

Name Key
Mrs. Roubos

Date _____
8R Period _____

Scientific Notation Word Problems

I. Key words and phrases:

Key Words	What you do
How many times / Quotient	Divide
How much more / many more / much longer / much shorter / Difference	Subtract
In total / combined	Add
Which is larger / smaller / longer / shorter	Compare them
Times (or no key words)	Multiply
Scientific Notation → (SCI)	Ex 4.63×10^4
Standard Form → (FLO)	Ex 20,302, 0.0043

II. Examples:

⚠ must write #'s in parentheses on paper and in calc ⚠

1) The diameter of the nucleus of a hydrogen atom is about 1×10^{-14} meters. The diameter of the entire atom is 1×10^4 times that size. What is the approximate diameter of a hydrogen atom expressed in scientific notation?

$$(1 \times 10^{-14}) \cdot (1 \times 10^4) = 1 \times 10^{-10}$$

2) In 2010, the population of Austria was about 8.397×10^6 . The population of Switzerland was about 7.783×10^6 . About how much more was the population of Austria than Switzerland?

⚠ watch order

$$(8.397 \times 10^6) - (7.783 \times 10^6) = 6.14 \times 10^5$$

3) The speed of light is 1.86×10^5 miles per second. What is this number in standard notation?

$$186,000$$

↓
(FLO)

2nd PROVE FLO =

4) The population of a small country is 5,740,000. Express this number using scientific notation.

$$5.74 \times 10^6$$

↓
SCI mode

2nd) DRG) > SCI (=)

5) In astronomy, the immense distances between celestial bodies are measured in light-years, the distance that light can travel in one year. One light year is approximately 5,880,000,000,000 miles. If a star is 8.5 light years from Earth, approximately how many miles it is from Earth?

- a) 50.0×10^{12} mi
- b) 5.0×10^{13} mi
- c) 5.9×10^{12} mi
- d) 5.4×10^{13} mi

(round)

* No key phrase = multiply

$$(5,880,000,000,000) \cdot (8.5)$$

6) A very small dust particle has a diameter of about 0.004 inches. Most cells of living organisms have diameters of about 4×10^{-4} inches. Which is larger, the dust particle or the typical cell in a living organism?

* Compare the exponents, then compare the coefficients

$$0.004 > 4 \times 10^{-4}$$

$$0.004 > 4 \times 10^{-4}$$

$$4 \times 10^{-3} > 4 \times 10^{-4}$$

$$0.004 > .0004$$

OR

$$-3 > -4$$

The dust particle is larger

7) (8.4×10^5) is how many times as great as (2.0×10^3) ?

$$(8.4 \times 10^5) \div (2.0 \times 10^3) = 4.2 \times 10^2$$

8) What is the combined weight of (6.2×10^3) mg and (4.5×10^4) mg?

$$(6.2 \times 10^3) + (4.5 \times 10^4) = 5.12 \times 10^4$$

9) The length of your classroom is about 3.5×10^2 inches. If the hallway is ten times as long as the classroom, what is the length of the hallway, expressed in scientific notation?

$$(3.5 \times 10^2) \cdot (10) = 3.5 \times 10^3$$

10) In 2010, the population of the Dominican Republic was about 9.884×10^6 . The population of Haiti was about 1.009×10^7 . About how much more was the population of Haiti than the Dominican Republic?

watch order -

$$\begin{array}{c} \text{Haiti} \\ \downarrow \\ (1.009 \times 10^7) \end{array} - \begin{array}{c} \text{D.R.} \\ \downarrow \\ (9.884 \times 10^6) \end{array} = 2.06 \times 10^6$$

10^7 10^6 2nd

11) (1.23×10^9) is how many times as great as (3×10^5) ?

$$(1.23 \times 10^9) \div (3 \times 10^5) = 4.1 \times 10^3$$

12) What is 6,200,000,000 written in scientific notation?

$$6.2 \times 10^9$$

SC7 math

2nd DE6 > SC7 =

13) A bookstore orders a shipment of books. The books weigh 3.2 lb each. How much will a shipment of 100 books weigh? Write your answer in scientific notation?

$$(3.2)(100) = 3.2 \times 10^2$$

Number sense = multiply

14) In 2011, the population of Canada was about 3.435×10^7 . The population of the United States was about 3.120×10^8 . What was the population in total of the two countries?

$$(3.435 \times 10^7) + (3.120 \times 10^8) = 3.4635 \times 10^8$$

15) What is 4.5×10^{-3} in standard form?

$$0.0045$$

FLU math

2nd PR6 < FLU =