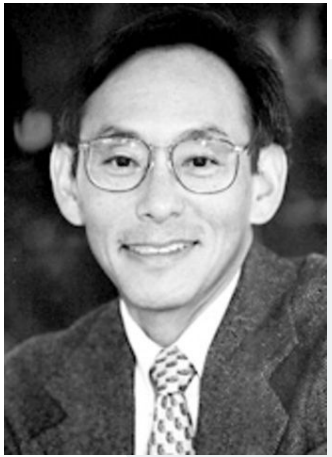
UNIT 7. ENERGY

1. ENERGY

ENERGY = CHANGES

> As the saying goes, the Stone Age did not end because we ran out of stones; we transitioned to better solutions. The same opportunity lies before us with energy efficiency and clean energy (Steven Chu, 2013).



WHAT IS ENERGY?

- ★ Ability to do work or cause change
- ★ Produces Warmth
- ★ Produces Light
- ★ Produces Sound
- ★ Produces Movement
- ★ Produces Growth
- ★ Powers Technology

UNITS FOR ENERGY

In the S.I., energy is measured in joules (J)
It can also be measured in calories, kWh and toe

1 calorie = 4,19 J

1 kWh = $3,6 \cdot 10^{6}$ J

1 toe = $4,19 \cdot 10^{19}$ J

ENERGY COMES IN DIFFERENT TYPES

CHANGES MAY HAPPEN IN MANY DIFFERENT WAYS DEPENDING ON THE TYPE OF ENERGY


POTENTIAL ENERGY
ELECTROMAGNETIC (LIGHT) ENERGY
SOUND ENERGY
KINETIC ENERGY
FORMS OF ENERGY
ELECTRICAL ENERGY
CHEMICAL ENERGY
wiseGEEK
THERMAL ENERGY

The properties of energy

Transform

On type of energy can transform into another or others, even into the same object.

Transfer

Energy can be transferred from one object into another, in the same or different form.

Dissipate

Energy can be transferred to the air, the ground or water, and it cannot be used again.

Energy is always conserved

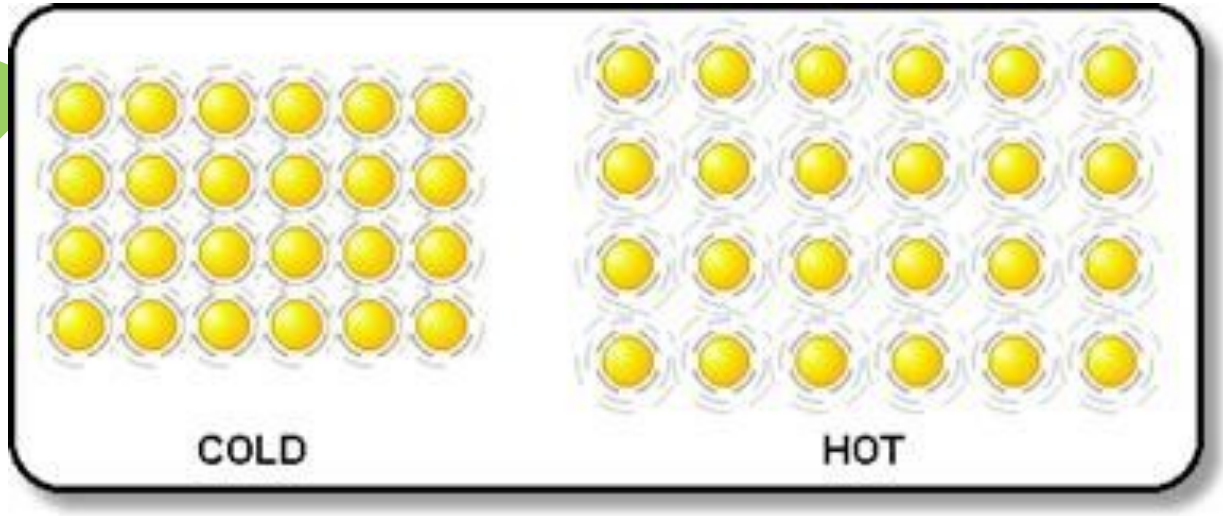
Initial Energy =
Transformed energy +
Transferred energy +
Dissipated energy

2. ENERGY, HEAT AND TEMPERATURE

ENERGY AND HEAT ARE NOT THE SAME.

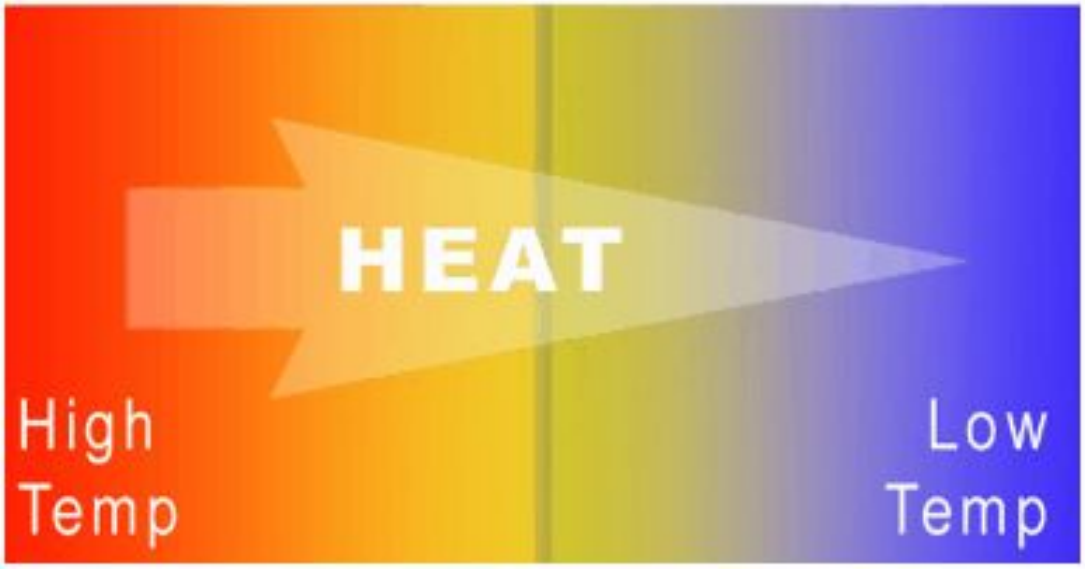
Temperature

It is a property that measures the kinetic energy of the particles that make up an object

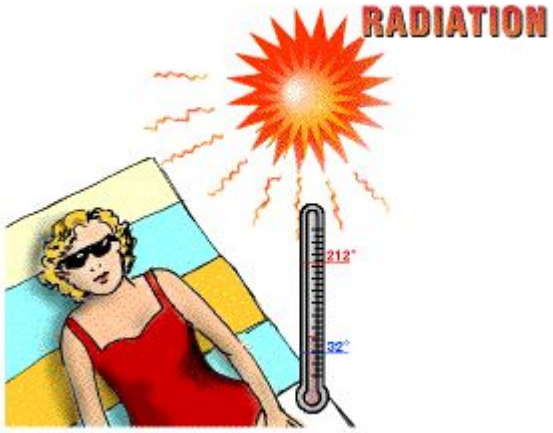


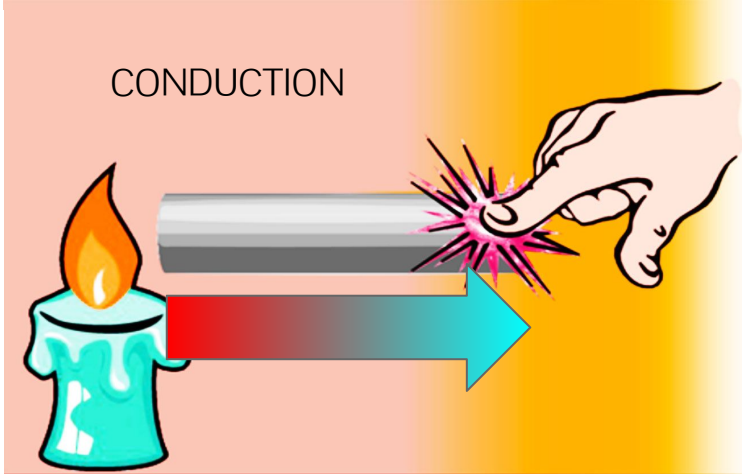
Heat

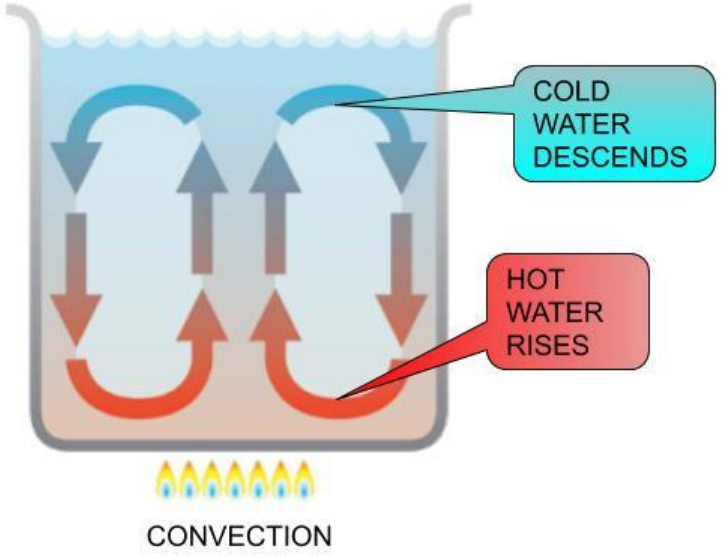
It is the energy transferred between two objects because of a difference in temperature.



WAYS OF HEAT TRANSFER







3. ENERGY IN OUR LIVES

WE GET OUR ENERGY FROM MANY **ENERGY SOURCES**

Non renewable energy sources

FOSSIL FUELS

RENEWABLE ENERGY SOURCES

Hydro

Wind

Tidal

Earth
- high temperature
- geothermal heat pump

Solar
-photovoltaic
- thermal (air/water)

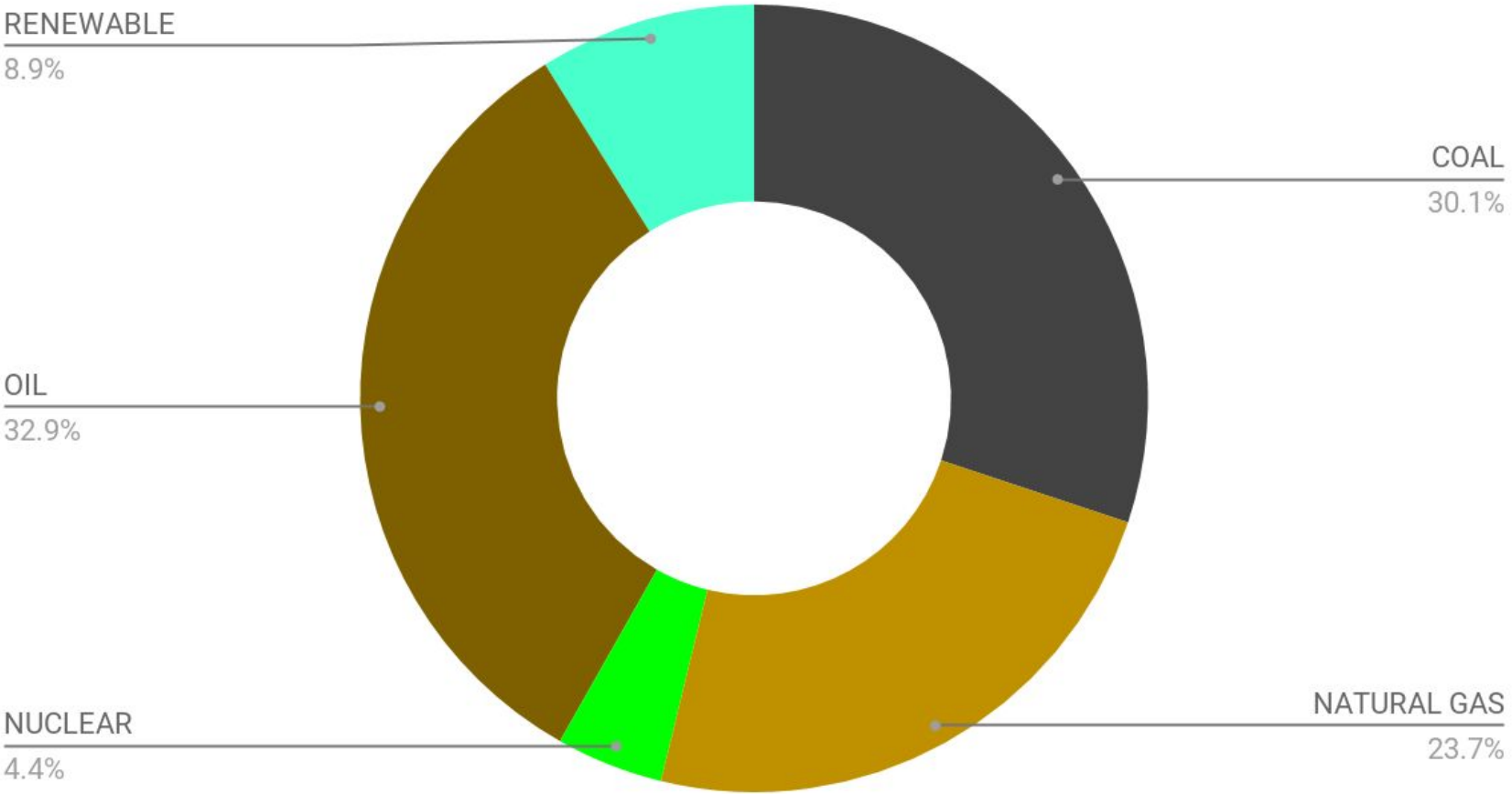
Biomass
- wood waste
- pulping liquor
- landfill gas
- municipal and industrial wastes
- firewood
- grains and oilseeds

ELECTRICITY

HEAT
(e.g. space heating,industrial process)

FUELS
(CHEMICAL)

World Energy Origin 2017



4. THE NEED FOR ENERGY SAVING

THE CURRENT GROWTH IN WORLD ENERGY CONSUMPTION IS UNSUSTAINABLE.

WHY DO WE NEED TO SAVE ENERGY?

1. CLIMATE CHANGE.
2. FOSSIL FUELS ARE FINITE.
3. RENEWABLE ENERGY SOURCES CANNOT MEET THE GROWING ENERGY DEMAND.

HOW CAN WE SAVE ENERGY?

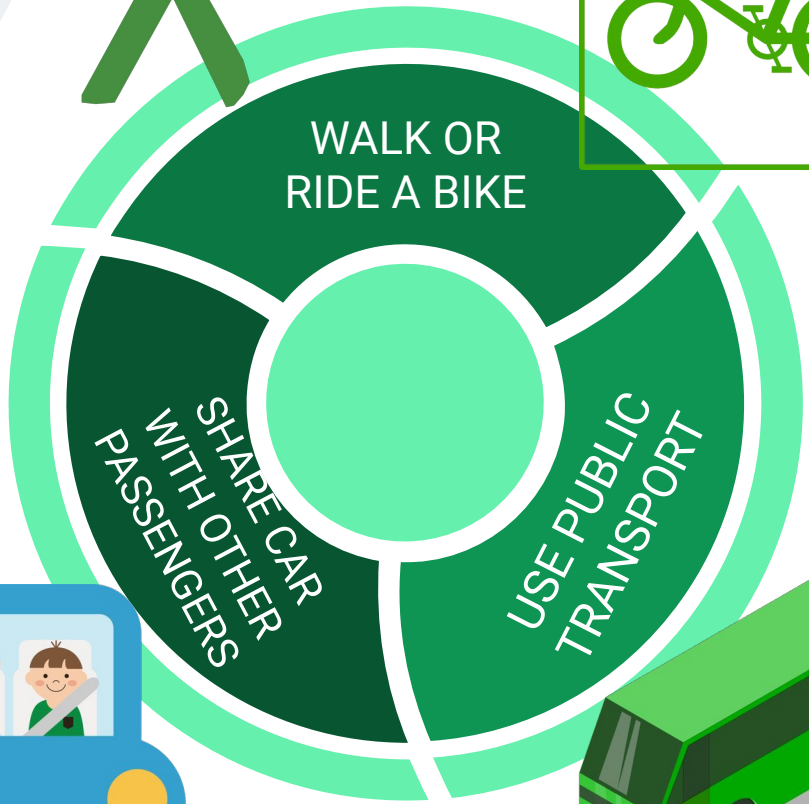
AT HOME

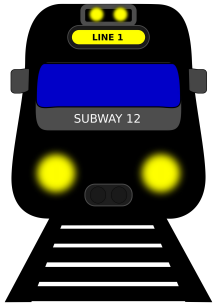
12 Tips To Save Energy At Home

1 Turn off lights when leaving a room	2 Switch to energy efficient appliances	3 Use LED lights
4 Unplug devices when not in use	5 Keep thermostat at low temperature	6 Reduce water consumption
7 Use smart automated devices	8 Switch to double glazing	9 Cook with the lid on
10 Use a smart meter to track usage	11 Wash at a cold temperature	12 Use solar powered devices

GREENMATCH
www.greenmatch.co.uk

TRANSPORT


WALK OR
RIDE A BIKE
USE PUBLIC
TRANSPORT
SHARE CAR
WITH OTHER
PASSENGERS


LINE 1
SUBWAY 12

SHOPPING

Reduce your footprint by eating meat

LESS

Buy

SEASONAL

&

LOCAL

Choose receipts that are

DIGITAL

Avoid multiple trips by planning

AHEAD

Thanks!

ANY QUESTIONS?

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Aula virtual

https://aulavirtual32.educa.madrid.org/ies.claracampoamor.mostoles/course/index.php?categoryid=35