

	Year 11 Physics					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
BIG Q Content <i>(max 5)</i> Please log into Seneca to support your child to understand this learning	<i>How do objects in motion behave?</i> Calculate the speed and acceleration of a moving object. Plot distance-time graphs and velocity-time graphs. Use distance-time graphs and velocity-time graphs to determine the speed, acceleration and distance moved by objects. Explain the factors that affect the thinking, braking and stopping distance of moving vehicles. Use data to compare the safety of different vehicles.	<i>What are the laws that govern forces?</i> Understand Newton's three laws of motion and apply them to both theory and practical contexts. Use experimental methods to prove the relationship between resultant force and acceleration described in Newton's Second Law. Use Hooke's Law to explain the relationship between the force applied to an elastic object and its extension. Explain the terms elastic deformation and limit of proportionality. Describe the effect of terminal velocity.	<i>What are the types and uses of waves?</i> Define transverse and longitudinal waves and describe the differences between them. Explain the causes of reflection and refraction. Identify the seven sections of the electromagnetic spectrum and give examples of their uses and risks. Calculate the speed, frequency and wavelength of a wave. Use a ripple tank to determine the speed of a wave.	<i>How are electromagnets produced and controlled?</i> Describe the magnetic field produced by a permanent magnet and the effects of the magnetic field. Describe the features of an electromagnet and the shape of the magnetic field produced. Explain the factors that can change the strength and direction of a magnetic field around an electromagnet. Calculate the magnetic field strength of a current carrying wire. Explain how the motor effect can be used to transfer electrical energy into kinetic energy.	Revision	Revision
Vocabulary <i>(max 10)</i> Please use your child's knowledge notes to help them learn these words	Vector Scalar Distance Displacement Speed Velocity Stopping Distance Thinking Distance Braking Distance Acceleration	Vector Scalar Distance Displacement Speed Velocity Stopping Distance Thinking Distance Braking Distance Acceleration	Longitudinal Transverse Electromagnetic Frequency Wavelength Peak Trough Compression Rarefaction Refraction	Magnetic Field Tesla Solenoid Core Motor Effect Pole Attract Repel		
Catholic Link	Life and Dignity of the Human Person: Understanding forces helps protect people's safety.	Care for God's Creation: Understanding forces can help reduce environmental damage. Aerodynamic vehicles experience less drag and use less fuel.	Solidarity: Transport systems help countries and communities cooperate.	Care for God's Creation: Electromagnetism supports renewable energy generation		
Careers Link	Forces- Architect and pilot	Forces- Sports scientists and construction manager	Waves- Sonographer, seismologist, radiographer	Electromagnetism- Robotics technician. MRI technician, radiologist		

Ways to enrich the Y11 Physics curriculum at home: <https://www.iop.org/explore-physics/at-home>

- Investigate surface resistance by rolling a ball with the same pushing force across smooth concrete, short grass, and long grass. Measure the distances to see how surface roughness impacts friction.
- Visit a local bridge (arch, beam, or suspension style). Identify which parts of the structure are under compression (squashing) and which are under tension (stretching)
- Make a glass resonate by filling it with varying amounts of water and rubbing a wet finger around the rim to create a standing wave. Can you make different pitch notes?