Describe the conservation of energy coined by James Joule.

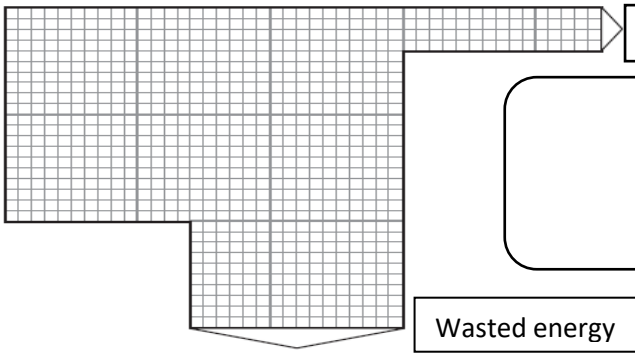
In the space below list all the different types of energy.

Write down in the box below the equation for efficiency.

Energy

Resource	Advantages	Disadvantages
Wind		
Solar		
Nuclear		
Biomass		
Hydroelectric		
Geothermal		

Use the Sankey diagrams below to calculate the efficiency.



Why do machines use oil? What does this do to the efficiency?

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……

Why is it impossible to get an efficiency above 1?

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……

Draw a story board to show how a thermal power station works. Describe what is happening at each stage.

Describe how fossil fuels are formed (Coal, Oil and Gas).

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……

Energy 2

Write down all the changes involved in the way energy is stored for the following systems.

an object projected upwards

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a moving object hitting an obstacle

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an object accelerated by a constant force

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a vehicle slowing down

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bringing water to a boil in an electric kettle

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A mass of 150g is attached to a spring to stretch it. What is the weight (measured in newtons) of this mass?

Write down in the box below the equations for kinetic energy and gravitational potential energy.

Write down in the box below the equation for power.

Water has a specific heat capacity of 4200 J/(kg°C). Explain what this means……

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An iron block had a mass of 2 kg. Calculate the energy transferred to increase the temperature of the iron block from 5 °C to 30°C. The specific heat capacity of iron is 450 J / kg °C.

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Explain how you can reduce the unwanted energy transfers from a car engine

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Explain how you can reduce the unwanted energy transfers from your home

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Convert the following units

2.5kJ into J ……

350g into kg ……

7.25kW into W ……

Write the following values in standard form

3650000J ……

0.0087kg ……

Write the following values to 2 significant figures

648N ……

9054J ……