INTOCHEMISTRY

Significant Figures Practice

ANSWER KEY

Part A: count significant figures. Part B: calculate with proper rounding. Part C: scientific notation.

1. How many significant figures are in 0.00450?

   Solution: 3. Leading zeros are placeholders; the final decimal zero counts.

2. How many significant figures are in 105.0?

   Solution: 4. The interior zero and trailing decimal zero count.

3. How many significant figures are in 200.?

   Solution: 3. The decimal point explicitly indicates both trailing zeros count.

4. How many significant figures are in 7.0200?

   Solution: 5. Interior and trailing decimal zeros count.

5. How many significant figures are in 0.00091?

   Solution: 2. Only 9 and 1 are significant.

6. How many significant figures are in 6.00×10^4?

   Solution: 3. Count the digits in 6.00, not the exponent.

7. How many significant figures are in 9001?

   Solution: 4. Both interior zeros count.

8. How many significant figures are in 40.0?

   Solution: 3. The decimal confirms the precision of both trailing zeros.

9. Calculate 12.3 + 0.45 + 7.891. Round appropriately.

Solution: 20.6. Unrounded sum = 20.641; addition rounds to the tenths place.

10. Calculate 9.87 − 2.5. Round appropriately.

Solution: 7.4. Unrounded difference = 7.37; subtraction rounds to the tenths place.

11. Calculate 3.20 × 4.5. Round appropriately.

Solution: 14 (or 1.4×10^{1}). Product = 14.4; two significant figures.

12. Calculate 18.0 ÷ 6.00. Round appropriately.

Solution: 3.00. All inputs have three significant figures.

13. Calculate 2.50 × 3.0. Round appropriately.

Solution: 7.5. Product = 7.50; two significant figures.

14. Calculate 0.0230 × 100.0. Round appropriately.

Solution: 2.30. Product = 2.300; three significant figures (from 0.0230).

15. Write 2500. in scientific notation, preserving the stated precision.

Solution: 2.500×10^{3}. The decimal point in 2500. indicates four significant figures.

16. Write 0.004500 in scientific notation, preserving the stated precision.

Solution: 4.500×10^{-3}. The number has four significant figures.