Name: KEY Date: _____

Scientific Notation and Exponents Review Sheet

For each question, answer True (T) or False (F).

1.) T 5×10^{12} is written in scientific notation.

2.) F If a number in standard notation is between 0 and 1, the scientific notation will have a power of ten with a positive exponent. NEGATIVE exponent

3.) F 9.999×10^3 is larger than 1.6×10^4 The power of ten will show which number is larger

4.) F 3,405,000 in scientific notation is 3.45×10^6 3.405×10^6

5.) T 2.1×10^{-3} in standard form is 0.0021

6.) F $0^0 = 0$ indeterminate

7.) F 5^{-4} evaluates to a negative number. $\frac{1}{5^4} = \frac{1}{625}$ which is positive

Write each number in standard form.

8.) 5.23×10^4 52300 52,300

9.) 4.16×10^{-3} .00416 .00416

Write each number in scientific notation

10.) 560,000 5.6×10^5

11.) 0.024 2.4×10^{-2}

Circle the greater number in each pair of numbers.

12.) (2.4 x 10^6) 7.9×10^2

13.) 3.1×10^{-7} (7.5×10^{-4})

Find the product or quotient in each example.

14.) $(3.1 \times 10^{-5})(3 \times 10^2)$ 9.3×10^{-3}

15.) $\frac{2.4 \times 10^{-3}}{2 \times 10^4}$ 1.2×10^{-7}

16.) $\frac{(6.0 \times 10^{-4})(3 \times 10^{-8})}{(9 \times 10^{-12})}$ $\frac{18 \times 10^{-12}}{9 \times 10^{-12}}$

$-12-(-12)$

$-12+12=0$

2×10^0

Write the following numbers in scientific notation.

17.) 35.7×10^7 3.57×10^8

18.) 0.08×10^{-3} 8×10^{-5}

19.) 0.05×10^2 5×10^0

20.) 435.6×10^2 4.356×10^4

Simplify every expression using the laws of exponents. Where <u>possible</u>, evaluate the expression.

21. $4(9^0)$ $4(1)$ $\boxed{4}$	22. $2^3 \times 2^2$ 2^5 $\boxed{32}$	23. $3^9 \div 3^3$ 3^6 $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$ $\boxed{729}$	24. -5^2 the opposite of 5^2 $\boxed{-25}$	25. $(-5)^2$ square the -5 # $(-5)(-5)$ 25 $\boxed{25}$
26. $10^7 \div 10$ 10^6 $\boxed{1000000}$	27. 4^{-2} $\frac{1}{4^2}$ $\boxed{\frac{1}{16}}$	28. $(-2)^{-3}$ $\frac{1}{(-2)^3}$ $\boxed{\frac{1}{-8}}$	29. $-5n^0$ $-5 \cdot n^0$ $-5 \cdot 1$ $\boxed{-5}$	30. $(-5n)^0$ $\boxed{1}$
31. $k^3 \cdot k^1 \cdot k^4$ $\boxed{K^8}$	32. $\frac{8^6}{8^3}$ 8^3 $\boxed{512}$	33. $\frac{x^4 \bullet x^5}{x^2}$ $\frac{x^9}{x^2}$ $\boxed{x^7}$	34. $\frac{4^{-4}}{4^{-6}}$ $-4-(-6)$ $-4+6$ 2 4^2 $\boxed{16}$	35. $(-3a^3)(2a^5)$ $\boxed{-6a^8}$

36. Order the following numbers from **least** to **greatest**. Show all work to justify your response.

3^{-3}	2^3	$(-3)^3$	2^{-5}	$(-2)^{-2}$
$\frac{1}{3^3}$	8	-27	$\frac{1}{2^5}$	$\frac{1}{(-2)^2}$
$\frac{1}{27}$			$\frac{1}{32}$	$\frac{1}{4}$

$-27, \frac{1}{32}, \frac{1}{27}, \frac{1}{4}, 8$

$\boxed{(-3)^3,\ 2^{-5},\ 3^{-3},\ (-2)^{-2},\ 2^3}$