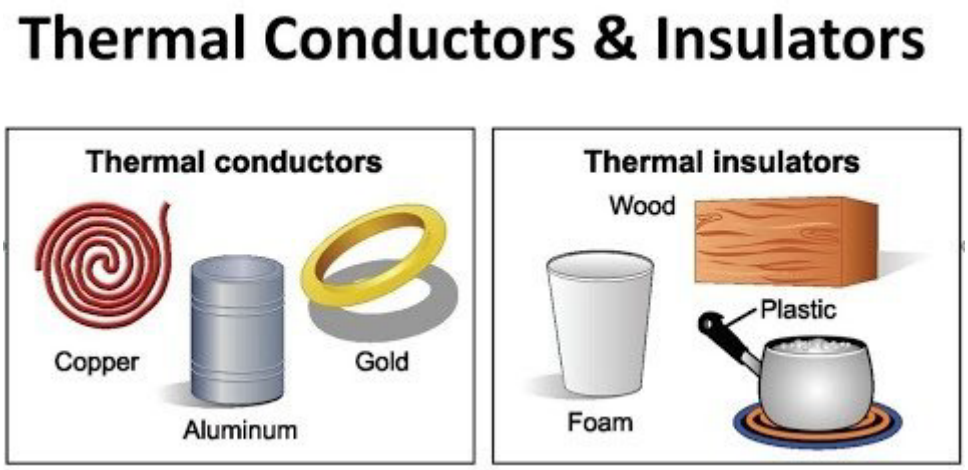
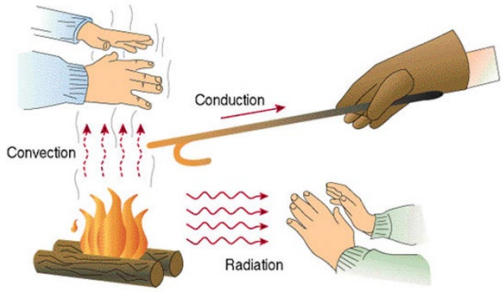
Energy – Heating and Cooling KEY LEARNING

Conductors of heat carry thermal energy quickly.
Thermal energy travels through an insulator slowly.



Thermal energy transfers from a hotter area to the cooler area.
Thermal energy moves by conduction, convection, and radiation.

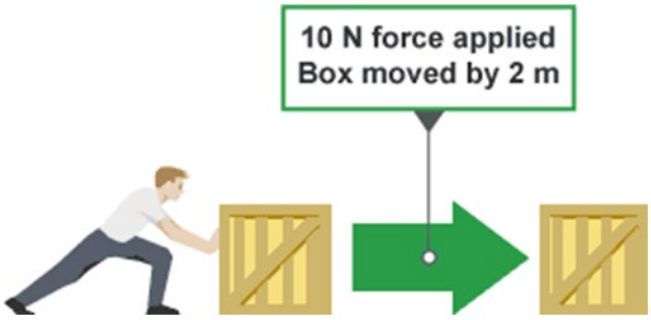


Keywords:

Conductor: Material that allows heat to move quickly through it.
Insulator: Material that only allows heat to travel slowly through it.
Temperature: A measure of the energy of 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. E.g: saucepan.
Convection: Transfer of thermal energy when particles in a heated fluid rise.
Radiation: Transfer of thermal energy as a wave. E.g: heat from the Sun.

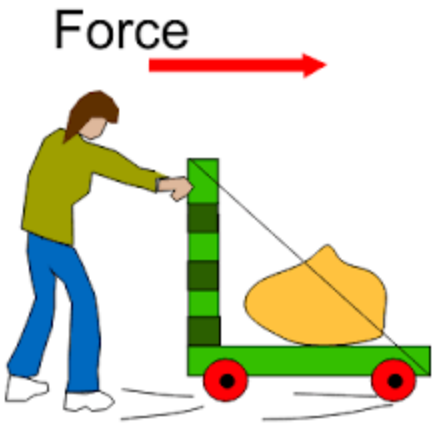
Energy – Work KEY LEARNING

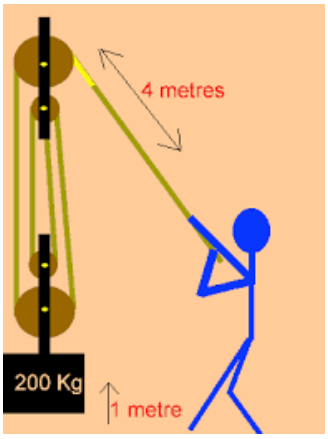
We use a force to move an object. We are doing work.



More work is done when we use a bigger force or we move the object further.

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





Key Learning Questions	Year 8 Energy
Which unit do we measure force in?	N (Newtons)
What materials let heat travel quickly?	Conductors
What do we call a material that only allows heat to travel slowly?	Insulators
If we use a force to move something, are we doing **work** or **effort**?	Work
Heat energy can also be called what?	Thermal energy

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Extension Questions	Year 8 Energy
At what point does a see-saw balance?	
What two things can be changed to help a see-saw balance?	
What do we call the transfer of thermal energy by vibration of particles?	
What do we call the transfer of thermal energy as a wave?	
What do machines reduce to make work easier?	
Name the machine that uses rope and wheels to lift heavy objects	
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?	
Four ropes on a pulley each lift with 150N. What is the total lifting force of the pulley?	
How do the particles of a hot object move?	
How are particles in a hot object arranged? Close or far apart?	
What would you find in a **vacuum**?	
The lid of a vacuum flask reduces which transfer of energy?	
The plastic in a vacuum flask slows which transfer of energy?	
When heat hits a silvery surface, what happens?	

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What two things can be changed to help a see-saw balance?	Distance
	Force
What do we call the transfer of thermal energy by vibration of particles?	Conduction
What do we call the transfer of thermal energy as a wave?	Radiation
What do machines reduce to make work easier?	Force (needed)
Name the machine that uses rope and wheels to lift heavy objects	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
Four ropes on a pulley each lift with 150N. What is the total lifting force of the pulley?	600N
How do the particles of a hot object move?	Fast
How are particles in a hot object arranged? Close or far apart?	Far apart
What would you find in a **vacuum**?	Nothing
The lid of a vacuum flask reduces which transfer of energy?	Convection
The plastic in a vacuum flask slows which transfer of energy?	Conduction
When heat hits a silvery surface, what happens?	Reflects

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