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|  | **Science – Physics** **KEY STAGE THREE ASSESSMENT FRAMEWORK, YEAR 7** |
| **Learning Focus**  | **Milestone 1** | **Milestone 2** | **Milestone 3** | **Milestone 4** | **Milestone 5**  |
| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **Electricity**  | I can draw a circuit that includes at least one bulb and one cell (1,8,9) I can state that an electrical circuit must be complete and include a power source, wires and a component for electricity to flow (1)I can identify conductors and insulators (1) | I can identify series and parallel circuits.I can state that electrical current is the same in all parts of a series circuit and that potential difference is shared (8,9)I can draw the circuit symbols of some common components of electrical circuits. I can name the components used to measure potential difference and current.I can state that the potential difference of a battery or cell is what causes the current to flow, and that a battery or cell of higher potential difference will cause more current to flow (1,8,9)I can construct simple electrical circuits (1) | I can state that resistance is a measurement of how easy or hard it is for current to flow through an object (7)I can describe how to correctly connect an ammeter and a voltmeter to a circuit (1,8,9)I can describe electrical current as the flow of charge in a circuit (2,6) | I can describe how in a parallel circuit the potential difference is the same for each branch as the battery or cell (9)I can describe that objects of increased resistance allow less current to flow (7)  | I can suggest some applications for materials of higher or lower resistance (7)I can explain how a fuse works and choose an appropriate fuse for a given appliance (7) |

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| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **Energy**  | I can state that energy is stored in food and fuel (1,6)I can state the units for energy (1)I can list some energy resources (2,8,9)I can name the three sides of the Fire Triangle (3) | I can name the energy type that is stored in food and fuel (1,6)I can name different energy stores (1)I can describe how the energy in different energy resources can be used (2,6,7,8)I can state that energy is always conserved. I can name different energy stores (1) | I can explain how almost all energy on Earth comes from the Sun (7)I can describe how coal, oil and gas were formed (7) I can compare and contrast energy resources (9)I can describe ways in which energy is stored, including describing chemical, gravitational and elastic as forms of potential energy (1)  | I can use scientific principles to suggest which energy resources may be most suitable (9)I can describe how energy may be wasted and/or dissipated, and I can explain situations that may change the amount of energy wasted (1,4)I can describe the effect on a fire of removing one side of the Fire Triangle (3)I can describe food as a fuel (6) | I can use scientific principles to suggest and justify which energy resources may be most suitable (8,9)I can suggest ways to put out a fire by applying my knowledge of the Fire Triangle (3) |

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| **Forces**  | I can list some forces. I can state that speed is a measurement of how fast an object is moving (1)I can state that forces act as a push or a pull, are either contact or non-contact, forces may occur when two objects interact and they are measured in Newtons (1,2,8) I can state that a force may affect the speed, direction or shape of an object and that motion may change depending on the size of the force (1,6)I can state that mass an weight are NOT the same thing (9)  | I can describe forces using force arrow diagrams (6,7)I can identify if a particular force is contact or non-contact (including gravity, magnetism and static electricity) (1)I can describe weight as depending on Gravity (9) | I can describe Hooke's Law (4)I can describe how floating or sinking is dependent on density (5)I can describe air and water resistance and explain ways of reducing or increasing air and water resistance (9) I can convert between mass and weight (9) | I can describe friction (10) I can explain ways of reducing or increasing friction and discuss some applications of friction (10)I can describe what balanced forces are and explain when a force is balanced or unbalanced (7)I can describe what a resultant force is (7)I can interpret resultant forces to predict the effect on an object's motion (7,6)I can calculate extension of springs using Hooke's Law (4) | I can calculate a resultant force (7)I can apply Hooke's Law to the measurement of forces using a force meter (3,4)I can explain what is meant by elastic limit and limit of proportionality (3,4)I can use calculations of density to predict whether an object will float or sink (5)  |

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|  | **Science – Physics** **KEY STAGE THREE ASSESSMENT FRAMEWORK, YEAR 8** |
| **Learning Focus**  | **Milestone 1** | **Milestone 2** | **Milestone 3** | **Milestone 4** | **Milestone 5**  |
| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **Heat Transfer** | I can draw particles in solid, liquid and gas. I can state that thermal energy is transferred from hotter objects to colder objects (1,2)  | I can state that thermal energy is transferred by conduction in solids, convection in liquids and radiation in vacuums and transparent objects (3,4,5)I can describe several situations where energy is transferred (2)I can describe and explain how thermal energy is transferred by conduction, in terms of particles (3) | I can describe and explain how thermal energy is transferred by convection, in terms of particles (4)I can describe and explain the expansion of heated materials (3)I can describe and explain how thermal energy is transferred by radiation, in terms of particles (5)I can identify energy wastage in energy transfers (6,7) | I can suggest how thermal energy transfer by convection, conduction and radiation may be changed (6)I can suggest ways of reducing unwanted energy transfers (6) | I can suggest why thermal insulators reduce thermal energy transfer (6) |

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| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **Magnetism** | I can state the poles on a magnet (3)I can state what will happen like and unlike poles are put together (4)I can identify materials that are magnetic (1,2,3) | I can use a plotting compass to draw fields around a magnet (5)I can describe the difference between magnetic and magnet (3)I can describe the difference between a magnet and an electromagnet (6) | I can explain why and object is magnetic using Domains (3)I can use a plotting compass to draw the fields around a current carrying wire (solenoid) (6)I can use practical skills to investigate variables affecting field strength of electromagnets (7,8) | I can explain changes to the force exerted by a magnet using domain theory (field direction and strength) (7,8)I can form conclusions based on practical evidence (7,8) | I can explain and evaluate the uses of magnets and electromagnets using data provided (9)I can consider the reliability of my evidence (7,8) |

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| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **Light and Sound** | I can state that white light is a mixture of colours (6)I can state that light waves are able to travel through a vacuum (11)I can state that light waves are transverse. I can state that during specular reflection in a plane mirror, the angle of incidence is always equal to the angle of reflection (3,4) I can state that pinhole cameras, cameras with lenses and the human eye form images from light. I can simply state the function of the human eye (9)I can recognise the 5 senses and their organs (1)I can state that waves transfer energy. I can state that waves may be reflected, refracted, dispersed or experience superposition (11)I can state that sound waves are longitudinal (12)I can state that sound cannot travel through a vacuum (12)I can label parts of the ear (14)I can state the auditory range of humans and name some animals that have different auditory ranges to humans (!4) I can state that sound is produced by vibrations and name some devices that detect sound, including microphones and ear drums (15) | I can list the colours of the spectrum of light in order (7) I can label the main parts of the human eye (10)I can state that in a vacuum, light waves have a maximum speed, the speed of light (11)I can state that light waves may be absorbed, reflected (diffuse and specular), refracted and diffused (3,4) I can state that different types of waves can travel through matter and vacuums, and I can name some types of waves including water waves, sound waves, pressure waves and light waves (11)I can describe what frequency is and state that it is measured in hertz (13)I can describe the function of parts of the ear (14)I can recognise and label a diagram of a longitudinal wave, including compressions and rarefactions (13)I explain shadows forming due to light travelling in straight lines (2) | I can describe how white light is a mixture of colours with reference to frequency (6)I can label and state the functions of the main parts of the human eye: cornea, pupil, iris, lens, retina, optic nerve (10)I can give some examples of when light is absorbed or reflected, and describe what is meant by absorbing and reflecting light (3,4)I can describe refraction using a ray model diagram. I can describe the formation of an image from specular reflection in a plane mirror using a ray model diagram (5)I can describe how the human eye forms an image using ray diagrams (10)I can describe the reflection of an observed wave in water (3)I can describe how sound requires matter to travel, and I can explain which material sound will travel fastest through with reference to particle arrangement (12)I can describe the reflection of a sound wave as an echo and describe some applications of echoes, including sonar, ultrasound and echolocation (12)I can explain what it means to describe sound as a longitudinal wave, with reference to the direction of vibrations and energy (11) | I can explain how a prism may be used to diffuse the different colours of light, with reference to refraction and wave speed (6)I can describe how a pinhole camera works using a ray diagram (9) I can explain how we see different colours, with reference to the colour of the object and the colour of the light available (7,8)I can describe the superposition of observed waves in water.I can compare and contrast longitudinal and transverse waves (11) | **I can explain light as a transverse electromagnetic** wave, with reference to oscillations and energy (transverse waves) and magnetic and electric fields (electromagnetic wave) (11)I can apply my knowledge of light waves to explaining why refraction occurs, with reference to particles and the speed of light (5)I can describe how sound waves can be used to transfer information if they are converted to electrical signals (15) |

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| **Physics**  **KEY STAGE THREE ASSESSMENT FRAMEWORK, YEAR 9** |
| **Learning Focus** | **Milestone 1** | **Milestone 2** | **Milestone 3** | **Milestone 4** | **Milestone 5**  |
| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **Electricity 2** | I can calculate current in series and parallel circuits (3)I can describe Electricity as energy transfer (1)I can model electricity (2) | I can state that electrical appliances have power ratings (W, kW) (5) I can use Sankey diagrams (1) I can construct electromagnets (8)  | I can calculate resistance when given potential difference and current (4) I can discuss resistance in terms of electrical conductors and insulators (3,4)I can describe the uses of electromagnets (8) | I can describe how power ratings relate to energy transfer and explain the effect of a higher power rating on the cost of running an appliance (5)I can link electric current as the flow of charge with the structure of atoms (2) | I can calculate electrical power, current and potential difference (5)I can calculate the energy transferred, power and time (6)I can calculate cost of electricity in domestic fuel bills when given energy transferred and cost per unit (7)I can compare and contrast energy efficiencies and I can evaluate appliances in terms of their energy efficiency (7) |

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| **Physics**  **KEY STAGE THREE ASSESSMENT FRAMEWORK, YEAR 9** |
| **Learning Focus** | **Milestone 1** | **Milestone 2** | **Milestone 3** | **Milestone 4** | **Milestone 5**  |
| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **Speed, Pressure, moments and maths.** | I can calculate Speed using distance/time (5)I can describe friction as a force which acts against motion (11)I know that when forces are equal and opposite they are balanced (13)I can explain what causes pressure in gases, liquids and solids (15,16)I can describe turning Forces as Moments (13,14)I can calculate averages- mean, mode and median (1)I can calculate uncertainty (2)I can define scalar and vector quantities (7)I can draw graphs (8) | I can explain factors that may affect an object's speed (5)I can describe ways of changing friction (11)I can calculate resultant forces (13,14)I can calculate pressure when given the force and area (15)I can state that pressure in liquids increases with a depth. (16)I can calculate Moments from given data (14)I can show error bars on a graph (8)I can give values to a given number of significant figures (3)I can convert between large and small numbers and standard formI can use equation triangles (6)I can give examples of vector and scalar quantities (7)I can identify patterns from a graph (8) | I can interpret distance-time graphs to describe changes in motion and calculate speed (9)I can describe the effects of balanced and unbalanced forces on movement (13)I can explain some ways of increasing or decreasing pressure (15)I can explain how levers can increase moment (12)I can compare vector and scalar (7)I can calculate a gradient from a straight line graph (8) | I can interpret Velocity –time graphs to describe change in motion and calculate distance (10)I can use knowledge of Moments to predict effects of changing turning forces (14) | I can rearrange formulae for pressure, speed and moment calculations (6)I can draw a tangent to a curve and calculate its gradient (8)I can describe how to affect air pressure (16) |