Guided Notes (Model Notes)

# Standard Notation to Scientific Notation

**Step 1)** Find the first \_\_*nonzero*\_\_ digit and place the decimal after it.

**Step 2)** Count how many places the decimal moves to get back to the \_\_*original number*\_\_.

**Step 3)** Write the number as: 

**Step 4)** Determine the exponent:

* If the number is \_\_*greater*\_\_ than 1, the exponent is \_\_*positive*\_\_.
* If the number is \_\_*less*\_\_ than 1, the exponent is \_\_*negative*\_\_.

# Significant Figures

* *“sig figs” – digits in the number that carry meaning*

# Examples

Write the following numbers in scientific notation with two significant figures.

|  |  |
| --- | --- |
| **(a)** 47,000  4.7 × 104 | **(b)** 3,500,000  3.5 × 106 |
| **(c)** 0.0059  5.9 × 10–3 | **(d)** 0.000082  8.2 × 10–5 |

# Scientific Notation to Standard Notation

**Step 1)** Look at the \_\_*exponent*\_\_ of the 10.

**Step 2)** Move the decimal in the number:

* To the \_\_*right*\_\_ if the exponent is positive.
* To the \_\_*left*\_\_ if the exponent is negative.

**Step 3)** Add *\_\_zeros\_\_* if needed to fill in missing places.

# Examples

Write the following numbers in standard notation with two significant figures.

|  |  |
| --- | --- |
| **(a)** 9.4 × 10–3  0.0094 | **(b)** 3.7 × 10–5  0.000037 |
| **(c)** 2.6 × 107  26,000,000 | **(d)** 1.5 × 104  15,000 |

# Comparing Numbers in Scientific Notation

* Look at the \_\_*exponents*\_\_ first.
  + The number with the \_\_*larger*\_\_ exponent is the greater number.

|  |  |
| --- | --- |
| **ex.)** 3.1 × 105  8.7 × 103 | **ex.)** 9.2 × 10–2  2.4 × 10–6 |

* + If the \_\_*exponents*\_\_ are the same, compare the \_\_*decimal values*\_\_.  
    The number with the \_\_*larger*\_\_ decimal is the greater number.

|  |  |
| --- | --- |
| **ex.)** 2.4 × 105  5.1 × 105 | **ex.)** 8.0 × 10–6  1.3 × 10–6 |

***Watch out for negative exponents!***