

# CALCULATIONS USING SIGNIFICANT FIGURES

Name \_\_\_\_\_

When multiplying and dividing, limit and round to the least number of significant figures in any of the factors.

**Example 1:**  $23.0 \text{ cm} \times 432 \text{ cm} \times 19 \text{ cm} = 188,784 \text{ cm}^3$

The answer is expressed as  $190,000 \text{ cm}^3$  since 19 cm has only two significant figures.

When adding and subtracting, limit and round your answer to the least number of decimal places in any of the numbers that make up your answer.

**Example 2:**  $123.25 \text{ mL} + 46.0 \text{ mL} + 86.257 \text{ mL} = 255.507 \text{ mL}$

The answer is expressed as  $255.5 \text{ mL}$  since 46.0 mL has only one decimal place.

Perform the following operations expressing the answer in the correct number of significant figures.

1.  $1.35 \text{ m} \times 2.467 \text{ m} =$  \_\_\_\_\_
2.  $1,035 \text{ m}^2 + 42 \text{ m} =$  \_\_\_\_\_
3.  $12.01 \text{ mL} + 35.2 \text{ mL} + 6 \text{ mL} =$  \_\_\_\_\_
4.  $55.46 \text{ g} - 28.9 \text{ g} =$  \_\_\_\_\_
5.  $.021 \text{ cm} \times 3.2 \text{ cm} \times 100.1 \text{ cm} =$  \_\_\_\_\_
6.  $0.15 \text{ cm} + 1.15 \text{ cm} + 2.051 \text{ cm} =$  \_\_\_\_\_
7.  $150 \text{ L}^3 + 4 \text{ L} =$  \_\_\_\_\_
8.  $505 \text{ kg} - 450.25 \text{ kg} =$  \_\_\_\_\_
9.  $1.252 \text{ mm} \times 0.115 \text{ mm} \times 0.012 \text{ mm} =$  \_\_\_\_\_
10.  $1.278 \times 10^3 \text{ m}^2 + 1.4267 \times 10^2 \text{ m} =$  \_\_\_\_\_

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When multiplying numbers in scientific notation, multiply the first part of the number (mantissa) and add exponents.

**Example 1:**  $(3.0 \times 10^2)(2.5 \times 10^6) =$   
**Answer:** Multiply  $3.0 \times 2.5 = 7.5$   
Add  $2 + 6 = 8$   
 $= 7.5 \times 10^8$

When dividing numbers in scientific notation, divide the first part of the number and subtract exponents.

**Example 2:**  $\frac{9.0 \times 10^6}{4.5 \times 10^2}$   
**Answer:** Divide  $9.0$  by  $4.5 = 2.0$   
Subtract  $2$  from  $6 = 4$   
 $= 2.0 \times 10^4$

Perform the following calculations. Express all answers in scientific notation.

1. $(1.5 \times 10^3)(3.5 \times 10^5)$	6. $(4 \times 10^5) + (1 \times 10^{-3})$
2. $(2.0 \times 10^8)(2.0 \times 10^6)$	7. $(7.6 \times 10^{-3})(8.2 \times 10^{-4})$
3. $(6.2 \times 10^6) + (3.1 \times 10^2)$	8. $(8.5 \times 10^{-8}) + (2.5 \times 10^{-3})$
4. $(5.0 \times 10^4) + (2.5 \times 10^3)$	9. $(7.0 \times 10^{11})(7.0 \times 10^{-11})$
5. $(6.8 \times 10^7)(2.2 \times 10^{-5})$	10. $(1.3 \times 10^{-5}) \div (2.6 \times 10^{-9})$