Key

Multiplication
When numbers in scientific notation are multiplied, only the number is multiplied. The exponents are added.

$$(2.00 \times 10^3)(4.00 \times 10^4) = (2.00)(4.00) \times 10^{3+4}$$
$$= 8.00 \times 10^7$$

Division
When numbers in scientific notation are divided, only the number is divided. The exponents are subtracted.

$$\frac{9.60 \times 10^7}{1.60 \times 10^4} = \frac{9.60}{1.60} \times 10^{7-4}$$
$$= 6.00 \times 10^3$$

1. $(4 \times 10^2)(2.2 \times 10^5)$

8.8×10^7

2. $\frac{9 \times 10^{-4}}{3 \times 10^0} =$ 3×10^{-4}

3. $(6.02 \times 10^7)(2 \times 10^{-1})$

$12.04 \times 10^{6+1}$

1.204×10^7

4. $\frac{1.4 \times 10^4}{2 \times 10^8} =$ $0.7 \times 10^{-4-1}$

7.0×10^{-3}

5. $(7 \times 10^{-3})(5 \times 10^{-10})$

$35 \times 10^{-13+1}$

3.5×10^{-12}

6. $\frac{3.5 \times 10^{-5}}{7 \times 10^{-2}} =$ $0.5 \times 10^{-3-1}$

5.0×10^{-4}

7. $(4.1 \times 10^3)(5 \times 10^5)$

$20.5 \times 10^{8+1}$

2.05×10^9

8. $\frac{6.6 \times 10^7}{3 \times 10^{-6}} =$ 2.2×10^{13}

9. $(2.5 \times 10^4)(4 \times 10^{-7})$

$10 \times 10^{-3+1}$

1.0×10^{-2}

10. $\frac{4.6 \times 10^{-4}}{2.3 \times 10^0} =$ 2×10^{-4}

Name Key Period _____ Date _____

Operations with Scientific Notation

These should all be solved without using a calculator. Make sure your answers are in proper scientific notation.

1. $(2.5 \times 10^6)(3 \times 10^3) =$ 7.5×10^9

2. $(3 \times 10^{-5})(3 \times 10^{-10}) =$ 9×10^{-15}

3. $(4 \times 10^1)(2 \times 10^{11}) =$ 8×10^{12}

4. $(6 \times 10^5)(4 \times 10^3) =$ $24 \times 10^8 = 2.4 \times 10^9$

5. $(5 \times 10^{-15})(7 \times 10^6) =$ $35 \times 10^{-9} = 3.5 \times 10^{-8}$

6. $(2 \times 10^{-4})(7 \times 10^{-8}) =$ $14 \times 10^{-12} = 1.4 \times 10^{-11}$

7. $(7 \times 10^6)(3 \times 10^{-7}) =$ $21 \times 10^{-1} = 2.1 \times 10^0$

8. $(4 \times 10^{-10})(3 \times 10^{13}) =$ $12 \times 10^3 = 1.2 \times 10^4$

9. $\frac{2.6 \times 10^{-3}}{1.3 \times 10^9} =$ 2×10^{-12}

10. $\frac{5 \times 10^8}{2 \times 10^3} =$ 2.5×10^5

11. $\frac{1.2 \times 10^7}{4 \times 10^5} =$ $0.3 \times 10^2 = 3 \times 10^1$

12. $\frac{2.3 \times 10^{-3}}{4.6 \times 10^9} =$ $0.5 \times 10^{-12} = 5 \times 10^{-13}$

13. $\frac{7 \times 10^{-5}}{3.5 \times 10^{-9}} =$ 2×10^4

14. $\frac{9 \times 10^{-3}}{3 \times 10^{-3}} =$ 3×10^0

15. $\frac{2.8 \times 10^0}{4 \times 10^{-7}} =$ $0.7 \times 10^7 = 7 \times 10^6$

16. $\frac{2 \times 10^{-2}}{8 \times 10^{-11}} =$ $0.25 \times 10^9 = 2.5 \times 10^8$