

WORK

Work is done and energy transferred when a force moves an object.

The bigger the force or distance, the greater the work.

Machines make work easier by reducing the force needed. Levers and pulleys do this by increasing the distance moved, and wheels reduce friction.

Keywords:

Work: The transfer of energy when a force moves an object, in joules.

Lever: A type of machine which is a rigid bar that pivots about a point.

Input force: The force you apply to a machine.

Output force: The force that is applied to the object moved by the machine.

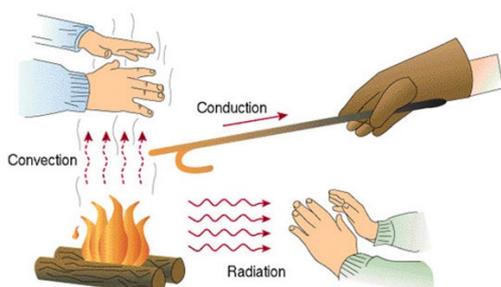
Displacement: The distance an object moves from its original position.

Deformation: When an elastic object is stretched or squashed, which requires work.

HEATING AND COOLING

The thermal energy of an object depends upon its mass, temperature and what it's made of. When there is a temperature difference, energy transfers from the hotter to the cooler object.

Thermal energy is transferred through different pathways, by particles in conduction and convection, and by radiation.



Conduction			Convection			Radiation		
A	F	H	C	E	I	B	D	G
A. Usually in solids.			B. No particles			C. Liquids and gases only		
D. Infrared radiation			E. Particles move about			F. Particles vibrate		
G. Shiny surfaces reflect this			H. Plastics are bad at this			I. Insulation in the loft reduces this		

Keywords:

Thermal conductor: Material that allows heat to move quickly through it.

Thermal insulator: Material that only allows heat to travel slowly through it.

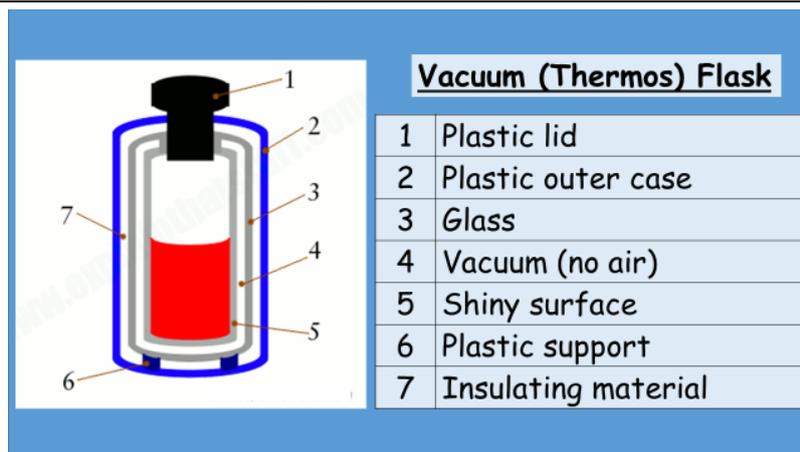
Temperature: A measure of the motion and energy of the particles.

Thermal energy: The quantity of energy stored in a substance due to the vibration of its particles.

Conduction: Transfer of thermal energy by the vibration of particles.

Convection: Transfer of thermal energy when particles in a heated fluid rise.

Radiation: Transfer of thermal energy as a wave.



Subject	Year 8 Energy
Which units do we measure force in?	Newtons (N)
At what point does a see-saw balance?	Pivot
What two things can be changed to help a see-saw balance?	Distance and force.
Keyword: A machine which is a bar that pivots about a point.	Lever
How do machines make work easier?	Reduce the force needed.
Which machines reduce the force needed by increasing distance?	Levers and pulleys.
A 10N force is applied 5m from a see-saw pivot. To balance, how big must the force be 1m from the pivot on the other side?	50N
Keyword: The distance an object moves from its original position.	Displacement
Keyword: Elastic objects are stretched/squashed, requiring work.	Deformation
Four ropes on a pulley each lift with 150N. What is the total lifting force of the pulley? How much force do you apply?	600N 150N
Heat energy can also be called what?	Thermal energy
An object has lots of thermal energy. How do its particles move?	Move fast/move a lot.
Keyword: Transfer of thermal energy by vibration of particles.	Conduction
Keyword: Thermal energy of particles cause heated fluid to rise.	Convection
Keyword: Transfer of thermal energy as a wave.	Radiation
What do we call a material that only allows heat to travel slowly?	An insulator
What would you find in the vacuum of a vacuum flask?	Nothing
The lid in a vacuum flask reduces which transfer of energy?	Convection
The plastic in a vacuum flask slows which transfer of energy?	Conduction
How does a silvery surface in a vacuum flask reduce energy loss?	Reflection/Less <u>radiation</u>

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