

Year 7						
Term	1	2	3	4	5	6
Topic Title	Forces	Completion of Forces Space: The night sky, The Solar System, The Earth, The Moon.	Completion of Space Light	Light	Light/Sound	Sound
Rationale	Forces incorporate a large topic at KS2, hence this topic extends the pupils knowledge of work previously covered. It is also necessary that they learn these foundation ideas as this will be required in subsequent topics in Year 8 such as magnetism and motion.	Many stars visible at this time of year due to nights drawing in. Phases of moon observable. This is generally considered one of the most popular topics and fits in well at the beginning of the year having also studied about wave properties in the previous module which possesses some curricular links.	Many stars visible at this time of year due to nights drawing in. Phases of moon observable. This is generally considered one of the most popular topics and fits in well at the beginning of the year having also studied about wave properties in the previous module which possesses some curricular links.	This topic fits in well with the previous topics. Many of the keywords used and properties of light may have been discussed in these modules such as wave properties, reflection (Moons). The pupils have also recently completed topics about the eye in Year 6, so this topic fits in appropriately at this point in the year.	The pupils have already studied the basics of the physics of sound in Year 4. This builds on this topic, but also introduces many keywords that they will need when studying future topics such as light and space. There are also a number of engaging activities for the pupils to try at the beginning of Year 7	The pupils have already studied the basics of the physics of sound in Year 4. This builds on this topic, but also introduces many keywords that they will need when studying future topics such as light and space. There are also a number of engaging activities for the pupils to try at the beginning of Year 7
Prior knowledge	Year 3: Pupils should be taught to: <ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing Forces and magnets, focusing on attraction and repulsion of magnets, magnetic materials and the two poles of a magnet. At KS2 (Year 5) Pupils should be taught to: explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	At KS2 (Year 5) Pupils should be taught to: <ul style="list-style-type: none"> describe the movement of the Earth, and other planets, relative to the Sun in the solar system describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	At KS2 (Year 5) Pupils should be taught to: <ul style="list-style-type: none"> describe the movement of the Earth, and other planets, relative to the Sun in the solar system describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	From KS2 (Year 6): Pupils should be taught to: <ul style="list-style-type: none"> recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. 	At KS2 (Year 4) Pupils have been taught to: <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases. 	At KS2 (Year 4) Pupils have been taught to: <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases.
Key knowledge/skills development	Balanced forces: <ul style="list-style-type: none"> Opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface. Forces and motion Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only) Change depending on direction of force and its size non-contact forces: gravity forces acting at a distance on Earth and in space, forces between magnets and forces due to static electricity 	<ul style="list-style-type: none"> Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection. Our Sun as a star, other stars in our galaxy, other galaxies. The light year as a unit of astronomical distance, gravity force, gravity forces between Earth and Moon, and between Earth and Sun. The seasons and the Earth's tilt, day lengths at different times of year, in different hemispheres. 	<ul style="list-style-type: none"> Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection. Our Sun as a star, other stars in our galaxy, other galaxies. The light year as a unit of astronomical distance, gravity force, gravity forces between Earth and Moon, and between Earth and Sun. The seasons and the Earth's tilt, day lengths at different times of year, in different hemispheres. 	<ul style="list-style-type: none"> The similarities and differences between light waves and waves in matter. Light waves travelling through a vacuum; speed of light. The transmission of light through materials: absorption, diffuse scattering, and specular reflection at a surface. The transmission of light through materials: absorption, diffuse scattering, and specular reflection at a surface, use of ray model to explain imaging in mirrors, differential colour effects in absorption and diffuse reflection. The refraction of light and action of convex lens in focusing (qualitative); the human eye. Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras. The refraction of light and action of convex lens in focusing (qualitative); the human eye. Colour and the different frequencies of light, white light, and prisms (qualitative only); differential colour effects in absorption and diffuse reflection. 	<ul style="list-style-type: none"> Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. Sound needs a medium to travel, the speed of sound in air, in water, in solids, Sound produced by vibrations of objects, in loud speakers, Auditory range of humans and animals. Frequencies of sound waves, measured in hertz (Hz). Pressure waves transferring energy; waves transferring information for conversion to electrical signals by microphones, Sound produced by vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum, Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound, Frequencies of sound waves measured in hertz (Hz); echoes, reflection, and absorption of sound, 	<ul style="list-style-type: none"> Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. Sound needs a medium to travel, the speed of sound in air, in water, in solids, Sound produced by vibrations of objects, in loud speakers, Auditory range of humans and animals. Frequencies of sound waves, measured in hertz (Hz). Pressure waves transferring energy; waves transferring information for conversion to electrical signals by microphones, Sound produced by vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum, Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound, Frequencies of sound waves measured in hertz (Hz); echoes, reflection, and absorption of sound,
National Curriculum/specification links	P1:1-3-1.5	P1:4-1-4.4	P1:4-1-4.4	P1: 3:1-3.4	P1: 2:1-2.6	P1: 2:1-2.6
Additional Literacy Opportunities	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks Isaac Newton - Biography	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks. Planet Research Task	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks. Planet Research Task	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks. Use of ultrasound: research	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks. Use of ultrasound: research
Additional Numeracy Opportunities	Force Diagrams: calculating simple resultant forces	Large numbers use of the unit light year	Large numbers use of the unit light year Maths Project in STEM Lessons	Reading angles, calculating speeds.	Speed of sound calculations. Use of wavelength and frequency - introduction	Speed of sound calculations. Use of wavelength and frequency - introduction
STEM (WS)	In the Lab Unit; WS unit; Asking scientific Q's; Planning 7 recording data skills.	Complete WS unit: Analysing data; Evaluating data; Scientific investigation. Writing a conclusion. Crest Awards begin	Maths Project and skills	Bio Crest Investigation	Chem Crest Investigation	Phys Crest investigation
Cross curricular links	P774 Forces (balanced / unbalanced, types of force) LINK: (Y7 PE Term 1-6) (Y8 Tech Term 1,4,6) (Y9 PE Term 1-6) (Y9 Tech Term 1,2)	P772 Space (Earth in space, solar system; Universe; eclipses) LINK: (Y8 RE Term6) (Y9 History Term 6)	P772 Space (Earth in space, solar system; Universe; eclipses) LINK: (Y8 RE Term6) (Y9 History Term 6)	P773 Light waves; eye; colour; Isaac Newton (Y7 Art Term3,4); (Y7 Maths Term 5); (Y8 Term 5) (Y9 Computing Term 1,2,3) (Y9 Maths Term 3) (Y9 History Term 5)	P771 Sound (waves, types; ultrasound) LINK: Y7 music term1; term3; term6), (Y8 Music term 1,5,6)	P771 Sound (waves, types; ultrasound) LINK: Y7 music term1; term3; term6), (Y8 Music term 1,5,6)
Key vocabulary	push, pull, contact, non-contact, interaction pair, newtonmeter, weight, reaction, deform, compress, stretch, reaction, extension, tension, elastic limit, Hooke's Law, linear, friction, lubrication, water resistance, air resistance, drag forces, streamlined, gravity, magnetic, electrostatic, field, mass, weight, kilograms, gravitational field strength, balanced, equilibrium, unbalanced, driving force, resistive force.	The night sky, The Solar System, The Earth, The Moon, star, artificial satellite, orbit, natural satellite, planet, Sun, comet, meteor, meteorite, star, galaxy, Milky Way, Universe, astronomer, ellipse, asteroid, Mercury, Venus, Mars, terrestrial, gas giant, dwarf planet, gravity, exoplanet, axis, day, night, year, season, constellation, phases of the moon, umbra, total solar eclipse, penumbra, partial solar eclipse, lunar eclipse	The night sky, The Solar System, The Earth, The Moon, star, artificial satellite, orbit, natural satellite, planet, Sun, comet, meteor, meteorite, star, galaxy, Milky Way, Universe, astronomer, ellipse, asteroid, Mercury, Venus, Mars, terrestrial, gas giant, dwarf planet, gravity, exoplanet, axis, day, night, year, season, constellation, phases of the moon, umbra, total solar eclipse, penumbra, partial solar eclipse, lunar eclipse	source, emit, reflect, eye, absorb, luminous, non-luminous, transmit, transparent, translucent, opaque, umbra, penumbra, vacuum, wave, light-time, image, virtual, plane, incident ray, reflected ray, normal, angle of incidence, angle of reflection, law of reflection, specular reflection, diffuse scattering, refraction, medium, lens, convex, converging, focus, focal point, retina, iris, pupil, cornea, inverted, photoreceptor, optic nerve, brain, pinhole camera, real image, pixel, charge-coupled device, prism, spectrum, dispersion, continuous, frequency, primary colour, secondary colour, filter	oscillation, vibration, energy, undulation, sound, amplitude, frequency, wavelength, peak, crest, trough, transverse, longitudinal, compression, rarefaction, reflection, incident wave, reflected wave, superpose, vibration, medium, vacuum, speed of sound, speed of light, pitch, loudness, microphone, oscilloscope, hertz, kilohertz, audible range, infrasound, ultrasound, ear, pinna, auditory canal, eardrum, outer ear, ossicles, middle ear, amplify, oval window, cochlea, auditory nerve, inner ear, decibels, diaphragm, amplifier, echo, reverberation, transmitter, receiver	oscillation, vibration, energy, undulation, sound, amplitude, frequency, wavelength, peak, crest, trough, transverse, longitudinal, compression, rarefaction, reflection, incident wave, reflected wave, superpose, vibration, medium, vacuum, speed of sound, speed of light, pitch, loudness, microphone, oscilloscope, hertz, kilohertz, audible range, infrasound, ultrasound, ear, pinna, auditory canal, eardrum, outer ear, ossicles, middle ear, amplify, oval window, cochlea, auditory nerve, inner ear, decibels, diaphragm, amplifier, echo, reverberation, transmitter, receiver

