

Thermal Energy Notes Week 15
complete

Thermal Energy

**Temperature-
MEASUREMENT of kinetic
energy of molecules
Heat- is the FLOW
(MOVEMENT) of kinetic
energy from one object to
another
Thermal Energy- is the total,
random kinetic energy of
particles in an object**

Thermal Energy

Thermal Energy depends on 2 things:

1-Mass/Volume

Example- a bathtub full of water has more TE than a glass of water (even if it is boiling hot)

2-Temperature

Example if you have two glasses with the same amount of water. The one with the highest temp will have more TE

Thermal Energy

**Measuring Thermal Energy:
Joule (J)- (“jewel”)-
main unit of
measurement of TE. It
is equal to 4.16
calories**

Heat moves: Higher to lower

Heat ALWAYS moves from high heat energy to low heat energy

Example:

From a hot drink cup to your hand

Heat Moves: 3 ways **C-notes**

Heat is FLOW
(MOVEMENT) of
kinetic energy
Heat moves three
ways:

1- Conduction- is
when heat moves by
DIRECT contact
Example: pot of
water on stove

Heat Moves: 3 ways **C-notes**

2- Convection- is when moving matter moves heat with it. This can only happen with liquids and gases.

Example: moving blobs in a lava lamp

Heat Moves: 3 ways **C-notes**

3- Radiation- is energy that moves through space is absorbed by matter
Example: sun heating a car or pavement in the summer

Heat moves: conductors and insulators

Heat ALWAYS moves from high heat energy to low heat energy

Example:

Energy from water in small bottle (hot water) moved into the water in the beaker

Heat moves: conductors and insulators

Some materials move heat energy better than others...they are called conductors
Examples: iron, aluminum, floor tiles, water, copper, glass

Heat moves: conductors and insulators

Some materials move heat energy poorly...they are called insulators
Examples: plastic, wood, Styrofoam, paper, cotton, air

C-notes

How does insulation work?

Fact: Heat always goes from high to low heat

IDEA: If you could block that or slow it down, you could keep some of the heat



C-notes

How does insulation work?

Insulation uses materials that are NOT good conductors of heat to slow down the movement of heat energy.

C-notes

How does a coat work?

Your coat slows down the movement of heat away from you...

Plus- it traps your own heat....

