

2.11: End of Chapter Key Terms

Units, Measurement, Graphing, and Calculation Key Terms

1. **Measurement:** The process of obtaining the magnitude of a quantity relative to an agreed standard.
2. **Unit:** A standard quantity used to specify measurements.
3. **International System of Units (SI):** The modern form of the metric system, used globally for scientific measurements, including units such as meter (m), kilogram (kg), second (s), ampere (A), kelvin (K), mole (mol), and candela (cd).
4. **Length:** A measure of the distance between two points; the SI unit is the meter (m).
5. **Mass:** A measure of the amount of matter in an object; the SI unit is the kilogram (kg).
6. **Time:** A measure of the duration of events; the SI unit is the second (s).
7. **Temperature:** A measure of the average kinetic energy of particles in a substance; the SI unit is the kelvin (K).
8. **Volume:** The amount of space occupied by an object or substance; commonly measured in liters (L) or cubic meters (m³).
9. **Density:** The mass per unit volume of a substance; commonly measured in grams per cubic centimeter (g/cm³) or kilograms per cubic meter (kg/m³).
10. **Precision:** The degree to which repeated measurements under unchanged conditions show the same results.
11. **Accuracy:** The degree to which a measurement or calculation reflects the true value.
12. **Significant Figures:** The digits in a measurement that are known with certainty plus one final digit, which is somewhat uncertain or estimated.
13. **Scientific Notation:** A method of expressing numbers as a product of a coefficient and a power of 10, used to handle very large or very small numbers.
14. **Conversion Factor:** A ratio used to convert from one unit of measurement to another.
15. **Dimensional Analysis:** A technique for converting units of measurement by using conversion factors.
16. **Graph:** A visual representation of data that shows relationships between variables.
17. **Cartesian Coordinate System:** A coordinate system that specifies each point uniquely by a pair of numerical coordinates, typically (x, y).
18. **Origin:** The point (0, 0) in a Cartesian coordinate system where the x-axis and y-axis intersect.
19. **X-Axis:** The horizontal axis in a graph.
20. **Y-Axis:** The vertical axis in a graph.
21. **Data Point:** A specific value plotted on a graph representing an observed measurement.
22. **Line Graph:** A graph that uses points connected by lines to show how something changes in value (typically over time).
23. **Bar Graph:** A graph that uses bars to show comparisons among categories.
24. **Histogram:** A type of bar graph that shows the frequency of data within certain intervals.
25. **Pie Chart:** A circular chart divided into sectors, each representing a proportion of the whole.
26. **Scatter Plot:** A graph with points plotted to show a possible relationship between two sets of data.
27. **Slope:** A measure of the steepness of a line on a graph; calculated as the rise over the run ($\Delta y/\Delta x$).
28. **Intercept:** The point where a line crosses an axis on a graph.
29. **Trend Line:** A line indicating the general course or tendency of something, e.g., the relationship between variables in a scatter plot.
30. **Linear Relationship:** A relationship between two variables that can be graphically represented as a straight line.
31. **Nonlinear Relationship:** A relationship between two variables that does not graph as a straight line.
32. **Equation:** A mathematical statement that asserts the equality of two expressions.
33. **Variable:** A symbol used to represent a quantity that can change.
34. **Constant:** A value that does not change.
35. **Independent Variable:** The variable that is manipulated or controlled in an experiment.
36. **Dependent Variable:** The variable that is measured or observed in response to changes in the independent variable.
37. **Error:** The difference between a measured or calculated value and the true value.
38. **Percent Error:** The percent difference between the experimental value and the accepted value, calculated as
$$\frac{\text{Experimental Value} - \text{Accepted Value}}{\text{Accepted Value}} \times 100\%$$
39. **Significant Figures Rules:** Rules that determine the number of significant figures in a calculated result, including rules for addition, subtraction, multiplication, and division.
40. **Standard Deviation:** A measure of the amount of variation or dispersion in a set of values.

41. **Uncertainty:** An estimate of the amount by which a measured or calculated value may differ from the true value.
 42. **Calibration:** The process of adjusting a measuring instrument to match a known standard.
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