

Name: Key

Blk: _____ Date: _____

Chemistry 11 SCIENTIFIC NOTATION + SIGNIFICANT FIGURES

Why use Scientific Notation?

→ Sometimes it is useful to be able to express either **LARGE** or **SMALL** numbers in a simplified manner.

→ Expressing #'s to the base of 10 allows for more efficient + simplified calculations.

1. Converting Ordinary Notation into Scientific Notation:

a. $299,793,000 \rightarrow 2.99793 \times 10^8$

b. $0.000,000,5893 \rightarrow 5.893 \times 10^{-7}$

2. Converting Scientific Notation into Ordinary Notation:

a. $1.8 \times 10^6 \rightarrow 1,800,000$

b. $5.39621 \times 10^{-9} \rightarrow 0.00000000539621$

3. Mathematics of EXPONENTS

When multiplying you ADD exponents

Ex. $10^6 \times 10^4 = 6 + 4 = 10^{10}$

When dividing you SUBTRACT exponents

Ex.

$$\frac{10^8}{10^4} = 8 - 4 = 10^4$$

4. Using your SCIENTIFIC CALCULATORS to perform mathematical calculations involving Scientific Notation.

A. $(5.8 \times 10^3)(6.7 \times 10^{-5})$

i. Enter (5.8 EXP 3)

ii. Enter (×)

iii. Enter (6.7 EXP (-) 5)

iv. Convert answer into correct number of sig figs

$\therefore (5.8 \times 10^3)(6.7 \times 10^{-5}) = 0.3886 \rightarrow \boxed{3.9 \times 10^{-1}}$

(2) (2)

B. $(2.7 \times 10^{-5}) \div (3.9 \times 10^{-3})$

v. Enter (2.7 EXP - 5)

vi. Enter (÷)

vii. Enter (3.9 EXP - 3)

viii. Convert answer into correct number of sig figs

$\therefore (2.7 \times 10^{-5}) \div (3.9 \times 10^{-3}) = 0.006923 \rightarrow \boxed{6.9 \times 10^{-3}}$

(2) (2)

C. $(3.5 \times 10^3) + (5.4 \times 10^5)$

ix. Enter (3.5 EXP 3)

x. Enter (+)

xi. Enter (5.4 EXP 5)

Convert answer into correct number of sig figs

$\therefore (3.5 \times 10^3) + (5.4 \times 10^5) = 543500 \rightarrow \boxed{5.435 \cdot 10^5}$

3500 + 540000

?
(decimal places)

D. $(6.25 \times 10^4) - (3.52 \times 10^5)$

xii. Enter (6.25 EXP 4)

xiii. Enter (-)

xiv. Enter (3.52 × 10⁵)

Convert answer into correct number of sig figs

$\therefore (6.25 \times 10^4) - (3.52 \times 10^5) = -289500 \rightarrow \boxed{-2.895 \cdot 10^5}$

?
(decimal places)

62500 - 352000