


VII. Computing with scientific notation - Multiplication and Division

To multiply: $(a \times 10^m)(b \times 10^n) = (a \times b)(10^{m+n})$

Model:
 $(2 \times 10^3)(4 \times 10^2) = (2)(4) \times 10^{3+2} = 8 \times 10^5$

Practice:

1) $(5 \times 10^3)(2 \times 10^4)$ 6×10^4	2) $(2.9 \times 10^9)(2 \times 10^4)$ 4.8×10^{13}
3) $(2 \times 10^2)(3.6 \times 10^4)$ 7.2×10^{12}	4) $(8.8 \times 10^7)(2 \times 10^{-2})$ 8.8×10^{-7}



Oct 15-10:24 PM


5) $(4.2 \times 10^{-12})(2.1 \times 10^8)$
 8.82×10^{-20}

6) $(3.3 \times 10^{16})(7 \times 10^9)$
 $23.1 \times 10^{25} = 2.31 \times 10^{26}$

7) $(3.99 \times 10^{16})(9.1 \times 10^{-7})$
 36.309×10^9
 3.6309×10^{10}

8) $(1.2 \times 10^{-27})(1.2 \times 10^{12})$
 1.44×10^{-5}

LARS Subtract left digit



Oct 15-10:25 PM

To divide: $(a \times 10^m) \div (b \times 10^n) = (a \div b)(10^{m-n})$

Model:
 $(9 \times 10^4) \div (3 \times 10^2) = (9 \div 3)(10^{4-2}) = 3 \times 10^2$

Practice:

1) $(9 \times 10^3) \div (2 \times 10^{-1})$ 2×10^{13}	2) $(2.2 \times 10^5) \div (5 \times 10^{12})$ $.4 \times 10^{-7} = 4 \times 10^{-8}$
3) $(2 \times 10^4) \div (2 \times 10^{13})$ 3.5×10^{-19}	4) $(9.3 \times 10^{15}) \div (3.3 \times 10^6)$ 2.81×10^9

-6-13

To Do
 +/- Keep
 -x-
 -

LARS

Oct 15-10:27 PM

5) $(7.625 \times 10^2) \div (2.5 \times 10^7)$ $-2-7$
 3.05×10^5

6) $(3.41 \times 10^{10}) \div (6.2 \times 10^4)$ $10-4$
 $55 \times 10^{14} = 5.5 \times 10^{15}$

7) $(5.117 \times 10^3) \div (6.02 \times 10^{-7})$ $-2-7$
 $85 \times 10^5 = 8.5 \times 10^4$

8) $(3.024 \times 10^{13}) \div (7.2 \times 10^9)$ $-13-8$
 $.42 \times 10^{-25} = 4.2 \times 10^{-22}$

9) $(3 \times 10^5) \div (6 \times 10^2)$
 $12 \times 10^{14} = 2 \times 10^{12}$

10) $(8 \times 10^{-9}) \div (6 \times 10^5)$ $-5-9$
 $24 \times 10^{-14} = 4 \times 10^{-19}$

11) $(9 \times 10^{-8}) \div (3 \times 10^{-7})$ $-17-7$
 $81 \times 10^{-17} = 27 \times 10^{-10} = 2.7 \times 10^{-11}$

12) $(5 \times 10^5) \div (2 \times 10^{-4})$ $17-4$
 $30 \times 10^{17} = 15 \times 10^{21} = 1.5 \times 10^{22}$

Oct 15-10:28 PM


Problem Solving:

11. The surface area of Lake Superior, the largest of the Great Lakes, is 8.2×10^4 square kilometers. The surface area of the smallest Great Lake, Ontario, is 1.816×10^4 square kilometers. About how many times as great is the area covered by Lake Superior than Lake Ontario?

1.816×10^4

Greater $\frac{8 \times 10^4}{1.816 \times 10^4} \approx 4.4 \times 10^0$
 smaller


so about 4 times



12. In 2000, 8.1 billion text messages were sent in the United States. In 2010, the number of annual text messages had risen to 1.81×10^{12} . About how many times as great was the number of text messages in 2010 than 2000?

Greater $\frac{1.81 \times 10^{12}}{8.1 \times 10^{10}} \approx .22 \times 10^2$
 smaller

22 times



Oct 15-10:28 PM