

Turn in your test corrections for the Exponents.

Warm-up

$$1) 1\frac{3}{4} + \frac{2}{3} =$$

$$2) \frac{7}{8} \div \frac{3}{4} =$$

$$3) 2\frac{1}{3} - 1\frac{7}{9} =$$

$$4) 2.\overline{12} \times \frac{7}{9} =$$

$$1) 1\frac{3}{4} + \frac{2}{3} = \frac{7}{4} + \frac{2}{3} = \frac{21}{12} + \frac{8}{12} = \frac{29}{12}$$

$$2) \frac{7}{8} \div \frac{3}{4} = \frac{7}{8} \cdot \frac{4}{3} = \frac{7}{6}$$

$$3) 2\frac{1}{3} - 1\frac{2}{9} = 2\frac{3}{9} - 1\frac{2}{9} = \frac{21}{9} - \frac{16}{9} = \frac{5}{9}$$

$$4) 2.\overline{12} \times \frac{7}{9}$$

$$2\frac{12}{99} \times \frac{7}{9}$$

$$70\frac{210}{99} \times \frac{7}{9} = \frac{490}{297}$$

Scientific Notation Word Problems

Place Value Chart

Hundred Billions		Hundred Millions		Hundred Thousands		Hundreds		Tenths												
Ten Billions		Ten Millions		Ten Thousands		Tens		Hundredths												
Billions		Millions		Thousands		Ones		Thousandths												
2	1	0	,	9	8	7	,	6	5	4	,	3	2	1	.	2	3	4	5	6



This Chart shows the place value of the number 210,987,654,321.23456

This is how you say it.

Two hundred ten billion, nine hundred eighty seven million, six hundred fifty four thousand, three hundred twenty one, and twenty three thousand four hundred fifty six hundred thousandths.

1) Write 9 billion in scientific notation.

$$\underline{9,000,000,000} \quad 9 \times 10^9$$

2) Write 23 million in scientific notation.

$$\underline{23,000,000} \quad 2.3 \times 10^7$$

3) Write 613 thousand in scientific notation.

$$\underline{613,000} \quad 6.13 \times 10^5$$

Drag and drop words into the appropriate category for word problems. Add any new words to you chart from earlier this year (Verbal Expressions interactive Notebook)

Addition	Subtraction
more than overall increased Sum total in all	difference decreased fewer than how much longer how many more

Multiplication

product
times

Division

per
quotient
each
how many times greater
how many times longer
how many times more

1. In a vacuum, light travels at the speed of 3.0×10^8 . In air, light travels at a speed of 2.3×10^8 . How many times faster does light travel in a vacuum than ~~ice?~~ air?

Keyword operation: how many times (\div)

Solve the problem:

$$\begin{aligned}\frac{3.0 \times 10^8}{2.3 \times 10^8} &= \left(\frac{3.0}{2.3}\right) \times 10^{8-8} \\ &= 1.304 \times 10^0 \\ &= 1.304 \times 1 \\ &= 1.304\end{aligned}$$

2. The distance between Mars and Earth varies over time. The greatest distance between the two planets is about 4.01×10^8 km. The shortest distance is 5.45×10^7 km. What is the difference in km between these distances written in scientific notation?

Keyword operation: difference (-)

Solve the problem:

$$\begin{array}{r} 391010 \\ 401,000,000 \\ - 54,500,000 \\ \hline \underline{346,500,000} \end{array}$$

$$\begin{array}{r} 4.01 \times 10^8 - 5.45 \times 10^7 \\ 4.01 \text{uuuu} - 5.45 \text{uuuu} \\ 401,000,000 - 54,500,000 \\ 3.465 \times 10^8 \end{array}$$

3. In the year 2006 there were 8.512×10^8 one dollar bills printed. In the year 2007 there were 8.32×10^7 one dollar bills printed. How many more dollar bills were printed in 2006 than 2007?

Keyword operation: how many more (-)

Solve the problem:

$$8.512 \times 10^8 - 8.32 \times 10^7$$

$$8.512 \times 10^8 - .832 \times 10^8$$

$$(8.512 - .832) \times 10^8$$

$$7.68 \times 10^8$$

$$\begin{array}{r} 7.1411 \\ 8.512 \\ - .832 \\ \hline 7.680 \end{array}$$

4. The population of Asia is 4.05×10^9 . The population of Europe is 7.36×10^8 . What is the total population of both Asia and Europe?

Keyword operation: total (+)

Solve the problem:

$$4.05 \times 10^9 + 7.36 \times 10^8$$

$$4.05 \times 10^9 + .736 \times 10^9$$

$$\begin{array}{r} 4.050 \\ + .736 \\ \hline 4.786 \end{array} \quad (4.05 + .736) \times 10^9$$

$$4.786 \times 10^9$$

5. The half-life of uranium-238 is 4.5×10^9 years. The half-life of uranium-234 is 2.5×10^5 years. How many times greater is the half-life of uranium-238 than that of uranium-234?

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6. The state of Colorado covers about 1.04×10^5 square miles. The Indian Ocean covers about 2.808×10^7 square miles. How many times bigger than Colorado is the Indian Ocean?

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7. Students at Salt Lake Community College pay 1.585×10^4 dollars for tuition. Students at George Washington University pay 4.573×10^5 dollars. How many times greater is the tuition at George Washington?



8. The population of the United State is 3×10^8 and the population of the world is 7×10^9 . How many times larger is the population of the world than the U.S.?

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Geographers keep track of how many people live in different areas of the world. They are especially interested in how the populations of certain area change. The table below shows the population of different regions in 1985 and in 2005.

Place	Population	
	1985	2005
Earth	4.9×10^9	6.4×10^9
China	1.1×10^9	1.3×10^9
India	7.6×10^8	1.1×10^9
United States	2.4×10^8	3.0×10^8

9. In 2005, how many times greater [÷] than China's population is the population of the world ^{add}?
10. How many more ⁺ people inhabited Earth in 2005 ⁺ than in 1985?

