

**WKS – Chem Honors
Scientific Notation**

NAME Answer Key
Period _____ Date _____

For Parts A to C do NOT use your calculator.

A. Express in scientific notation. Keep track of units.

1. 3,000,000 km $3 \times 10^6 \text{ km}$	2. 0.0000307 L $3.07 \times 10^{-5} \text{ L}$
3. -350,000 mm $-3.5 \times 10^5 \text{ mm}$	4. -0.00009 kg $-9 \times 10^{-5} \text{ kg}$

B. Express in common decimal form. Keep track of units.

5. $7.3 \times 10^2 \text{ ms}$ 730 ms	6. $5.83 \times 10^{-4} \text{ L}$ 0.000583 L
7. $-3.4 \times 10^6 \text{ km}$ -3,400,000 km	8. $-8.003 \times 10^{-4} \text{ s}$ -0.0008003 s

C. Evaluate the following expressions. Write the answer as you initially determine it, then convert it to valid scientific notation if necessary. Watch your units!

9. $8.5 \times 10^3 \text{ s} + 2.3 \times 10^2 \text{ s}$ $8.5 \times 10^3 \text{ s} + 0.23 \times 10^3 \text{ s} = 8.73 \times 10^3 \text{ s}$	10. $4.55 \times 10^2 \text{ g} - 3.3 \times 10^1 \text{ g}$ $4.55 \times 10^2 \text{ g} - 0.33 \times 10^2 \text{ g} = 4.22 \times 10^2 \text{ g}$
11. $25 \times 10^4 \text{ cm} \times 5 \times 10^2 \text{ cm}$ $125 \times 10^6 \text{ cm}^2 = 1.25 \times 10^8 \text{ cm}^2$	12. $\frac{4 \times 10^4 \text{ g}}{8 \times 10^2 \text{ L}}$ $0.5 \times 10^2 \text{ g/L} = 5 \times 10^1 \text{ g/L}$

D. Evaluate the following expressions *using your calculator*; write your answer in scientific notation. Watch units!

13. $2 \times 10^{-4} \text{ mm} \times 3 \times 10^7 \text{ mm}$ $6 \times 10^3 \text{ mm}^2$	14. $\frac{3.4 \times 10^{-8} \text{ m}}{1.7 \times 10^{-3} \text{ s}}$ $2 \times 10^{-5} \text{ m/s}$
15. $\frac{5 \times 10^2 \text{ g} \times 8 \times 10^{-4} \text{ cm}}{2 \times 10^7 \text{ s}}$ $2 \times 10^{-8} \text{ g} \cdot \text{cm/s}$	16. $\frac{8 \times 10^{-1} \text{ kg} \times 1.5 \times 10^2 \text{ m}}{2 \times 10^{-1} \text{ s} \times 7.5 \times 10^1 \text{ s}}$ $8 \times 10^0 \text{ kg} \cdot \text{m/s}^2$

17. By what *factor* is 6 greater than 2?

$$\frac{6}{2} = 3$$

18. By what *factor* is 1×10^6 greater than 1×10^2 ?

$$\frac{1 \times 10^6}{1 \times 10^2} = 1 \times 10^4 = 10,000$$