

Chapter 5 – Measurements and Calculations

Next Generation Science Standards Addressed:

HS-PS1-7. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

Objectives:

Chapter 5: *Upon completion of the unit the student will differentiate between and explain the roles of quantitative and qualitative observation and analysis in chemistry by:*

1. Identify and utilize the SI (System International) and metric units of measurement used in chemistry.
2. Identify and utilize the British of measurement used in chemistry
3. Using a calculator, complete unit conversions using dimensional analysis and appropriate unit notations.
4. Analyze potential answers of calculations for correctness using mental mathematical reasoning.
5. Use scientific calculators and scientific (exponential) notation correctly.
6. Explain what causes uncertainty in measurement and identify sources of error in measurements.
7. Compare and contrast accuracy and precision.
8. Demonstrate and apply the rules of significant figures in solving calculations.
9. Solve dimensional analysis problems.
10. Assess lab data and calculations using the above objectives.
11. Distinguish between heat and temperature.
12. Compare and contrast the Fahrenheit, Celsius and Kelvin temperature scales and interconvert among the three scales.
13. Explain what is meant by absolute zero.
14. Define and use the key terms on page 163 of the text book.

Vocabulary in addition to the Key terms on page 163:

Independent variable
Dependent variable
Technology
Qualitative
Quantitative
Certainty
Unit Conversion
Derived Unit