

## Definitions and Concepts for CAIE Physics A-level

### Topic 1: Physical Quantities and Units

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**Accuracy:** How close a measurement is to its true value, influenced by the systematic and random errors of that measurement.

**Absolute Uncertainties:** The interval that a value is said to lie within, with a given level of confidence.

**Base Units:** The set of seven basic measures from which all other SI units can be derived.

**Precision:** A measure of how close a measurement is to the mean value. It only gives an indication of the magnitude of random errors, not how close data is to the true value.

**Random Error:** The unpredictable variation in a measurement. These can be reduced by taking many repeated measurements and calculating their mean.

**Resolution:** The smallest interval that a given measuring device can measure.

**Scalar Quantity:** A quantity that only has a magnitude.

**Systematic Error:** A consistent shift in readings causing a deviation from the true value. This shift is due to the equipment or method being used and cannot be reduced by repeated measurements.

**Quantity:** A characteristic that can be measured. Quantities always have a size and unit

**Vector Quantity:** A quantity that has a magnitude and a direction.

**Zero Errors:** A form of systematic error, caused when a measuring instrument doesn't read zero at a value of zero. This results in all measurements being offset by a fixed amount.

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