1.1: Interpreting Errors

Systematic Error

- Measurements deviate from the correct value by the same amount each time
- Errors have a pattern

Example: Time on a watch is always 5 minutes ahead of the true time

Random Error

- Errors have no pattern

Example: Everyone's watch shows a different time

Uncertainty in Measurement

- Number ± error
- It is the amount a number may be off from the correct value

Example: Age ±365 days

Ratio Comparison

- Shows how two numbers compare
- Reduced fraction shows comparison

Example:

$$\frac{65\text{mph}}{30\text{mph}} = \frac{2.2}{1} \text{ (Means one speed is 2.2 times faster than the other)}$$

Percent Error

- Percentage measurements are off from standard/correct value
- Absolute value

$$\text{Percent Error} = \frac{\text{Experimental/Measured Value} - \text{Accepted/Theoretical Value}}{\text{Accepted/Theoretical Value}} \times 100\%$$

Contributors and Attributions

- Template:ContribCCPhySc101L