A small physics glossary for everyday situations

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A number becomes useful when you know what it measures, its unit and its uncertainty. This glossary helps you read instructions, compare energy use and understand simple phenomena. The examples are educational. They are not instructions for working on an electrical installation or a way to certify that equipment is safe.

Quantities, units and measurements

A quantity is a measurable property, such as length, duration, mass or temperature. A unit lets us express it in a comparable way. The International System of Units uses, among others, the metre, second, kilogram and kelvin. A value without a unit, such as 20 on a diagram, remains ambiguous. Writing the unit is part of the answer.

A prefix changes the scale: kilo means a thousand, and milli means one thousandth. Thus, 1 kilometre is 1,000 metres. Uncertainty reminds us that a measurement is not perfectly exact. If a ruler cannot show millimetres, displaying six decimal places does not produce a better measurement.

Motion and interactions

Speed relates distance travelled to time. Covering 100 metres in 20 seconds gives an average speed of 5 metres per second. That average does not describe every change during the journey. Acceleration describes a change in velocity, including a change in direction even when speed remains constant.

Mass, expressed in kilograms, describes a body's inertia, among other properties. Weight is a force associated with gravity, expressed in newtons. Near ground level on Earth, a mass of 1 kilogram has a weight of about 9.8 newtons. This approximation varies with location. Mass and weight are therefore not interchangeable quantities.

Energy and power

Energy describes the capacity for transformations or transfers and is expressed in joules. Power is the rate of energy transfer: 1 watt equals 1 joule per second. High power does not necessarily mean high total energy consumption if an appliance runs for only a very short time.

For constant power, energy equals power multiplied by duration. A 1,000-watt appliance used for half an hour consumes 500 watt-hours, or 0.5 kilowatt-hours. The calculation assumes constant power. Batteries and converters also have losses. A stated capacity does not guarantee the same amount of usable energy under all conditions.

Temperature, heat and pressure

Temperature characterises a thermal state. Heat is energy transferred because of a temperature difference. A blanket reduces some thermal exchanges; it does not automatically generate heat. Pressure is force distributed over an area and is expressed in pascals. The same force acting on a smaller area can produce greater pressure.

To check a calculation, ask three questions: are the units consistent, is the order of magnitude plausible, and are the assumptions stated? Keep the manufacturer's instructions and the measurement conditions. A simplified formula explains a relationship. It does not certify the safety of an appliance, structure or practical intervention.

Primary sources

Bureau international des poids et mesures - Résumé de la brochure SI, version actuelle 2026
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NASA Glenn Research Center - Masse, poids et équation de Newton
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