

Name _____ Period ___ Date _____

Chemistry 1
 Scientific / Exponential Notation

Part A. Express the following expanded form to scientific / exponential notation form. The first four are examples to demonstrate the concept. The idea is to move the decimal until there is one digit (not zero) to the left of the decimal. Also if the number is small the exponent is negative and if the number is large the exponent is positive.

| | Expanded form | Method to convert | Scientific/exponential notation form |
|-------|---------------|-------------------|--------------------------------------|
| Ex. 1 | 10000 | <u>1</u> 0000 | 1×10^4 |
| Ex. 2 | 0.02 | 0. <u>0</u> 2 | 2×10^{-2} |
| Ex. 3 | 3005 | <u>3</u> 005 | 3.005×10^3 |
| Ex. 4 | 0.0532 | 0. <u>0</u> 532 | 5.32×10^{-2} |

| | Expanded form | Method to convert (No work required, for your use only) | Scientific/exponential notation form |
|----|------------------|--|--------------------------------------|
| 1 | 10000 | | |
| 2 | 0.0001 | | |
| 3 | 10000000000 | | |
| 4 | 200000000 | | |
| 5 | 0.0000000004 | | |
| 6 | 790000 | | |
| 7 | 260000000000 | | |
| 8 | 0.0000000045 | | |
| 9 | 0.00000000000013 | | |
| 10 | .0175 | | |
| 11 | .0000462 | | |
| 12 | 28 | | |
| 13 | 3000000 | | |

| | | | |
|----|---------|--|--|
| 14 | 0.00900 | | |
| 15 | 371 | | |
| 16 | 7.480 | | |

Part B. Now we will change the scientific/exponential notation to expanded form. If the exponent is negative, then move the decimal to make the number smaller. If the exponent is large, then move the decimal to make the number larger.

| | Scientific/exponential notation form | Method to convert | Expanded form |
|-------|--------------------------------------|-------------------|---------------|
| Ex. 1 | 1×10^4 | <u>10000</u> | 10000 |
| Ex. 2 | 2×10^{-2} | <u>0.2</u> | 0.02 |
| Ex. 3 | 3.005×10^3 | <u>3005</u> | 3005 |
| Ex. 4 | 5.32×10^{-2} | <u>0.532</u> | 0.0532 |

| | Scientific/exponential notation form | Method to convert (No work required, for your use only) | Expanded form |
|----|--------------------------------------|--|---------------|
| 17 | 6.2×10^{-1} | | |
| 18 | 1.75×10^{-2} | | |
| 29 | 9.410×10^{-2} | | |
| 20 | 7.05×10^{-1} | | |
| 21 | 9.15×10^2 | | |
| 22 | 9.15×10^3 | | |
| 23 | 5.302×10^1 | | |
| 24 | 1.342×10^2 | | |
| 25 | 9.15×10^{-5} | | |
| 26 | 7.6450×10^0 | | |
| 27 | 5.302×10^{-1} | | |