Definitive list of learning objectives and things to learn for CE/Scholarship physics

Year 7:

You should know and understand:

Pg	Units & Density		
	units and abbreviations for mass time length area and volume		
	the measurement of the mass and volume of regularly-shaped solids		
	Finding the volume of liquids using a measuring cylinder		
	Finding the volume of irregularly shaped solids (using the displacement of water to find a volume)		
	the relationship between density, mass and volume; how to use this for simple quantitative work		
	that the unit of density is kg/m ³ or g/cm ³		

Pg	Energy		
	the significance of the Law of Conservation of Energy		
	that although energy is always conserved, it may be dissipated,		
	reducing its availability as a resource		
	that energy can exist in many different forms		
	the form in which energy is stored in a particular situation		
	how to describe the energy transformation taking place in simple		
	situations		
	that energy can be measured and that the unit of energy is the joule		
	Thermal Energy		
	Particle theory and energy changes in the 3 states of matter		
	Conduction – how some materials are conductors and others are		
	insulators.		
	Convection – what convection is and real world examples		
	Radiation – what black body radiation is. Real world examples		
	Insulation – how insulation works		
	How houses are insulated.		
	Energy Resources		
	that electricity is generated using a variety of energy resources		
	about the variety of energy resources		
	the distinction between renewable and non-renewable resources		
	that a renewable resource is one which can be replenished within a		
	lifetime;		
	some of the advantages and disadvantages of renewable and non-		
	renewable resources		
	the role of the Sun as the ultimate source of the energy		
	that a variety of processes is used to generate electricity		

Pg	Space		
	that the weight of an object on Earth is the result of the gravitational		
	attraction between its mass and that of the Earth		
	that there is a gravitational force of attraction between any two		
	masses; that this force causes bodies to fall towards the centre of the		
	Earth; that the weight of a body is the pull of gravity on it		
	how the movement of the Earth causes the apparent daily and annual		
	movement of the Sun and other stars		
	the relative positions of the Earth, Sun and planets in the solar system		
	that the Earth is one of several planets which orbit the Sun;,		
	the reasons for the changes causing night and day		
	seasons	ļ	
	and eclipses of the Sun and Moon	ļ	
	the concept of a moon as a satellite, as shown by our Moon and the		
	moons of other planets	ļ	
	; that the solar system is part of the Milky Way galaxy, and that the		
	Universe contains many such groups of stars or galaxies	ļ	
	about the scale of astronomical distances		
	about the movements of planets around the Sun and to relate these to		
	gravitational forces	ļ	
	that it is gravitational forces which keep the Moon in orbit round the		
	Earth and planets in orbit round the Sun	ļ	
	that the Sun and other stars are light sources and that the planets and		
	other bodies are seen by reflected light		
	why the planets and our Moon are visible even though they are not		
	light sources		
	about the use of artificial satellites and probes to observe the Earth		
	and to explore the solar system	L	

Pg	Light		
	that light travels in a straight line at a finite speed in a uniform medium		
	How to draw light ray diagrams		
	that non-luminous objects are seen because light scattered from them		
	enters the eye		
	The law of reflection		
	The difference between regular and diffuse reflection		
	that, on a qualitative basis, light changes direction when it reaches the		
	boundary between two different materials and that this phenomenon is		
	called refraction		
	that white light can be dispersed to give a range of colours		
	how a prism disperses white light and that a similar effect occurs		
	naturally in a rainbow		
	Basic mixing of light colours		

Pg	Sound		
	that light can travel through a vacuum but sound cannot,		
	that light travels very much faster than sound		
	that sound travels through solids, liquids and air, but not through a		
	vacuum; that an event observed from a distance is seen before it is		
	heard		
	the relationship between the pitch of a sound and the frequency of the		
	vibration causing it		
	that increasing frequency increases pitch		
	that increasing amplitude increases the loudness of a sound		
	that sound causes the eardrum to vibrate and that different people		
	have different audible ranges		
	that loud sounds can cause temporary or permanent damage to		
	hearing		

Pg	Speed		
	relationship between speed, distance and time;		
	how to use this for simple quantitative work		
	about the timing of moving bodies to measure speed;		
	the concept of constant speed		
	The concept of speeding up and of slowing down, without a formal		
	definition of acceleration		