Guided Notes (Model Notes)

# Multiplying Numbers in Scientific Notation

**Step 1)** Multiply the *decimal numbers (coefficients)* .

**Step 2)** *Add*  the exponents.

**Step 3)** Rewrite the result in scientific notation.
 *Remember the number before the decimal point should be 0–9 .*

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| --- | --- |
| **Example** |  |
| **Step 1)**  |  |
| **Step 2)**  |  |
| **Step 3)**  | Is 20.25 ×107  written in scientific notation? Why or why not?*No, because the number before the decimal is not between 0 and 9.* |

# Rewriting Numbers in Scientific Notation

**Step 1)** Move the decimal in the number so there is only *one nonzero digit*  before it.

**Step 2)** Count the number of places and note *the direction*  you moved the decimal.

**Step 3)** Change the exponent:

* If you moved the decimal *left* , add the number of places to the exponent.
* If you moved the decimal *right* , subtract the number of places from the exponent.

How could we write 20.25 ×107  in scientific notation? 2.025 ×108 .

# Examples

Write each product in scientific notation. Round each answer to two decimal places.

|  |  |
| --- | --- |
| **(a)**  2.09 × 108 | **(b)**  1.14 × 109 |
| **(c)**  3.81 × 10–7 | **(d)**  1.68 × 10–4 |

# Dividing Numbers in Scientific Notation

**Step 1)** Divide the *decimal numbers (coefficients)* .

**Step 2)** *Subtract*  the exponents.

**Step 3)** Rewrite the result in scientific notation.

# Examples

Write each quotient in scientific notation. Round each answer to two decimal places.

|  |  |
| --- | --- |
| **(a)**  1.86 × 104 | **(b)**  1.34 × 10–4 |
| **(c)**  1.67 × 10–9 | **(d)**  4.10 × 10–3 |