Honors Chemistry Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Dr. Wexler
Scientific Notation Practice Quiz 2 (Advanced)
Date:

**Part I. Expressing Scientific Notation**

A. Convert each of the following numbers into scientific notation
Examples: 5830 = 5.830 x 103; 0.0004 = 4 x 10-4

Hint: if the number is greater than 1, the exponent will be positive (and visa versa)

1. 320 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. 59 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. 253000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. 0.007 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. 0.093 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B. Convert each of the following numbers into standard notation
Examples: 4 x 105 = 400000; 3 x 10-3 = 0.003
Hint: if the exponent is positive, move the decimal to the right (and visa versa)

6. 3.2 x 103 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. 5.0 x 105 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. 9.84 x 102 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. 4.0 x 10-1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. 6.7 x 10-2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. 1.5 x 10-3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C. Correct the scientific notation of each number using the decimal rule:
Example: 98.0 x 1012 = 9.80 x 1013; 0.098 x 1012 = 9.8 x 1010
Hint: if when moving the decimal the number gets smaller, the exponent must get bigger (and visa versa)

12. 53 x 103  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. 290 x 1016 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. 2950 x 108 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. 0.602 x 1024 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16. 0.24 x 106  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. 42 x 10-17 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18. 0.33 x 1018 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. 0.062 x 10-7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part II. Computing with Scientific Notation (you must show your work to receive full credit). Do not use a calculator!**

A. Multiplication
Hint: use the “addition rule”: (2 x 101)x(2 x 103) = 4 x 103+1 = 4 x 104

20. (3 x 105)x(2 x 1015)

21. (2 X 106)x(4 X 10-15)

B. Division
Hint: for division use the “subtraction rule”: (2 x 101) / (2 x 103) = 1 x 101-3 = 1 x 10-2

22. (6 x 1018)/(2 x 105)

23. (8 X 108)/(2 X 10-4)

C. Addition or subtraction

Hint: for addition or subtraction, the exponents must be made identical before you can combine the terms.
(As a rule, change the smaller exponent to equal the larger exponent)
For example, (1 x 108) + (2 x 107) becomes (1 x 108) + (**0.2** x 10**8**) becomes (1 + 0.2) x 108 = 1.2 x 108

24. (3 x 1014) + (6 x 1013)

25. (1.5 x 1016) – (5 x 1015)