

A comparison of six science curricula to the end of the junior secondary phase (grade 9)

Andrew Clegg, Sept 2003

Physical processes

		California**	England	Hong Kong*	Ontario	Singapore*	Qatar
Heat	Heat and temperature		Year 8		Grade 7	P4	Year 4
	Examples of heat loss and gain in everyday life	Grade 6	Year 8	Years 1-3		P4	Year 4
	Sources of heat	Grade 6	Year 8			P4	Year 4
	Good and bad conductors of heat	Grade 6	Year 8	Years7-9		P4	Year 9
	Expansion, density changes		Year 8	Years7-9		S1-3	Year 9
	Reducing waste heat		Year 8			S1-3	Year 9
	Specific heat capacity				Grade 7		
	Conduction, convection and radiation	Grade 6	Year 8	Years7-9	Grade 7	S1-3	Year 9
Light	Light sources, sun	Grade 3	Year 1	Years 3-6	Grade 4		Year 2
	Shadows, position of sun	Grade 3	Year 3	Years 3-6	Grade 4	P4	Year 2
	We see an object when reflected light enters the eye	Grade 3	Year 6			P4	Year 8
	Colour of light striking an object affects the way it is seen	Grade 3			Grade 4		
	Transparency		Year 8	Years7-9	Grade 4	P4	Year 8
	Refraction		Year 8	Years7-9	Grade 4		Year 8
	Dispersion,	Grade 7	Year 8	Years7-9	Grade 4		Year 8
	Simple optical devices	Grade 7		Years7-9	Grade 4		Year 8
	Velocity of light		Year 8				
	Reflection	Grade 7	Year 8				Year 8
Electromagnetic spectrum	Grade 7		Years7-9			Year 9	
Sound	Kinds of sound, hearing	Grade 2	Year 1	Years7-9	Grade 4		Year 4
	Sound as a vibration. Instruments	Grade 2	Year 5	Years7-9	Grade 4		Year 4
	Pitch and loudness of sound	Grade 2	Year 5	Years7-9	Grade 4		Year 4
	Sound travels through a medium		Year 5	Years7-9	Grade 4		Year 4
	Properties of objects, including shape and hollowness, affect the sound they can make		Year8	Years7-9	Grade 4		Year 4
	Other animals have a different hearing range than humans		Year8		Grade 4		Year 4
	The ear loudness, damage to the ear		Year8	Years7-9	Grade 4		Year 4

	Studying vibrations, the oscilloscope		Year8					
	Ultrasound, applications			Years7-9				
	Echoes, applications							
Forces and structures	Forces as pushes and pulls	Grade 2	Year 1	Years7-9	Grade 3	P5		Year 5
	Forces can change the shapes of objects		Year 1	Years7-9		P6		Year 5
	Forces can cause movement	Grade 2	Year 9		Grade 3	P6		Year 5
	Different kinds of forces. Forces can act at a distance and can act through materials		Year 7		Grade 3	P6		Year 6
	Friction. Air and water resistance	Grade8	Year 4	Years7-9	Grade 3			Year 5
	Forces act in particular directions	Grade8	Year 3	Years7-9	Grade 3	S1-3		Year 5
	Opposing forces acting on an object (eg a pull and friction)	Grade8	Year 6	Years7-9	Grade 3	S1-3		Year 5
	Recognise that objects fall to the ground unless something holds them up, weight	Grade 2		Years7-9	Grade 3	S1-3		Year 6
	Measuring forces. The newton	Grade8	Year 6	Years7-9		P6		Year 5
	Simple mechanical systems. Levers and machines	Grade7	Year 9		Grade 6			
	Simple machines, mechanical advantage				Grade 6	P5		
	Velocity ratio				Grade 8			
	Mechanical efficiency				Grade 8			
	Moments		Year 9		Grade 7	S1-3		Year 7
	Density and buoyancy	Grade8	Year 7	Years7-9		S1-3		Year 7
	Stretching. Force and extension		Year 7			P6		Year 7
	Pressure		Year 9	Years7-9	Grade 6			Year 7
	Gravity, mass and weight	Grade8	Year 9	Years7-9	Grade 7	S1-3		Year 7
	Work					S1-3		Year 9
	Fluid pressure		Year 9		Grade 6			Year 7
Bernoulli principle, flight, lift and drag				Grade 6				
Pneumatics and hydraulics				Grade 8				
Classification and performance of structures				Grade7				
Motion	Compare the movement of familiar things	Grade8	Year 1	Years 1-3		S1-3		Year 5
	Measure the movement of an object	Grade 2				S1-3		Year 5
	Velocity and acceleration	Grade8	Year 9			S1-3		Year 8
	Newton's second law	Grade8	Year 9			S1-3		Year 8
	Distance-time and velocity-time graphs	Grade8	Year 9			S1-3		Year 8

	Vectors and scalars	Grade8		Grade 8	S1-3		
Electricity and Magnetism	Everyday appliances that use electricity		Year 2			Year 5	
	Construct simple series circuits involving batteries, wires, bulbs and other components	Grade 4	Year 2	Years 7-9	Grade 6	P5	Year 5
	Construct simple parallel circuits involving batteries, wires, bulbs and other components	Grade 4	Year 7	Years 7-9	Grade 6	P5	Year 7
	Switches		Year 4	Years 7-9	Grade 6	P5	Year 5
	Varying the number of cells in a circuit		Year 4	Years 7-9	Grade 6	P5	Year 5
	Circuit diagrams and symbols		Year 6	Years 7-9	Grade 6	P5	Year 5
	Cell as an energy store		Year 7	Years 7-9	Grade 6	P5	Year 5
	Transport of energy by electricity		Year 9	Years 7-9	Grade 9	S1-3	Year 7
	Electrical conductors and insulators		Year 7	Years 7-9	Grade 6	P5	Year 7
	Safety aspects related to electricity		Year 7	Years 7-9	Grade 6	P5	
	Series and parallel circuits		Year 7	Years 7-9	Grade 6	S1-3	Year 7
	Current		Year 7	Years 7-9	Grade 9	S1-3	Year 7
	Voltage			Years 7-9	Grade 9	S1-3	Year 7
	Resistance, Ohm's Law			Years 7-9	Grade 9	S1-3	
	Domestic electricity		Year 7	Years 7-9		S1-3	Year 8
	Electrical power			Years 7-9		S1-3	
	Efficiency of electrical devices				Grade 9		
	Logic circuits				Grade 6		
	Magnetism and electromagnetism						
	Classify materials as magnetic and non-magnetic	Grade 4	Year 3		Grade 3	P3	Year 6
Make and use a compass needle	Grade 4	Year 8		Grade 3	P3	Year 6	
Magnetic effect, electromagnets	Grade 4	Year 8	Years 7-9	Grade 6		Year 8	
Everyday uses of magnets	Grade 4	Year 8	Years 4-6	Grade 3	P3	Year 6	
Everyday uses of electromagnets	Grade 4	Year 8		Grade 6		Year 8	
Magnetic poles, attraction and repulsion	Grade 4	Year 8		Grade 3	P3	Year 6	
Electrostatics							
Some materials become charged when rubbed	Grade 4			Grade 3		Year 6	
Electrically charged objects attract or repel each other	Grade 4			Grade 3		Year 6	
Magnetic and electric fields		Year 8	Years 4-6	Grade 3		Year 6	

	Everyday examples of static electricity. How static electricity can be removed				Grade 3		Year 6
Energy	Energy from the sun, heat and light	Grade 3		Years 7-9	Grade 1	P4, P6	Year 4
	Forms of stored energy	Grade 3	Year 9	Years 1-3	Grade 1	P6	Year 9
	Devices that can store energy			Years 7-9	Grade 5		Year 9
	Stored energy in food			Years 7-9	Grade 1	P6	Year 9
	Energy is required to make things work and move	Grade 3	Year 9	Years 1-3	Grade 2	P4	Year 9
	Machines and living things convert energy from one form to another	Grade 3	Year 9	Years 4-6		P6	Year 9
	Energy can be transmitted in the form of waves, electricity and moving objects	Grade 3					
	Electrical energy and its conversion	Grade 4	Year 9	Years 7-9	Grade 6	P6	Year 9
	Kinetic energy and its conversion			Years 7-9	Grade 6		Year 9
	Energy from moving water and wind			Years 7-9	Grade 2	S1-3	Year 9
	Renewable and non-renewable energy sources	Grade 6	Year 7	Years 7-9	Grade 5	S1-3	Year 9
	Conservation of energy			Years 3-6	Grade 5	S1-3	Year 9
	Ways of conserving energy in our lives		Year 9	Years 3-6	Grade 5	P5	Year 9
	Fuels as an energy source. Fossil fuels		Year 7	Years 7-9	Grade 5		Year 9
Nuclear energy							

* More able group curriculum ** Grade 9 not included

Life Processes

		California**	England	Hong Kong	Ontario*	Singapore*	Qatar
Characteristics and classification of living organisms	Classification of objects as living and things that have never lived.		Year 1	Years 1-3	Grade 1	P3	Year 2
	Variety of living things		Year 1	Years 1-3	Grade 1	P3	Year 2
	Main external parts of the bodies of humans and other animals	K	Year 1	Years 1-3	Grade 1		Year 3
	Leaf, flower, stem and root of flowering plants	K	Year 1	Years 4-6	Grade 3		Year 4
	Physical characteristics of different classes of animal			Years 7-9	Grade 1		Year 4
	Different ways animals care for their young				Grade 2		
	Similarities between green plants and animals. Differences within these groups	Grade 2	Year 2			P3	
	Taxonomic classification		Year 7	Years 7-9	Grade 6	S 1-3	Year 6
	Variation within a species		Year 7	Years 7-9			
	Classification of green plants, seeds/spores		Year 8				Year 7

	Microorganisms, Useful, and harmful. Grow and reproduce	Grade 4	Year 6		Grade 7	P3	Year 7	
	Classification of microorganisms		Year 8		Grade 7		Year 7	
	Microorganisms and disease		Year 7					
	Unicellular organisms				Grade 8		Year 7	
Organisation and maintenance of organisms	Plants need light and water	Grade 1	Year 1	Years 1-3	Grade 1	P3	Year 3	
	Humans and other animals need food and water to stay alive	Grade 1	Year 2	Years 1-3	Grade 1		Year 6	
	Animals, including humans, move, feed, grow, use their senses and reproduce	Grade 1	Year 2	Years 1-3	Grade 1		Year 4	
	Infer what animals eat by the shape of their teeth	Grade 1			Grade 2		Year 6	
	Importance of a balanced diet to stay healthy. Care of teeth		Year 3	Years 1-3	Grade 1		Year 6	
	Effect of light, gravity and environmental stress on plant growth	Grade 2	Year 3				Year 3	
	Structure and function of different animal and plant parts	Grade 3		Years 4-6	Grade 5	P3	Year 4	
	Transport in organisms	Grade 5		Years 7-9	Grade 5	P4		
	The skeleton and muscles. Movement.		Year 4	Years 7-9	Grade 5	P3	Year 3	
	Circulatory system	Grade 7	Year 5	Years 7-9			Year 8	
	Effect of exercise on heartbeat blood and muscles	Grade 5	Year 5	Years 7-9	Grade 6		Year 3	
	Gaseous exchange process in the lungs	Grade 5	Year 9	Years 7-9	Grade 6	P4	Year 5	
	Digestion	Grade 5	Year 8	Years 7-9	Grade 5	P3	Year 6	
	Function of the kidneys	Grade 5					Year 8	
	The senses	Grade 7		Years 7-9			Year 8	
	Defence against infection				Grade 5			
	Nutrients in foods, balanced diet		Year 8	Years 7-9	Grade 5		Year 6	
	Maintaining fitness, diet, exercise		Year 9	Years 7-9		S1-3		
	Maintaining fitness, drugs, alcohol, smoking		Year 9	Years 7-9		S1-3		
	Sexually transmitted diseases			Years 7-9		S1-3		
	classification of diseases, procedures fro treating diseases							
	Respiraton and photosynthesis							
	Photosynthesis	Grade 5	Year 6	Years 7-9	Grade 4	P5	Year 8	
	Photosynthetic reaction		Year 9	Years 7-9	Grade 7	S1-3	Year 8	
	Respiration	Grade 5	Year 7	Years 7-9	Grade 8	P4	Year 8	
	Cellular biology							
The cell as a single unit of life	Grade 7	Year 7	Years 7-9	Grade 5	P5	Year 7		

	Identify different parts of plant and animal cells and relate them to function	Grade 7	Year 7	Years 7-9	Grade 8	P5	Year 7
	Cell division as part of the growth process	Grade 7	Year 7	Years 7-9	Grade 8	P5	Year 7
	Respiration in cells	Grade 7	Year 8	Years 7-9	Grade 8	S1-3	Year 7
	Mitosis and meiosis, DNA replication	Grade 7			Grade 9		Year 7
	Cell differentiation	Grade 7		Years 7-9			Year 7
Continuity of life	Seeds fruits and spores. Reproduction in plants	Grade 2		Years 7-9	Grade 9	P5	Year 5
	Asexual reproduction in plants			Years 7-9	Grade 9	P5	Year 5
	Parts and functions of a flower	Grade 7	Year 5	Years 7-9	Grade 9	P5	Year 5
	Organisms produce offspring that resemble their parents	Grade 2	Year 5	Years 7-9	Grade 2	P3	Year 5
	Some organisms have several stages in their life cycles	Grade 2			Grade 2	P3	Year 4
	Life cycles of a plants and animals including humans	Grade 7	Year 5	Years 4-6		P5	Year 4
	Fertilisation in animals and plants	Grade 7	Year 7	Years 7-9	Grade 9	S1-3	Year 5
	Human reproduction	Grade 7	Year 7	Years 7-9	Grade 9	S1-3	Year 5
	Caring for new-born babies		Year 7	Years 7-9		S1-3	Year 5
	Changes during human growth	Grade 7	Year 7	Years 7-9	Grade 9	S1-3	Year 5
	Inheritance of characteristics	Grade 2	Year 9			P5	Year 7
	Sexual reproduction leading to similar but not identical offspring	Grade 7	Year 9	Years 7-9			Year 7
	Identical twins		Year 9				Year 7
	Selective breeding in plants and animals		Year 9				Year 7
	Cloning		Year 9				Year 7
Role of hormones in reproduction and growth	Grade 7			Grade 9	S1-3	Year 7	
Birth control	Grade 7				S1-3	Year 7	
Evolution by natural selection	Grade 7						
Relationships been organisms and with environments	Study plants and animals in the local environment		Year 1	Years 1-3	Grade 6	P6	Year 1
	Similarities and differences between local environments and ways in which these affect animals and plants that are found there	Grade 1	Year 2	Years 4-6	Grade 6	P6	Year 6
	Ways in which animals use their environment to meet their needs	Grade 3	Year 2		Grade 2	P6	Year 6
	Different environments support different forms of life	Grade 3	Year 2	Years 4-6	Grade 7	P6	Year 6
	When environments change some living things adapts and other s die	Grade 3			Grade 4	P6	
	Local habitat, simple keys, food sources. Herbivors and carnivors	Grade 4	Year 4		Grade 7	P6	Year 6
	Adaptation to habitats, food chains and webs. Interdependence of organisms in a habitat	Grade 4	Year 7		Grade 3	P6	Year 6

Seasonal changes in plants and animals			Years 4-6	Grade 2/3	S1-3	
Studying a habitat; populations, interdependence		Year 8		Grade 7	S1-3	
Carbon and nitrogen cycles					S1-3	
The desert environment						Year 9
Energy flow						
Living things need energy	Grade 3	Year 7			P4	Year 6
Plants get their energy from the sun and that animals get their food either directly or indirectly from plants	Grade 4	Year 7		Grade 4	P4	Year 6
Feeding relationships	Grade 4	Year 7		Grade 4	P6	Year 6
Conservation						
Living things can change environments	Grade 3				P6	Year 6
Protection of environments from over-exploitation				Grade 3	P6	Year 6
Human use of plants for food shelter and clothing.		Year 9		Grade 3	P6	Year 9
Destruction of environments and the extinction of species			Years 4-6	Grade 4	P6	Year 4
Biomes. Roles of organisms	Grade 6				P6	Year 6
Factors affecting numbers and types of organisms in an ecosystem	Grade 6				S1-3	Year 6
Use of fertilisers and pesticides in food production		Year 9			S1-3	Year 9
Hydroponics						Year 9

* More able group curriculum ** Grade 9 not included

Materials

		California**	England	Hong Kong	Ontario*	Singapore*	Qatar
States and properties of matter	Similarities and differences between materials	K	Year 1	Years 1-3	Grade 1	P3	Year 1
	Classification on the basis of simple material properties	K	Year 1	Years 1-3	Grade 1	P3.	Year 4
	Classification on the basis of physical constants	Grade 8	Year 7				Year 7
	Know that materials can be changed to alter their appearance			Years 3-6	Grade 1		
	States of matter	Grade 3	Year 5		Grade 2	P4	Year 3
	Uses of materials linked to properties.	Grade 6	Year 3	Years 1-3	Grade 2	P3, P6	Year 4
	Measurement of volume of a liquid		Year 5			S1-3	Year 5
	Measurement of length, area, mass and volume					S1-3	Year 5
Heating and cooling	Effect of heat on materials	Grade 8	Year 2				Year 6

	Temperature		Year 4		Grade 5	P4	Year 3
	Thermometers					S1-3	Year 7
Thermochemistry	Burning in air and oxygen	Grade 8	Year 7			S1-3	Year 7
	Burning fuels	Grade 8	Year 7			S1-3	Year 9
	Endo- and exo-thermic reactions	Grade 8				S1-3	
Elements, mixtures and compounds	Solids and liquids, dissolving,	Grade 5	Year 4	Years 7-9	Grade 2	S1-3	Year 6
	Solubility		Year 7	Years 7-9	Grade 7	S1-3	Year 6
	Separating mixtures	Grade 5	Year 6	Years 7-9	Grade 7	S1-3	Year 7
	Importance of water, its uses, its phases	Grade 5		Years 7-9		P4	Year 5
	Reversible and irreversible changes	Grade 8	Year 6	Years 3-6	Grade 5	S1-3	Year 6
	Elements and compounds	Grade 3	Year 7	Years 7-9	Grade 5	S1-3	Year 7
	Criteria of purity		Year 8	Years 7-9			Year 7
Particles	Particulate theory of matter	Grade 3	Year 7	Years 7-9	Grade 7	S1-3	Year 7
	Atoms combine to form molecules	Grade 5	Year 8	Years 7-9	Grade 9	S1-3	Year 7
	Each element is made of only one kind of atom	Grade 5	Year 8	Years 7-9	Grade 9	S1-3	Year 7
	Periodic Table; prediction of properties	Grade 5,8			Grade 9		Year 9
	Ordered arrays of particles in crystals	Grade 5	Year 8	Years 7-9			Year 7
	Changes of state	Grade 8	Year 8	Years 7-9	Grade 8	S1-3	Year 7
	Living organisms are made up of just a few elements	Grade 5					
	Compounds contain elements in fixed proportions	Grade 8	Year 8		Grade 9	S1-3	Year 7
	Bohr-Rutherford atomic model	Grade 8			Grade 9	S1-3	
	Ion formation				Grade 9	S1-3	
	Valency						
Covalent bonding							
Acidity	Acids and alkalis and their uses		Year 7	Years 7-9		S1-3	Year 7
	pH and indicators	Grade 8	Year 7	Years 7-9		S1-3	Year 7
	Neutralisation	Grade 8	Year 7	Years 7-9		S1-3	Year 7
	Common properties of salts such as NaCl	Grade 5		Years 7-9			
	Reaction of metals, carbonates and oxides with acids		Year 9	Years 7-9			Years 7,8,9
Metals	Physical properties of metals	Grade 5	Year 7	Years 7-9			Year 8
	Chemical properties of metals		Year 7	Years 7-9			Year 8

Materials	Reactivity series	Year 9			Year 8
	Extraction, recycling		Years 7-9		Year 8
	Uses		Years 7-9		Year 8
	Alloys		Years 7-9		Year 8
	iron and steel				Year 8
	Plastics; manufacture, properties and uses		Years 7-9	S 1-3	
	Disposal of plastics		Years 7-9		
	Composites		Years 7-9		
	Structure and function of common materials				Year 8
Types of reaction	Electrolysis				Year 8
	Burning	Year 7	Years 7-9	S1-3	Year 7
	Redox				
	Word equations			S1-3	Year 7
	Symbol equations				
Limestone	Limestone and its derivatives, cement, glass				
Petroleum	Origins				Year 9
	The petroleum industry				

* More able group curriculum ** Grade 9 not included

Earth and Space

		California**	England	Hong Kong	Ontario*	Singapore*	Qatar
Earth sciences	Different landform characteristics	K			Grade 7		
	Name and compare different rocks.	Grade 2	Year 3		Grade 7		
	Origin of soil	Grade 2	Year 3		Grade 7		
	Different kinds of soil, testing		Year 3		Grade 7		
	Fossils	Grade 2			Grade 6		Year 5
	Igneous, sedimentary and metamorphic rocks	Grade 4	Year 8		Grade 7		Year 7
	Geological changes and timescale, earth history	Grade 4, 7	Year 8		Grade 7		Year 7
	Effect of weathering, water and organisms on rocks	Grade 4	Year 8		Grade 7		Year 5
	Identify minerals from properties	Grade 4	Year 8				
	Plate tectonics and continental drift	Grade 6	Year 8		Grade 7		Year 7

	Internal structure of the earth	Grade 6					Year 7
	Earthquakes and volcanoes	Grade 6			Grade 7		Year 7
Weather and the atmosphere	Weather changes and its effects on the earth and its inhabitants	K		Years 1-3			Year 3
	Make and use simple weather measurements	Grade 1					Year 3
	Sun warms the land	Grade 1					Year 4
	Water cycle	Grade 5	Year 5	Years 7-9	Grade 7	P4	Year 5
	Uneven heating of the atmosphere by the sun causes the weather	Grade 5					
	Use weather maps to predict weather	Grade 5					
	Atmospheric pressure	Grade 5					Year 7
	Convection currents in the air and in the oceans affect the weather	Grade 6			Grade 7		
	Water systems	Grade 5		Years 7-9	Grade 7		Year 5
	Water conservation, recycling	Grade 5		Years 7-9	Grade 7	P4	Year 5
	Origin of water used by the local community. Water pollution	Grade 5		Years 7-9		P4	Year 5
	Water from sea water					S1-3	Year 5
	Acid rain		Year 9	Years 7-9			
	Tides and ocean currents				Grade 7		
The ozone layer							
Astronomy	Stars stay in the same place in the night sky although they appear to move, Different stars are visible in different seasons	Grade 3		Years 1-3	Grade 9		
	Earth, sun and moon. Causes of day and night, change in shadow length, Movement of earth sun and moon	Grade 3	Year 5	Years 3-6	Grade 9	P5	Year 2
	The cause of seasons	Grade 3	Year 5	Years 3-6	Grade 9	P5	Year 4
	Planets and the moon can be seen because they reflect light from the sun		Grade 7		Grade 9		Year 4
	Sun is an average star, made mainly of hydrogen and helium		Year 7		Grade 9	P5	Year 4
	The solar system	Grade 5				P5	Year 8
	Role of gravitational attraction in maintaining the planets in their positions	Grade 5	Year 7		Grade 9	P5	Year 6
	Earths position relative to the sun is a major factor in its ability to support life	Grade 5	Year 9				Year 8
	Uses of man-made satellites					P5	
	Structure and evolution of the universe		Year 9			P5	Year 8
	Origin of the solar system	Grade 8			Grade 9		Year 8
	Stellar evolution	Grade 8			Grade 9		

* More able group curriculum ** Grade 9 not included

Science enquiry

		California	England	Hong Kong	Ontario	Singapore	Qatar
Collecting evidence	Observing	K	Year 1	Years 1-3	Grade 1	P3	Year 1
	Making simple measurements	Grade 2	Years 1	Years 1-3	Grade 1	P3	Year 2
	Simple comparisons	Grade 2	Year 1	Years 1-3	Grade 1	P3	Year 1
	Using the senses	K	Year 1	Years 1-3	Grade 1		Year 1
	Repeating results, Understanding uncertainty	Grade 1	Year 5			S1-3	Year 8
	Access and evaluate evidence from secondary data		Year 5		Grade 8		Year 6
	Sorting and classifying	K	Years 7-9		Grade 6	P3	Year 1
	Following oral instructions	Grade 2				S1-3	Year 2
	Following written instructions	Grade 4				S1-3	Year 4
	Differentiate evidence from opinion	Grade 2					
Carry out investigations over time to record changes in natural phenomena	Grade 6					Year 9	
Planning	Suggest how to investigate an idea	Grade 5	Year 1	Years 1-3	Grade 2	P5	Year 2
	Turning ideas into a form that can be tested - defining the problem	Grade 5	Year 1		Grade 3	P6	Year 2
	Thinking about what is expected to happen. Predictions	Grade 2	Year 2	Years 7-9	Grade 1	S1-3	Year 3
	Deciding what evidence to collect		Year 2		Grade 4	P4	Year 3
	Planning an investigation using a sequence of steps	Grade 2	Year 3	Years 7-9		S1-3	Year 5
	Controlling variables	Grade 5	Year 3	Years 7-9	Grade 4	P4	Year 7
	Deciding what equipment to use	Grade 5	Year 4	Years 7-9	Grade 1		Year 3
	Generating ideas and constructing hypotheses	Grade 6		Years 7-9		P5	Year 9
Formulating the questions to ask within a complex study such as fieldwork		Years 7-9		Grade 7		Year 9	
Evaluating	Explaining observations	Grade 3	Year 1	Years 1-3	Grade 2	P4	Year 2
	Drawing conclusions	Grade 3	Year 1	Years 1-3	Grade 2	P4	Year 2
	Deciding whether a test or a comparison is fair		Year 2	Years 7-9	Grade 4	P5	Year 4
	Deciding whether the results support a prediction	Grade 3	Year 2	Years 7-9		P5	Year 3
	Identifying patterns and trends		Year 4		Grade 6	P4	Year 5
	Interpreting graphs	Grade 6	Year 5		Grade 6	P5	Year 5

	Deciding whether the evidence is sufficient to support a conclusion	Grade 5	Year 5	Years 7-9		P6	Year 7
	Understand systems and be able to identify components in a system				Grade 2	P5	
	Evaluating numerical data	Grade 8	Years 7-9	Years 7-9	Grade 7	S1-3	Year 7
	Ensure data are reproducible	Grade 8	Years 7-9				Year 8
	Solve simple equations	Grade 8	Years 7-9			S1-3	Year 7
Communicating	Recording observations	Grade 1	Year 1	Years 1-3	Grade 1	P3	Year 1
	Drawing observations	K	Year 1	Years 1-3	Grade 1	P3	Year 1
	Drawing block graphs	Grade 1	Year 2		Grade 3	P5	Year 2
	Drawing bar charts	Grade 1	Year 5		Grade 3	P5	Year 5
	Drawing line graphs	Grade 6	Year 6			P5	Year 5
	Explain work to others	K	Year 1	Years 1-3	Grade 1	P3	Year 1
	Using numerical data, tally charts, scattergrams and tables to describe results	Grade 3	Years 7-9		Grade 6	P4	Year 5
	Write a report of an investigation	Grade 5	Years 7-9	Years 3-6	Grade 2	S1-3	Year 7
	Use appropriate specialist vocabulary	Grade 7	Years 7-9		Grade 1		Year 1
	Creating posters, making displays	Grade 7	Years 7-9		Grade 1		Year 1
	Create scale models	Grade 7			Grade 7		
Practical skills	Testing circuits		Year 2		Grade 6		Year 7
	Measuring liquid volumes	Grade 2	Year 3	Years 7-9			Year 7
	Using thermometers	Grade 2	Year 4	Years 7-9			Year 7
	Using a forcemeter		Year 4	Years 7-9	Grade 3		Year 7
	Measuring length	Grade 2	Years 7-9	Years 7-9			Year 7
	Use magnifiers	Grade 2	Years 7-9		Grade 1		Year 7
	Measuring mass	Grade 5	Years 7-9	Years 7-9			Year 7
	Read a topographic map	Grade 6					
	Measuring electric current and voltage	Grade 7	Years 7-9	Years 7-9	Grade 6		Year 7
	Design and construct simple structures and devices that do something				Grade 1		
	Understand and follow safe work procedures - know hazard symbols		Years 7-9	Years 7-9	Grade 4		Year 7
	Use simple hand tools				Grade 1		
	Use a microscope	Grade 7	Years 7-9		Grade 8		Year 7
	Access information on the internet	Grade 7	Years 7-9				Year 5