500	985,000,000
LP#6 0.00083	0.0000000121	0.00005732
LP#7 9,310,000,000	0.000000398	443

Review – In the **left column** write each expression in decimal form. In the **right column** express each decimal using scientific notation.

R#1 $6.90 \times 10^3 =$ $4.68 \times 10^{-5} =$	8,350 0.0432
R#2 $7.01 \times 10^4 =$ $2.56 \times 10^{-9} =$	9,210,000 0.000054
R#3 $9.23 \times 10^5 =$ $2.71 \times 10^{-7} =$	360,000 0.000781

Lesson 2.9

Homework – Write each expression in decimal form.

1) $6.02 \times 10^4 =$ 2) $1.46 \times 10^7 =$ 3) $8.00 \times 10^8 =$ 4) $4.66 \times 10^3 =$

5) $4.51 \times 10^8 =$ 6) $3.19 \times 10^5 =$ 7) $7.06 \times 10^3 =$ 8) $6.21 \times 10^9 =$

9) $5.21 \times 10^{-4} =$ 10) $8.39 \times 10^{-7} =$ 11) $1.81 \times 10^{-2} =$ 12) $7.83 \times 10^{-8} =$

13) $2.16 \times 10^{-1} =$ 14) $7.72 \times 10^{-6} =$ 15) $5.03 \times 10^{-9} =$ 16) $1.23 \times 10^{-6} =$

Express each number using scientific notation.

17) 7,240   18) 0.053   19) 8,050,000   20) 0.000624

21) 471,000   22) 0.000175   23) 6,130   24) 0.0756

25) 11,200,000   26) 0.00008   27) 790,000   28) 0.000458

29) 1,300   30) 0.0981   31) 197,000,000   32) 0.000004

Synthesis

Express the following in scientific form.

33) $\dfrac{5}{1000}$ 34) $\dfrac{7}{10}$ 35) $\dfrac{21}{500}$ 36) $\dfrac{789}{10,000}$ 37) $\dfrac{56}{2000}$

38) $\dfrac{123}{1,000,000}$ 39) $\dfrac{27}{20,000}$ 40) $\dfrac{423}{100,000}$ 41) $\dfrac{31}{500,000}$ 42) $\dfrac{5}{1000}$