Learning Journey

P1 - Energy

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| 1C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | When a **system** (object or group of objects) changes **energy** is transferred from one store to another **mechanically**, **electrically** (both of which are ‘work’), by **heating** or **radiation**.Energy stores include: **Thermal, kinetic, gravitational potential, elastic potential, chemical, magnetic, electrostatic and nuclear.** |
| 2C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | Cover what you want to find when using formula triangle.**Kinetic energy = movement.** Object speeding up transfers energy to kinetic energy stores.**Ek = ½ mv2****Raised object** store energy in their **gravitational potential energy** stores.**Ep = mgh**Falling objects transfer energy from gravitational to kinetic energy stores. |
| 3C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | **Stretching t**ransfer energy to **elastic potential energy** stores.**Ee= ½ ke2**This works so long as the **limit of proportionality** has not been exceeded. |
| 4C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | **Law of Conservation of Energy**- energy cannot be **created** or **destroyed** it can only be **transferred** usefully, stored or dissipated.**Power** is the rate of doing work.**P = E/t or P = W/t** |
| 5C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | When a force moves an object energy is transferred (Work).**W = Fs**When a current flows work is done against the resistance.**E = QV** |
| 6C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | The heat energy transferred when an object is heated or cools can be found using:**∆E = mcѲ****Specific Heat Capacity** ‘c’ = amount of energy needed to heat 1kg of a substance by 1˚C.The higher ‘c’ the better they are as an energy store. |
| 7C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | Know a method for how calculate the specific heat capacity of an object experimentally.(**Required Practical)** |
| 8C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | **Conduction** solids only, vibrating particles transfer energy to neighbouring ones. Collisions transfer energy between kinetic stores.**Thermal conductivity** is a measure of how quickly energy is transferred through a material.**Convection** in liquids and gases, energy transferred to kinetic energy stores and this time particles move.More heat = more kinetic energy = particles move faster = take up more space = less dense = particles rise ‘taking’ heat with them. |
| 9C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | **Streamlining** and **lubrication** reduce frictional forces, reducing unwanted energy transfers.**Insulation** is used to prevent heat loss from homes = reduce unwanted energy transfers. Lower conductivity = better insulation.Know how **cavity walls, double glazing, draught excluders** and **loft insulation** work to reduce unwanted energy transfers in the home. |
| 10C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | Apply knowledge and use skills to complete investigation into effectiveness of insulating materials.**Required Practical** |
| 11C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | Useful devices transfer energy from one store to another.Some energy is wasted (often as heat or sound).**Efficiency**=**Useful Energy or Power output/Total Energy or Power input**Nothing is 100% efficient. |
| 12C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | For each resource (**Fossil fuels, Nuclear, Biofuels, Wind, HEP, Geothermal, Tidal, Solar and Water Waves**) pupils will need to know: Is it renewable/non-renewable?Is it used for transport – if so how?Is it used for heating – if so how?How can electricity be generated using this resource?What are the energy transfers involved?How reliable is it?How expensive?Advantages?Disadvantages? |
| 13C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | Know the trends in energy use and production taking into considerations:Location, Environmental Costs, Set-up/decommissioning, Reliability, Set-up/Running costs for resources. |
| 14C:\Users\rca\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\542FDEB4.tmp | Application of points of consideration when planning use of energy resources.Group task – Ashton Island |