

Energy

1. Energy costs

CONCEPT 2

ENERGY USE IN THE HOME

NOTES

Energy is required every day to light and heat our homes, power electrical devices such as the TV and to charge our mobile phones.

Electrical appliances in our home transfer energy. Some devices transfer energy very quickly whilst others do so at a much slower rate.

Power is measure of how quickly energy is transferred in a system. Power is measured in watts (W). A device that transfers 1 joule of energy in 1 second would have a power of 1 watt. 1 watt is a small amount of power so we often use kilowatts (kW). $1000W = 1kW$.

The power rating on an electrical device shows how quickly it transfers electrical energy.

Energy transfer, power and time are linked by the equation:

$$\text{Power (W)} = \frac{\text{Energy Transferred (J)}}{\text{Time Taken (s)}}$$

Power is a measure of the rate of change. This being the amount of energy transferred every second. If the power rating of an appliance is high, it will transfer more energy every second in comparison to one with a lower power rating. An appliance with a lower power rating may transfer more energy if it is on for a longer period of time.

If a device has a high power rating or is left on for an extended period units of kW, kJ and hours can be used.

$$\text{Energy Transferred (kWh)} = \text{Power (KW)} \times \text{Time (Hours)}$$