Energy

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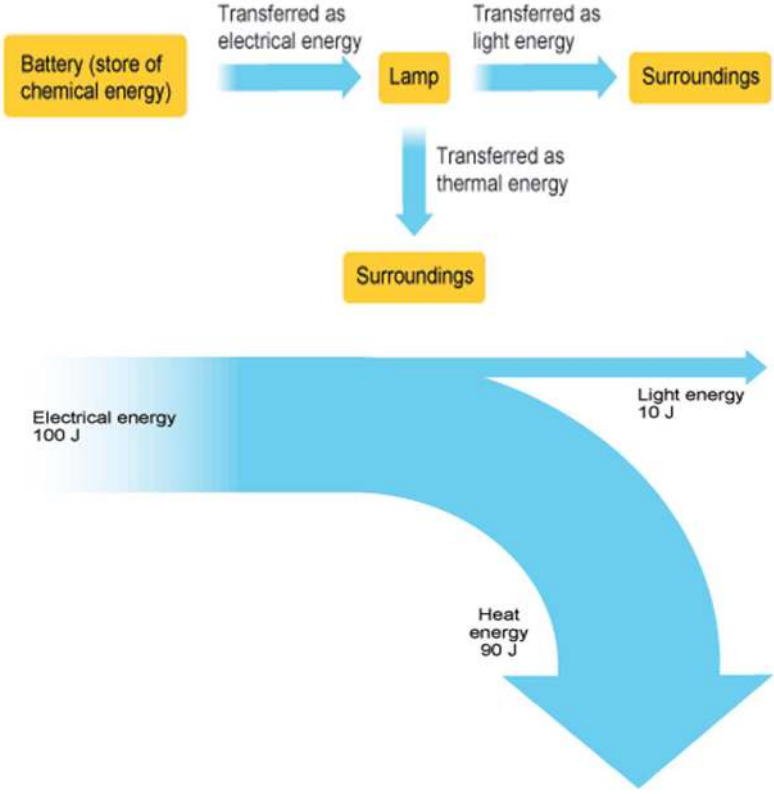
What is Energy?

Definition => The ability to do work.

Can exist in many forms => KE/GPE, chemical, electrical, light, heat, sound …
Can be stored or converted.
Cannot be created or destroyed. It can only be converted from 1 form to another. (**Law of Conservation of Energy**)

- Energy is never "wasted" or "lost".
- Correct concept: Some energy transfer is useful. Most energy transfers are not useful.



ALBERT EINSTEIN

$E = mc^2$

E = energy of object at rest
m = mass (units: kg)
c = speed of light in vacuum (~3 X 10^8 m/s). c is a constant.

Symbol: E

Units: Joules (J), or kg m^2 s^{-2}

Why is the equation famous?

1. It is deceptively simple.
2. It suggests that mass and energy are equivalent. Meaning, mass can be converted into energy, and energy can be converted into mass.
3. It suggests that a body at rest (not moving) has "rest energy".