

Electricity and Energy

CONSERVATION OF ENERGY

Appropriate websites:

BBC Bitesize: Conservation of Energy

<http://www.bbc.co.uk/education/guides/z4yj6sg/revision>

| | 1 st Attempt | 2 nd Attempt | 3 rd Attempt |
|--|----------------------------|----------------------------|----------------------------|
| I can use the relationship $E_k = \frac{1}{2} mv^2$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $E_p = mgh$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state and use the principle of the conservation of energy. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know that when energy is transferred that there may be a loss in energy and can discuss how to improve the efficiency of a system. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can carry out calculations involving Kinetic and Potential energy when dealing with the conservation of energy. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Evaluation of Progress

My Targets are.....

To achieve my targets I will have to...

ELECTRICAL CHARGE AND ELECTRIC FIELDS

APPROPRIATE WEBSITES:

BBC Bitesize: Electric charges and fields

<http://www.bbc.co.uk/education/guides/z9vqtfr/revision>

| | | | |
|---|-----------------------|-----------------------|-----------------------|
| I can define charge in terms of being positive or negative. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know that electrical current is defined as the amount of electrical current defined in a time period. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $Q = It$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can describe the difference between alternating current and direct current. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can describe the effect of an electrical field on an electrical charge. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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PRACTICAL ELECTRICAL AND ELECTRONIC CIRCUITS

APPROPRIATE WEBSITES:

BBC Bitesize: Practical Electrical and Electronic Circuits

<http://www.bbc.co.uk/education/guides/zk37hyc/revision>

| | | | |
|--|-----------------------|-----------------------|-----------------------|
| I can state appropriate devices to measure voltage and current. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can describe in a diagram the appropriate positions of the meters to measure voltage and current. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state the rules governing the flow of current in series circuits and use them appropriately. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state the rules governing the flow of current in parallel circuits and use them appropriately. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state the relationships for the voltage in series circuits and use them appropriately. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state the relationships for the voltage in parallel circuits and use them appropriately. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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OHMS LAW

APPROPRIATE WEBSITES

BBC Bitesize: Ohms Law

<http://www.bbc.co.uk/education/guides/z8b2pv4/revision>

| | | | |
|---|-----------------------|-----------------------|-----------------------|
| I can use appropriate equipment to gather data on the voltage across a resistor and the current through a resistor. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the data from the above experiment to draw a graph of V vs I to determine the resistance of a resistor. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $R = V \div I$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state and use the relationship for total resistance in series circuits. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state and use the relationship for total resistance in parallel circuits. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Evaluation of Progress

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ELECTRICAL POWER

APPROPRIATE WEBSITES

BBC Bitesize: Electrical Power

<http://www.bbc.co.uk/education/guides/zdgm39/revision>

| | | | |
|---|-----------------------|-----------------------|-----------------------|
| I can define electrical power as the energy used per second. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $E = P \times t$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $P = I \times V$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $P = I^2 \times R$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $P = V^2 \div R$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can select an appropriate fuse for a device given the power of the device (assuming mains voltage = 230V) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Evaluation of Progress

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ELECTRONICS

ELECTRICAL COMPONENTS AND ELECTRONICS

Websites: <http://www.bbc.co.uk/education/guides/zk37hyc/revision/6>

| | | | |
|---|-----------------------|-----------------------|-----------------------|
| I can state the function and application of the following devices in electrical and electronic circuits: <i>cell, battery, lamp, switch, variable resistor, voltmeter, ammeter, LED, motor, loudspeaker, photovoltaic cell, fuse, diode, capacitor, thermistor, and LDR</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can set up a voltage divider circuit and measure the voltage across each component. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can calculate the voltage across each component in a voltage divider circuit. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know that transistors and MOSFETs are electronic switches that allow current to flow under certain conditions. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can measure the switching voltage of an electronic switch. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state how resistance varies when light intensity increases and decreases for an LDR. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can state how resistance varies when temperature increases and decreases for a thermistor. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can build and explain how a temperature sensing circuit works. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can build and explain how a light sensing circuit works. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

SPECIFIC HEAT CAPACITY

APPROPRIATE WEBSITES

BBC Bitesize: Specific Heat Capacity

<http://www.bbc.co.uk/education/guides/zwrxsbk/revision/1>

| | 1 st Attempt | 2 nd Attempt | 3 rd Attempt |
|--|----------------------------|----------------------------|----------------------------|
| I can state the factors that effect the change in temperature of a substance : <i>energy added / taken away, mass of substance, material of substance.</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $E_H = C \times m \times \Delta T$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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GAS LAWS AND KINETIC THEORY

APPROPRIATE WEBSITES

BBC Bitesize:

Gas Laws and Kinetic Model

<http://www.bbc.co.uk/education/guides/zjc6fg8/revision>

| | 1 st Attempt | 2 nd Attempt | 3 rd Attempt |
|--|----------------------------|----------------------------|----------------------------|
| I can use the relationship $P = F \div A$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know that the temperature of a substance is a measure of the average kinetic energy of its particles. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can explain the connection between temperature and heat energy by using the Kinetic Model theory. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the Kelvin scale of temperature which describes a temperature of absolute zero, where $E_k = 0$ J. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know that $0\text{K} = -273^\circ\text{C}$ and can convert from one scale to another. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $(P_1V_1) = (P_2V_2)$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $(P_1 / T_1) = (P_2 / T_2)$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I can use the relationship $(V_1 / T_1) = (V_2 / T_2)$ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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