

	Physics Module 1 – Electricity, Forces, The Universe You must be able to complete /understand all the previous pathway information to reach your pathway
7-9	Use the knowledge of switches and parallel circuits to devise circuits for purposes. Explain how a domestic ring main is a form of parallel circuit. Explain the effects of balanced and unbalanced forces in unfamiliar situations. Analyse the rotations and axes of other planets to predict annual changes.
6-8	Define current as the rate of flow of charge (usually electrons). Describe how changing the number or type of components in a circuit affects the current. Use the shape of a distance-time graph to explain an objects motion. Use the gradient of a d-t graph to calculate speed. Correctly use equations to calculate any factor from the speed or velocity. Describe evidence for the rotation of the sun.
5-7	Model circuits using simple circuit diagrams. Recall the link between current and lamp brightness. Identify situations and places where different forces can be found. Be able to re-arrange equations for speed and velocity. Define nuclear fusion. Explain the effect of the tilt of the Earth's axis on the energy received from the Sun.
4-6	Describe the effects of electrostatic attraction (and repulsion). Be able to sketch and define the term electric field. Describe effect of Van der Graff generator on individual (hair). Classify forces as contact and non-contact forces. State the meaning of balanced and unbalanced forces. Describe how to use a force meter. Compare a star and a planet.
3-5	Describe how changing the number or type of components in a circuit affects the current. Describe how current and potential difference behave in series and parallel circuits. State the meaning of conductor, insulator, complete circuit, ammeter and current. Explain how switches and broken lamps affect circuits and explain how switches can be used to control different parts of a parallel circuit. Construct a circuit from a circuit diagram. Use an ammeter to measure current through a circuit. State what is meant by contact and non-contact forces. Recall the effects of forces on an object, and describe how friction forces affect movement. Recall equation for speed and velocity. Be able to use magic triangle to rearrange formula. Explain the difference between a moon and a planet. Use a model to explain the changes in the seasons.
2-4	Define current units; A. Define potential difference units; V. Define the term static electricity. Identify electrons as having negative charge, and that they are rubbed off an insulator when rubbed. Recall and correctly apply the units of speed m/s, N. Describe what a force is and recall the names of simple forces. State what is meant by friction. Explain the changes in day length and height of the Sun in terms of the tilt of the Earth's axis.
1-3	Recall examples of materials that are either conductors or insulators. Identify common circuit components and their symbols. Recall some dangers of electricity. Draw simple force diagrams using a ruler and pencil, and arrows to indicate direction and magnitude of force. Define speed and mean speed. Recall the different types of resistive forces and describe how they affect movement. State the meaning of: Sun, star, galaxy, Universe, constellation. List the order of the planets by distance from the sun. Describe differences in the seasons in terms of day length and the height of the Sun.

	Physics Module 2 – Waves, Energy, The Universe You must be able to do /understand all the previous pathway information to reach your pathway
7-9	To describe wave motion as a mechanism of energy transfer and the behaviour of waves as they are reflected and superimposed. Evaluate energy-saving appliances or modifications. Decide and explain the best energy resources to use in an area. Interpret evidence for the development of the structure of the atom.
6-8	Evaluate different materials used for soundproofing / sound insulation. Explain the relationship between speed of sound and density of material. Describe energy transfer chains for given situations. Rearrange and use the efficiency equation. Explain how the sun is the ultimate source of energy in renewable resources. Describe how electricity is produced from heating water by fission chain reactions.
5-7	State the meaning of ultrasound and infrasound. Describe how microphones convert sound into electrical signals. Explain how sonar and echolocation work. Calculate the speed of sound. Recall the law of conservation of energy. Recall the efficiency equation. State the meaning of hydroelectricity, geothermal, solar energy, wind energy and tidal power. Describe observations of cosmic radiation & radiation from radon gas.
4-6	State the meaning of transverse eg electromagnetic waves and longitudinal waves eg sound Explain the meanings of the terms amplitude (related to loudness for sound), frequency and wavelength (both related to pitch for sound). Interpret CRO traces of sound waves. Explain how human hearing can be damaged by sound. Explain the process(es) in which energy is transferred by heating in a given situation and draw a Sankey diagram. Describe the advantages and disadvantages of different energy resources. Recall examples of renewable and non-renewable fuels and their sources. Name 3 forms of ionising radiation.
3-5	Recall waves transfer energy without transferring matter and sketch diagrams to show transverse and longitudinal waves. Label rarefactions and compressions. Recall that sound waves need a medium through which to transfer energy via the vibration of particles in that medium. Recall that the eardrum transfers vibrations to structures in the middle and inner ear. Describe some uses of ultrasound. Identify the process(es) in which energy is transferred by heating in a given situation. Describe how energy is transferred in conduction, convection, evaporation and radiation. Identify situations in which energy is stored. State the meaning of biomass/bio-fuel, fuel, renewable and non-renewable. Define radioactive, background radiation, nuclear fission.
2-4	Label parts of the ear. Recall that human hearing can be damaged by loud sounds. Recall that energy can be stored and transferred as potential, kinetic, thermal, electrical, electromagnetic, chemical and nuclear. List some radioactive elements. Recall the structure of the atom.
1-3	Recall the unit of sound is the decibel Db. List some sources of sound. Recall unit of energy is the Joule (J) and temperature is °C. Identify useful and wasted energies. Recall some advantages of low-energy appliances. List one safety measure in handling radioactive sources.