Science - Physics Target Related Expectation (TReE) Year 8

	Pathway 1 (Target Grade 1-3)						Pathway 2 (Target Grade 4-6)						Pathway 3 (Target Grade 7-8)					
	1.3.1 Friction and drag	1.3.2 Squashing and stretching	1.3.3 Turning forces	1.4.1 Pressure in gases	1.4.2 Pressure in liquids	1.4.3 Stress on solids	1.3.1 Friction and drag	1.3.2 Squashing and stretching	1.3.3 Turning forces	1.4.1 Pressure in gases	1.4.2 Pressure in liquids	1.4.3 Stress on solids	1.3.1 Friction and drag	1.3.2 Squashing and stretching	1.3.3 Turning forces	1.4.1 Pressure in gases	1.4.2 Pressure in liquids	1.4.3 Stress on solids
1 Forces	• Identify examples of drag forces and friction. • Calculate resultant forces.	• State an example of a force deforming an object. • Use Hooke's law.	• Calculate simple moments.	• Describe the motion of particles in a fluid.	• State simply what happens to pressure with depth. • Describe some objects that float and some that sink.	• Predict the effect of changing area and/or force on stress.	• Explain why drag forces and friction arise and describe what happens to a moving object when the resultant force acting on it is zero.	• Describe how forces deform objects. • Use Hooke's Law to predict the extension of a spring.	• Calculate the moment of a force.	• Explain why fluids exert a pressure and calculate fluid pressure.	• Describe how liquid pressure changes with depth. • Explain why some things float and some things sink, using force diagrams. • Use the equation for calculating fluid pressure.	• Predict quantitatively the effect of changing area and/or force on stress.	• Interpret the motion of objects subject to drag forces and friction.	• Explain how forces deform objects in a range of situations and how solid surfaces provide a support force, using scientific terminology and bonding.	• Use calculations to explain situations involving moments.	• Explain a range of observations in terms of fluid pressure and calculate fluid pressure in a range of situations.	• Explain why liquid pressure changes with depth and explain why an object will float or sink in terms of forces or density.	• Calculate stress in multistep problems and compare stress in different situations, explaining the differences in pressure using scientific knowledge.
	2.3.1 Magnets and magnetic fields	2.4.1 Electromagnets	2.4.2 Using electromagnets				2.3.1 Magnets and magnetic fields	2.4.1 Electromagnets	2.4.2 Using electromagnets				2.3.1 Magnets and magnetic fields	2.4.1 Electromagnets	2.4.2 Using electromagnets			
2 Electromagnets	• Draw the magnetic field lines around a bar magnet. • Record the shape of field lines round a magnet.	• State the differences between permanent magnets and electromagnets.	• State some uses of electromagnets.				• Describe the Earth's magnetic field and draw field lines round a magnet in detail.	• Describe how to make an electromagnet and describe how to change the magnetic field strength.	• Describe how an electric bell, circuit breaker, or loudspeaker works.				• Explain how magnets can be used and how a compass works.	• Predict the effect of changes made to an electromagnet, using scientific knowledge to justify the claim.	• Suggest investigations about electromagnets used in different applications.			
	3.3.1 Work, energy, and machines	3.4.1 Energy and temperature	3.4.2 Energy transfer: particles	3.4.3 Energy transfer: radiation and insulation			3.3.1 Work, energy, and machines	3.4.1 Energy and temperature	3.4.2 Energy transfer: particles	3.4.3 Energy transfer: radiation and insulation			3.3.1 Work, energy, and machines	3.4.1 Energy and temperature	3.4.2 Energy transfer: particles	3.4.3 Energy transfer: radiation and insulation		
3 Energy	• To understand that work is energy. • State that machines change the size of forces.	• State how energy and temperature are measured. • Describe how energy is transferred through solids, liquids, and gases.	• Describe simply what happens in conduction and convection. • State the difference between insulators and conductors.	• State some sources and properties of infrared radiation.			• Calculate work done and apply the conservation of energy to simple machines.	• State the difference between energy and temperature and describe what happens to particles when you heat up solids, liquids, and gases.	• Describe how energy is transferred by particles in conduction and convection.	• Describe some sources of infrared radiation, and how energy is transferred and describe different ways to insulate in terms of conduction, convection and radiation.			• Compare the work done in different scenarios and by different machines.	• Explain, giving an example to show that energy and temperature are different.	• Explain in detail the processes involved during heat transfers.	• Explain how thermal equilibrium can be established.		
	4.3.1 Sound waves, water	4.3.2 Radiation and energy	4.4.1 Modelling waves				4.3.1 Sound waves, water	4.3.2 Radiation and energy	4.4.1 Modelling waves				4.3.1 Sound waves, water	4.3.2 Radiation and energy	4.4.1 Modelling waves			
4 Waves	• Define frequency and amplitude. • To know that waves transfer energy but not matter.	• Name some parts of the electromagnetic spectrum and state which parts are harmful to living cells.	• Describe the difference between transverse and longitudinal waves.				• Describe the link between amplitude or frequency and energy.	• Describe the electromagnetic spectrum including the link between frequency and energy.	• Compare transverse and longitudinal waves, reflection, absorption, and transmission of waves.				• Explain, in terms of frequency, why we use ultrasound for cleaning and physiotherapy.	• Describe all the waves of the electromagnetic spectrum in terms of increasing wavelength or increasing frequency and explain why only some electromagnetic waves cause ionisation.	• Compare transverse and longitudinal waves with examples.			