

### Energy (Temperature Changes)

Internal (Thermal) Energy -> Energy stored in the movement of particles      Amount of internal energy depends on temperature, materials, mass

Temperature -> How hot or cold something is

### Efficiency Formula (Energy)

Formula: Efficient Powers / Total Amount of Electricity      4/40 x  
Produced x 100% = Percentage      100% =  
100

### Energy Formula

Formula:  $Q = mc\Delta T$        $Q$  -> Amount of heat transferred  
 $M$  = Mass       $C$  = Specific Heat Capacity  
 $\Delta T$  = The changes in temperature       $T$  = Temperature

In a refrigerator, 2kg of water cools from 30 °C to 0 °C and then freezes to form ice at 0 °C. The specific heat capacity of water is 4200 J kg °C, and the specific latent heat of fusion of ice is 336000 J kg °C. What is the heat washed in this process?

$$Q_1 = mc\Delta T = 2 \times 4 \times 200 \times -30$$

$$Q_2 = m\Delta H_f = 2 \times -336000$$

$$Q_1 + Q_2 = -924000$$

### Paying for Energy

Unit (Times, Energy,      Electricity and gas are paid base on  
Power wrattings)      usage and measure in Kwh

Formula ->  $KW \times H \times Kwh$  (Hour)

### Direction of Energy Transfer

<https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcS7XK65-RLuX-XyXrlq-xN3YJpISXVf9259F7Q&s>

### Listric Energy

Appliances -> Machines      Power -> Different appliance transfer  
different amount per second

Wratts -> Method      Power rattings -> Max amount of power  
measurement of the rate      a device produce under normal circum-  
of electricity      tances

Efficiency -> Ratio of      Sankey Diagram -> Diagram that shows  
useful energy from total      efficiency  
energy

### Transferring Energy

Evaporation      Conduction ->  
Passing vibrations  
(heat)

Radiation -> All objects emit infrared      Convection ->  
radiation (hotter, emit more, no need      Cooler fluid sink,  
medium, thermal imagers)      hotter fluids rise

### Controlling Energy Transfer

Insulation -> Retain warmth inside the house      Air is only good  
and reduces fuel costs.      conductor if it is  
trapped

To test insulation effectiveness, use      Light color -> Reflect  
containers with different insulating materials      energy, while Dark  
and measure temperature changes over      color -> Emit  
time.      radiation

