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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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| **Learning Focus** | **Milestone 1** | **Milestone 2** | **Milestone 3** | **Milestone 4** | **Milestone 5** |
| **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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| **Emerging** | **Developing** | **Securing** | **Mastering** | **Beyond** |
| **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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| **Learning Focus** | **Milestone 1** | **Milestone 2** | **Milestone 3** | **Milestone 4** | **Milestone 5** |
| **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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|  | **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** |
| **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 form  I 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) |