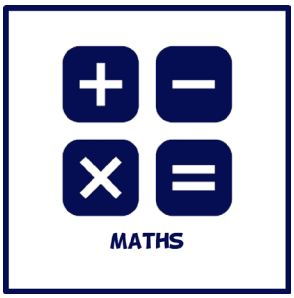
CHARLTON

Personalised Learning Checklist



Student Name:	
Form Group:	

Year 11 PLC Ebacc Subjects

ENGLISH

Language
&
Literature

ENGLISH Language

Review of Learning

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Language Paper 1 – Section A - FICTION	I am able to demonstrate a detailed understanding of an unseen fiction text.			
	I am able to pick out a range of appropriate evidence to answer a specific question.			
	I am able to embed evidence confidently into my analysis.			
	I am able to analyse the effects of language techniques.			
	I am able to analyse the effects of structural choices.			
	I am confident using a range of terminology.			
	I am able to develop my ideas beyond one point/interpretation.			
Language Paper 1 – Section B – FICTION	I am able to write in a clear and convincing manner.			
	I am able to sustain a chosen style and form based on a task set.			
	I am able to use a range of ambitious vocabulary to suit the task.			
	I am able to use linguistic devices confidently.			
	I am able to confidently use paragraphs for effect.			
	I am able to make use of varied and effective structural features.			
	I am able to punctuate sentences accurately and for effect.			
	I am able to use a range of punctuation accurately.			
	I am able to sustain my use of Standard English in my work.			
	I am able to spell complex and irregular words accurately.			

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Language Paper 2 – Section A – NON-FICTION	I am able to demonstrate a detailed understanding of unseen non-fiction texts.			
	I am able to pick out a range of appropriate evidence to answer a specific question.			
	I am able to embed evidence confidently into my analysis.			
	I am able to summarise the similarities and differences between texts.			
	I am able to analyse the effects of language techniques.			
	I am confident using a range of terminology.			
	I am able to develop my ideas beyond one point/interpretation.			
	I am able to demonstrate my understanding of different perspectives.			
	I am able to analyse how writers show their viewpoints through methods.			
	I am able to write in a clear and convincing manner.			
Language Paper 2 – Section B – NON-FICTION	I am able to sustain a chosen style and form based on a task set.			
	I am able to use the conventions of a specific form or genre.			
	I am able to use a range of ambitious vocabulary to suit the task.			
	I am able to use linguistic devices confidently.			
	I am able to confidently use paragraphs for effect.			
	I am able to make use of varied and effective structural features.			
	I am able to punctuate sentences accurately and for effect.			
	I am able to use a range of punctuation accurately.			
	I am able to sustain my use of Standard English in my work.			
	I am able to spell complex and irregular words accurately.			

ENGLISH
Literature

Review of Learning

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Modern Text: An Inspector Calls	I am able to use a range of quotations and evidence from the text.			
	I am able to choose relevant evidence based on different questions and tasks.			
	I am able to embed evidence confidently into my analysis.			
	I am able to have a range of ideas in response to different tasks.			
	I am able to create a developed argument when responding to tasks on the text.			
	I am able to examine the effects of the writer's choices within the novel/play.			
	I am able to identify and explore a range of methods in the text.			
	I am able to demonstrate clear links between contextual factors and my analysis.			
	I am able to use academic vocabulary and language choices to explain my ideas.			
	I am able to write in a fluent, confident and clear manner.			

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Shakespeare: Romeo and Juliet	I am able to use a range of quotations and evidence from the text.			
	I am able to choose relevant evidence based on different questions and tasks.			
	I am able to embed evidence confidently into my analysis.			
	I am able to have a range of ideas in response to different tasks.			
	I am able to create a developed argument when responding to tasks on the text.			
	I am able to examine the effects of the writer's choices within the play.			
	I am able to identify and explore a range of methods in the text.			
	I am able to demonstrate clear links between contextual factors and my analysis.			
	I am able to use academic vocabulary and language choices to explain my ideas.			
	I am able to write in a fluent, confident and clear manner.			

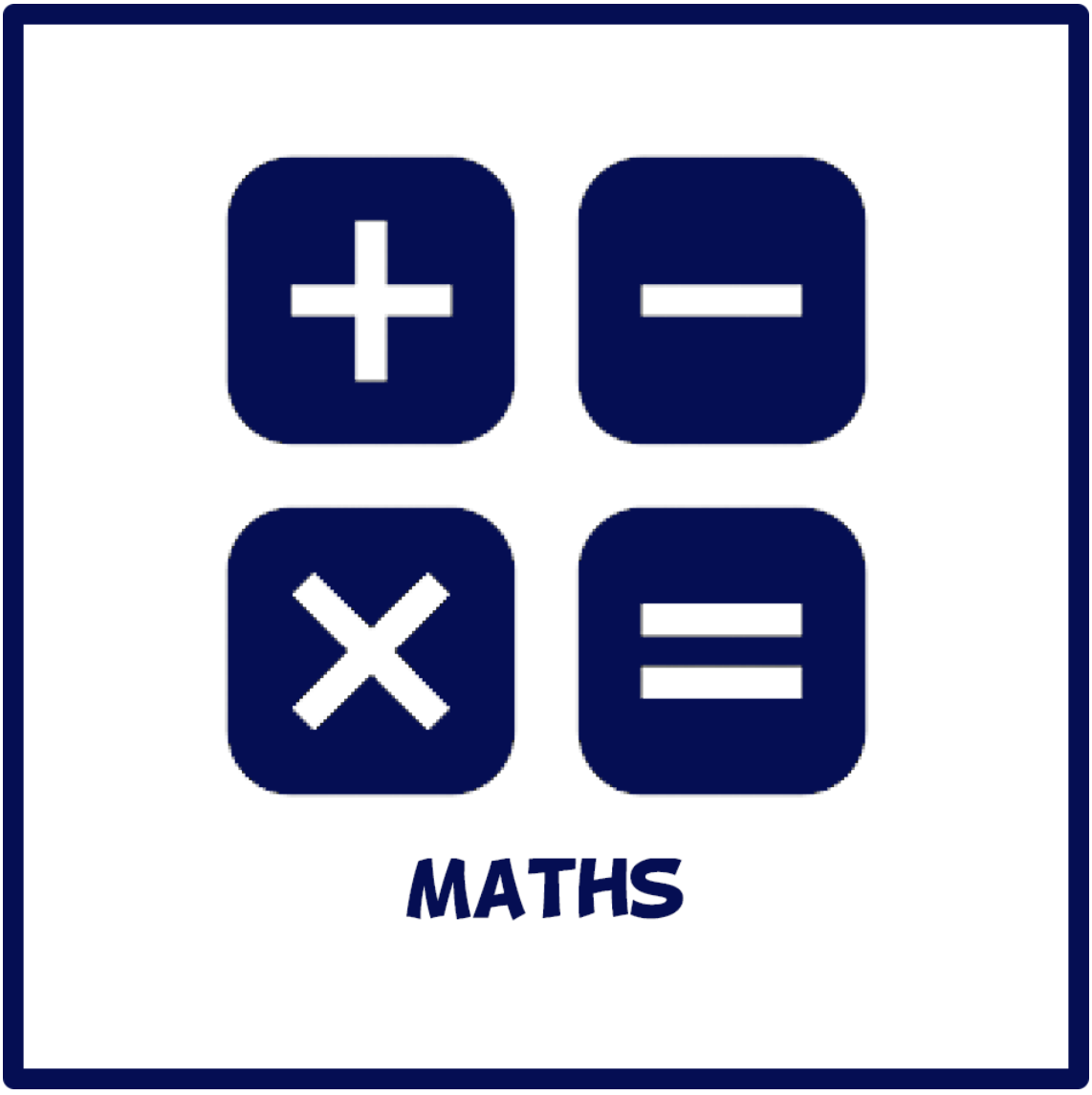
Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
19th Century Text: Jekyll and Hyde	I am able to use a range of quotations and evidence from the text.			
	I am able to choose relevant evidence based on different questions and tasks.			
	I am able to embed evidence confidently into my analysis.			
	I am able to have a range of ideas in response to different tasks.			
	I am able to create a developed argument when responding to tasks on the text.			
	I am able to examine the effects of the writer's choices within the novel.			
	I am able to identify and explore a range of methods in the text.			
	I am able to demonstrate clear links between contextual factors and my analysis.			
	I am able to write in a fluent, confident and clear manner.			

Poetry
Review of Learning

ENGLISH
Literature

		Self Assessment		
Topic	**Key knowledge/skills**	**Red**	**Amber**	**Green**
Poetry: Power and Conflict anthology	I am able to use a range of quotations and evidence from different poems.			
	I am able to choose relevant evidence based on different questions and tasks.			
	I am able to embed evidence confidently into my analysis.			
	I am able to have a range of ideas in response to different tasks.			
	I am able to make a range of comparative points about two different poems.			
	I am able to create a developed argument when responding to the comparative tasks.			
	I am able to examine and compare the effects of the poets' choices.			
	I am able to identify and explore a range of methods in the different poems.			
	I am able to demonstrate clear links between contextual factors and my analysis.			
	I am able to write in a fluent, confident and clear manner.			

		Self Assessment		
Topic	**Key knowledge/skills**	**Red**	**Amber**	**Green**
Unseen poetry	I am able to use a range of quotations and evidence from an unseen poem			
	I am able to choose relevant evidence based on different questions and tasks.			
	I am able to embed evidence confidently into my analysis.			
	I am able to have a range of ideas in response to an unseen poem.			
	I am able to create a developed argument when responding to a task.			
	I am able to examine the effects of a poet's choices.			
	I am able to write in a fluent, confident and clear manner.			
	I am able to compare the use of methods between two unseen poems.			
	I am able to identify a range of methods used by poets.			
	I am able to use a range of quotations and evidence from an unseen poem			



Foundation Topics Grades 1-5

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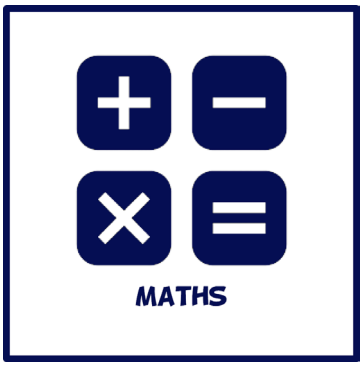
Higher Topics Grades 4-9

Algebra

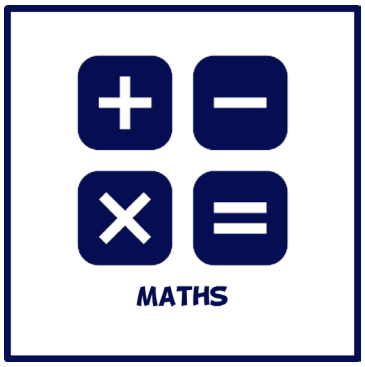
Review of Learning



		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
2	Basic sequences and rules			
2	Sequences of square, triangular and cube numbers			
2	Collecting like terms			
3	Using formulae			
3	Position-to-term rules			
3	Plotting straight line graphs			
3	Coordinates in all 4 quadrants			
3	Substitution			
3	Number machines			
3	Finding the nth term of a linear sequence			
3	Expanding single brackets			
3	Linear equations with one unknown			
3	Simplifying expressions			
3	Inequalities on number lines			
4	Using y = mx + c			
4	Real-life graphs			
4	Graphs of quadratic functions			
4	Graphs of linear functions			
4	Finding the equation of a line			
4	Factorising single brackets			
4	Changing the subject			
4	Writing formulae and expressions			
4	Solve linear inequalities in one variable			
4	Expanding double brackets			
5	Simplify surds			
5	Simplify indices			
5	Quadratic graphs			
5	Linear equations			
5	Graphical solution to equations			
5	Simultaneous equations (linear)			
5	Quadratic and simple geometric sequences			
5	Factorising quadratic expressions			
5	Finding the equation of a line			
5	Derive an equation			
5	**Cubic and reciprocal graphs**			

Geometry and Measures

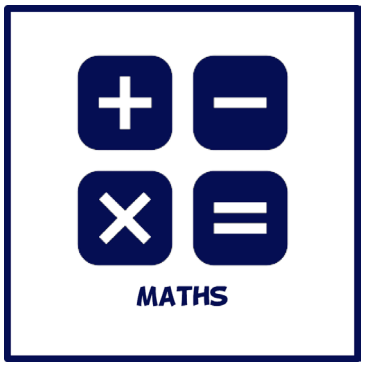
Review of Learning



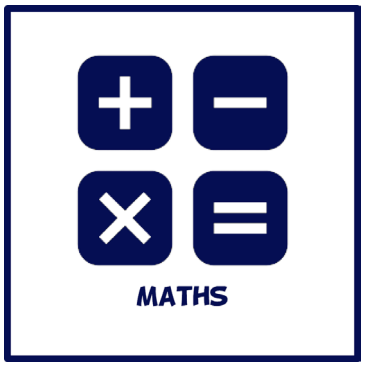
		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
2	3D shapes			
2	Perimeter of 2D shapes			
3	Using standard units			
3	Translations and vectors			
3	Properties of triangles			
3	Properties of quadrilaterals			
3	Measuring lines and angles			
3	Geometrical terminology and diagrams			
3	Congruent and similar shapes			
3	Circumference of a circle			
3	Circle terminology			
3	Areas of triangles, trapezia and parallelograms			
3	Areas of composite shapes			
3	Area of a circle			
3	Alternate and corresponding angles			
4	Volume of prisms			
4	Solve geometrical problems			
4	Polygons			
4	Plans and elevations			
4	Enlargements and fractional scale factor			
4	Congruent triangles			
4	Bearings			
4	Volume			
4	Trigonometry – sine, cosine and tangent rules			
4	Standard constructions			
4	Pythagoras			
4	Loci			
5	Basic trigonometric values			
5	Surface area			
5	Similarity and congruence			
5	Enlargements and negative scale factor			
5	Arc lengths and sectors			
2	3D shapes			
2	Perimeter of 2D shapes			
3	**Using standard units**			

Number

Review of Learning



		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
2	3D shapes			
2	Perimeter of 2D shapes			
3	Using standard units			
3	Translations and vectors			
3	Properties of triangles			
3	Properties of quadrilaterals			
3	Measuring lines and angles			
3	Geometrical terminology and diagrams			
3	Congruent and similar shapes			
3	Circumference of a circle			
3	Circle terminology			
3	Areas of triangles, trapezia and parallelograms			
3	Areas of composite shapes			
3	Area of a circle			
3	Alternate and corresponding angles			
4	Volume of prisms			
4	Solve geometrical problems			
4	Polygons			
4	Plans and elevations			
4	Enlargements and fractional scale factor			
4	Congruent triangles			
4	Bearings			
4	Volume			
4	Trigonometry – sine, cosine and tangent rules			
4	Standard constructions			
4	Pythagoras			
4	Loci			
5	Basic trigonometric values			
5	Surface area			
5	Similarity and congruence			
5	Enlargements and negative scale factor			
5	Arc lengths and sectors			
2	3D shapes			
2	Perimeter of 2D shapes			
3	**Using standard units**			



Probability

Review of Learning

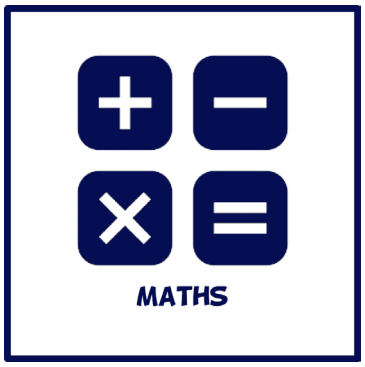
		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
2	Listing outcomes			
2	Probability scale			
2	Two-way tables			
3	Probability of equally likely outcomes			
3	Frequency trees			
4	Venn diagrams			
4	Unbiased samples			
4	Theoretical probability			
4	Relative frequency			
4	Mutually exclusive events			
5	Probability of independent event			
5	Probability of dependent events			

Ratio, Proportion and Rates of Change

		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
3	Use scale factors, diagrams and maps			
3	Use ratio notation			
3	Express one quantity as a fraction of another			
3	Convert standard units			
3	Proportion and ratio			
3	Problems involving ratio			
3	Express one quantity as a percentage of another			
3	Division of a quantity as a ratio			
4	Ratio sharing			
4	Percentage change			
4	Compare lengths, area and volume			
4	Compare fractions, decimals and percentages			

Statistics

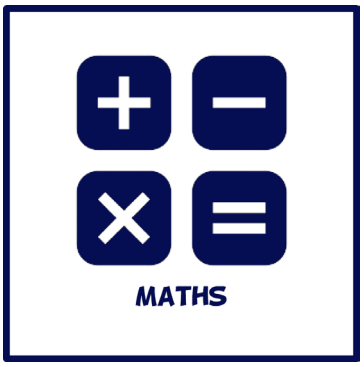
Review of Learning



		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
2	Tally charts and frequency tables			
3	Vertical line charts			
3	Types of data			
3	Pie charts			
3	Time series			
3	Averages			
4	Scatter diagrams			
4	Sampling			
4	Population			
4	Correlation			
4	Comparing distributions			
4	Comparing data using graphs			

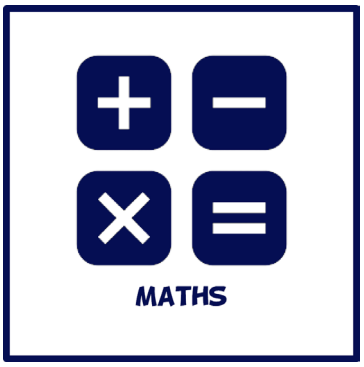
Algebra

Review of Learning



		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
4	Substitution			
4	Using y = mx + c			
4	Real-life graphs			
4	Graphs of quadratic functions			
4	Graphs of linear functions			
4	Finding the equation of a line			
4	Factorising single brackets			
4	Changing the subject			
4	Writing formulae and expressions			
4	Solve linear inequalities in one variable			
4	Expanding double brackets			
5	Simplify surds			
5	Simplify indices			
5	Quadratic graphs			
5	Linear equations			
5	Graphical solution to equations			
5	Simultaneous equations			
5	Quadratic and simple geometric sequences			
5	Factorising quadratic expressions			
5	Finding the equation of a line			
5	Deduce quadratic roots algebraically			
5	Cubic and reciprocal graphs			
5	Simultaneous equations (linear)			
6	Represent linear inequalities			
6	Quadratic equations (graphical methods)			
6	Quadratic equations (factorisation)			
6	nth term of a quadratic sequence			
6	Linear inequalities in two variables			
6	Inverse functions			
6	Identifying parallel lines			
6	Algebraic fractions			
7	Turning points and completing the square			
7	Translations and reflections of a function			
7	Solve quadratic inequalities			
7	Simultaneous equations (non-linear)			
7	Represent quadratic inequalities			
7	Quadratic equations (quadratic formula)			
7	**Quadratic equations (needing rearrangement)**			

Higher Topics (Grades 4-9)



Algebra

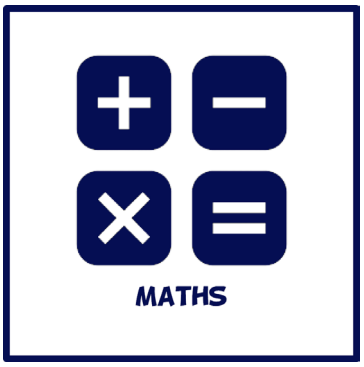
Review of Learning

		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
7	Graphs of exponential functions			
7	Geometric sequences			
7	Factorising difficult quadratic expressions			
7	Expanding the product of two or more binomials			
7	Composite functions			
8	Quadratic equations (completing the square)			
8	Graphs of trigonometric functions			
8	Gradients and area under a graph			
8	Algebra and proof			
9	Equation of a tangent			
9	Equation of a circle			
9	Approximate solutions to equations using iteration			

Geometry and Measures

		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
4	Circumference of a circle			
4	Circle terminology			
4	Areas of triangles, trapezia and parallelograms			
4	Area of a circle			
4	Alternate and corresponding angles			
4	Volume of prisms			
4	Solve geometrical problems			
4	Polygons			
4	Plans and elevations			
4	Enlargements and fractional scale factor			
4	Congruent triangles			
4	Bearings			
4	Volume			
4	Trigonometry – sine, cosine and tangent rules			
4	Standard constructions			
4	Pythagoras			
4	Loci			

Higher Topics (Grades 4-9)



Geometry and Measures

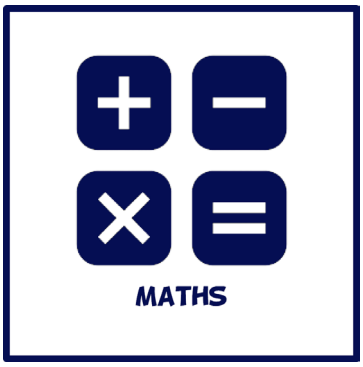
Review of Learning

		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
5	Surface area			
5	Similarity and congruence			
5	Enlargements and negative scale factor			
5	Arc lengths and sectors			
7	Trigonometric values			
6	Combined transformations			
7	Sine rule			
7	Pythagoras and trigonometry (2D and 3D)			
7	Cosine rule			
7	Area of a triangle			
8	Vector arguments and proof			
8	Circle theorems			

Number

		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
4	Terminating decimals and fractions			
4	Rounding			
4	Powers			
4	Order of operations			
4	Multiplying fractions			
4	Dividing fractions			
4	Multiples and factors			
4	Interpret calculator displays			
4	Fractions and percentages			
4	Adding and subtracting fractions			
4	Standard form			
4	LCM and HCF			
4	Estimation			
4	Converting metric units			
4	Compound measures			
5	Limits of accuracy			
5	Index laws			

Higher Topics (Grades 4-9)



Number

Review of Learning

		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
5	Error intervals			
5	Using Pi			
5	Product of prime factors			
6	Powers and roots			
7	Upper and lower bounds			
7	Recurring decimals			
7	Product rule			
7	Index laws (negative and fractional)			
8	Surds			

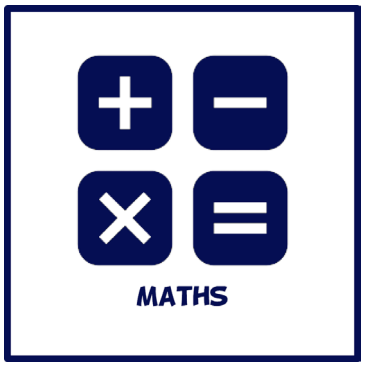
Probability

		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
4	Frequency trees			
4	Venn diagrams			
4	Unbiased samples			
4	Theoretical probability			
4	Relative frequency			
4	Mutually exclusive sum			
5	Probability of independent events			
5	Probability of dependent events			
7	Conditional probability			

Higher Topics (Grades 4-9)

Ratio, Proportion and Rates of Change

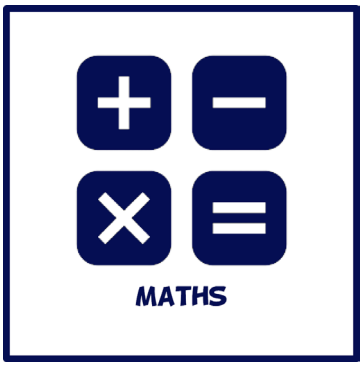
Review of Learning



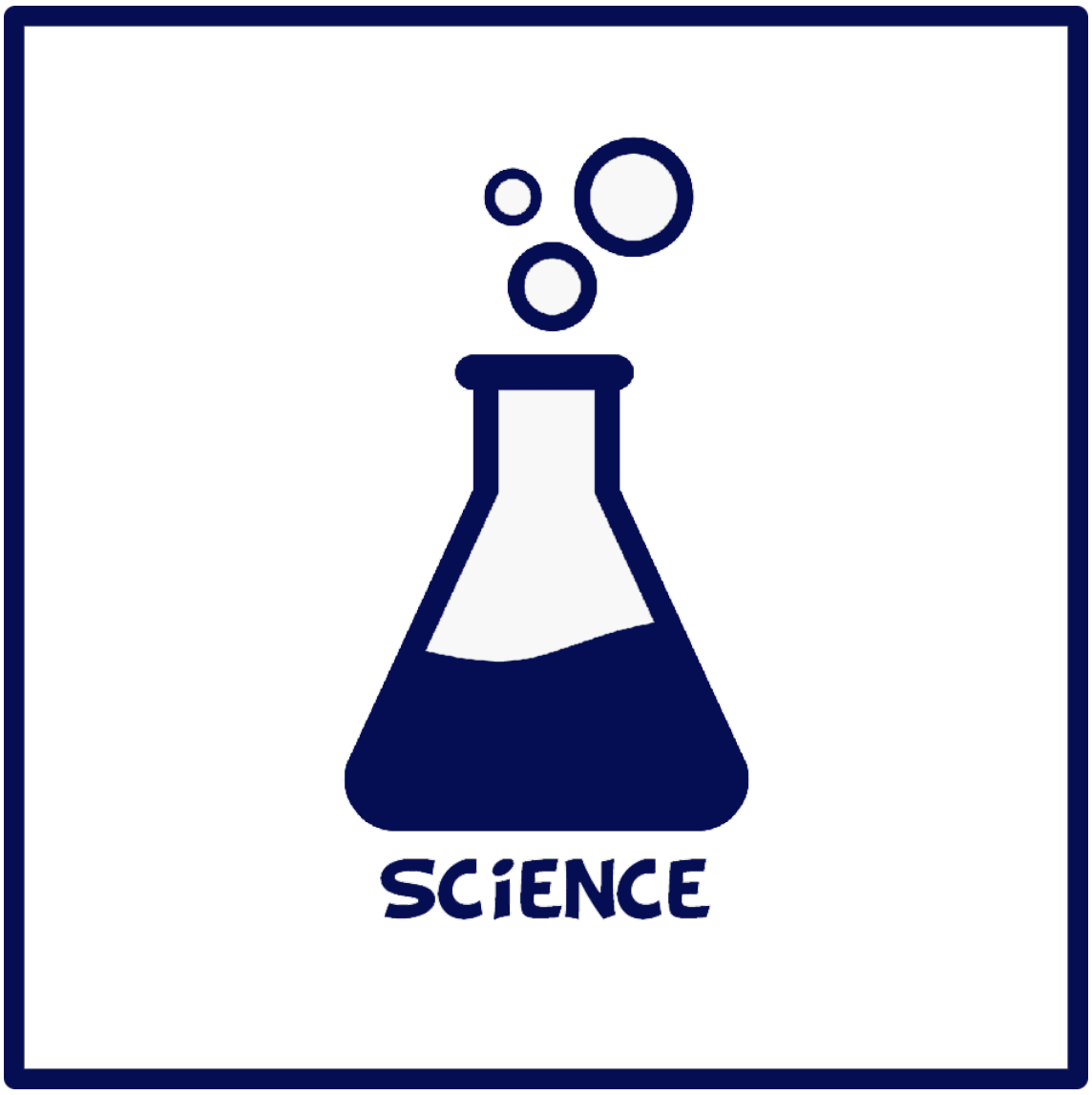
		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
4	Proportion and ratio			
4	Problems involving ratio			
4	Express one quantity as a percentage of another			
4	Division of a quantity as a ratio			
4	Ratio sharing			
4	Percentage change			
4	Compare lengths, area and volume			
4	Compare fractions, decimals and percentages			
5	Solve proportion problems			
5	Simple interest and financial maths			
5	Scale factors and similarity			
5	Problems with compound units			
5	Interpret proportion			
5	Growth and decay			
5	Gradient and the rate of change			
5	Compound units			
6	Direct and inverse proportion			
7	General iterative processes			
9	Gradients and the rate of change			

Statistics

Review of Learning

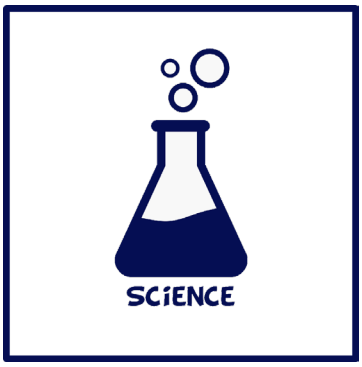


		Self Assessment		
Grade	**Topic**	**Red**	**Amber**	**Green**
4	Time series			
4	Averages			
4	Scatter diagrams			
4	Sampling			
4	Population			
4	Correlation			
4	Comparing distributions			
4	Comparing data using graphs			
5	Scatter graphs			
5	Histograms with equal class width			
6	Quartiles and Interquartile ranges			
6	Histograms with unequal class widths			
6	Cumulative frequency			
6	Box plots			
4	Time series			
4	Averages			
4	Scatter diagrams			
4	Sampling			
4	Population			



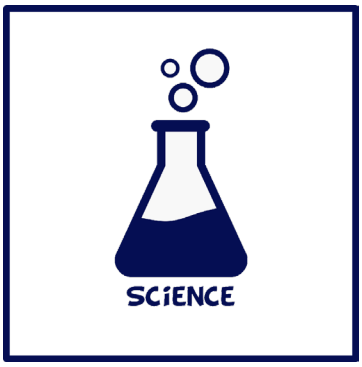
Combined Foundation Topics Grades 1-5
&
Combined Higher Topics Grades 4-9

Biology
Review of Learning



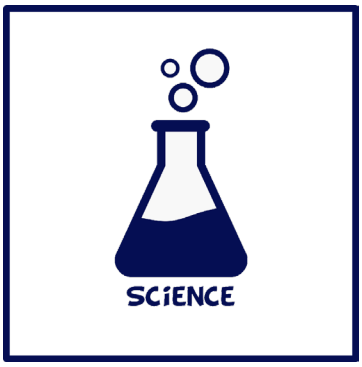
		Self Assessment		
Topic	**Knowledge/Skills**			
Cells: Paper 1	Use the terms 'eukaryotic' and 'prokaryotic' to describe types of cells			
	Describe the features of bacterial (prokaryotic) cells			
	Demonstrate an understanding of the scale and size of cells and be able to make order of magnitude calculations, inc standard form			
	Recall the structures found in animal and plant (eukaryotic) cells inc algal cells			
	Use estimations and explain when they should be used to judge the relative size or area of sub-cellular structures			
	Describe the functions of the structures in animal and plant (eukaryotic) cells			
	Describe what a specialised cell is, including examples for plants and animals			
	Describe what differentiation is, including differences between animals and plants			
	Describe how genetic information is stored in the nucleus of a cell (inc genes & chromosomes)			
	Describe the processes that happen during the cell cycle, including mitosis (inc recognise and describe where mitosis occurs)			
	Describe stem cells, including sources of stem cells in plants and animals and their roles			
	Describe the use of stem cells in the production of plant clones and therapeutic cloning			
	Discuss the potential risks, benefits and issues with using stem cells in medical research/treatments (inc diabetes and paralysis)			
	Define the terms magnification and resolution			
	Compare electron and light microscopes in terms of their magnification and resolution			
	Describe the process of diffusion, including examples			
	Explain how diffusion is affected by different factors			
	Define and explain "surface area to volume ratio", and how this relates to single-celled and multicellular organisms (inc calculations)			
	Explain how the effectiveness of an exchange surface can be increased, inc examples of adaptations for small intestines, lungs, gills roots & leaves			
	Describe the process of osmosis (inc calculation of water uptake & percentage gain and loss of mass of plant tissue)			
	Describe the process of active transport, including examples - gut and roots			
	Explain the differences between diffusion, osmosis and active transport			

Biology
Review of Learning



		Self Assessment		
Topic	**Knowledge/Skills**			
Organisation: Paper 1	Describe the levels of organisation within living organisms			
	Describe the digestive system and how it works as an organ system (from KS3)			
	Describe basic features of enzymes (inc rate calculations for chemical reactions)			
	Describe the lock and key theory as a model of enzyme action and explain how the shape a of the active sites makes the enzyme specific			
	Explain the effect of temperature and pH on enzymes			
	Describe the digestive enzymes, including their names, sites of production and actions			
	Describe how the products of digestion are used			
	Describe the features and functions of bile and state where it is produced and released from			
	Describe the structure of the human heart and lungs (inc how lungs are adapted for gaseous exchange)			
	Explain how the heart moves blood around the body (inc role and position of the aorta, vena cava, pulmonary artery & vein and coronary arteries)			
	Explain how the natural resting heart rate is controlled and how irregularities can be corrected			
	Describe the structure and function of arteries, veins and capillaries			
	Use simple compound measures such as rate and carry out rate calculations for blood flow			
	Describe blood and identify its different components, inc identifying blood cells from photographs/diagrams			
	Describe the functions of blood components, including adaptations to function			
	Describe what happens in coronary heart disease and what statins are used for			
	Describe and evaluate treatments for coronary heart disease and heart failure (inc drugs, mechanical devices or transplant)			
	Recall that heart valves can become faulty and describe the consequences of this			
	Describe how patients can be treated in the case of heart failure			
	Describe health and the explain causes of ill-health and the relationship between health and disease			
	Describe how different types of diseases may interact and translate disease incidence information between graphical and numerical forms			
	Describe what risk factors are and give examples discussing human and financial costs of non-communicable diseases at local, national and global levels			
	Describe what cancer is and explain the difference between benign and malignant tumours			
	Describe the known risk factors for cancer, including genetic and lifestyle risk factors			

Biology
Review of Learning



Topic	Knowledge/Skills	Self Assessment		
Infection and response : Paper 1	Explain what a pathogen is and how pathogens are spread (inc how viruses, bacteria, protists and fungi are spread in animals and plants)			
	Explain how pathogenic bacteria and viruses cause damage in the body			
	Explain how the spread of diseases can be reduced or prevented			
	Describe measles, HIV and tobacco mosaic virus as examples of viral pathogens			
	Describe salmonella food poisoning and gonorrhoea as examples of bacterial pathogens			
	Describe the signs, transmission and treatment of rose black spot infection in plants as an example of fungal pathogens			
	Describe the symptoms, transmission and control of malaria, including knowledge of the mosquito vector as an example of a protists pathogen			
	Describe defences that stop pathogens entering the human body (inc skin, nose, trachea & windpipe, stomach)			
	Recall the role of the immune system			
	Describe how white blood cells destroy pathogens			
	Describe how vaccination works, including at the population level			
	Explain how antibiotics and painkillers are used to treat diseases, including their limitations			
	Describe how sources for drugs have changed over time and give some examples			
	Describe how new drugs are tested, including pre-clinical testing and clinical trials (inc double blind trials and placebos)			

Biology
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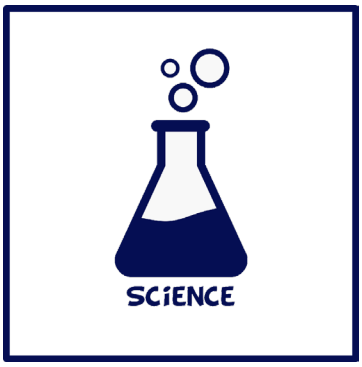
Paper 1



		Self Assessment		
Topic	Knowledge/Skills			
Bioenergetics	Describe plant tissues (epidermal, palisade mesophyll, spongy mesophyll, xylem, phloem and meristem) and describe their functions			
	Explain how the structure of plant tissues are related to their function within the leaf (plant organ) inc stomata and guard cells			
	Recall the plant parts that form a plant organ system that transports substances around the plant			
	Explain how root hair cells, xylem and phloem are adapted to their functions			
	Describe the process of transpiration and translocation including the role of the different plant tissues			
	Explain how the rate of transpiration can be affected by different factors (inc naming the factors)			
	Describe the role of stomata and guard cells in the control of gas exchange and water loss			
	Describe what happens in photosynthesis, including using a word equation and recognise the chemical formulas for carbon dioxide, water, oxygen & glucose			
	Explain why photosynthesis is an endothermic reaction			
	Recall the limiting factors of photosynthesis			
	Explain how limiting factors affect the rate of photosynthesis, including graphical interpretation (limited to one factor)			
	HT ONLY: Explain how the limiting factors of photosynthesis interact, inc graphical interpretation (two/three factors)			
	HT ONLY: Explain how limiting factors are important to the economics of greenhouses, including data interpretation			
	HT ONLY: Explain and use inverse proportion in the context of photosynthesis			
	Describe how the glucose produced in photosynthesis is used by plants			
	Describe what happens in respiration including using a word equation and recognise the chemical formulas for carbon dioxide, water, oxygen & glucose			
	Describe aerobic and anaerobic respiration with regard to the need for oxygen, the differing products and the relative amounts of energy transferred			
	Recognise the equations for aerobic respiration, anaerobic respiration in muscles and anaerobic respiration in plants and yeast cells.			
	Recall what type of respiration fermentation is and its economic importance.			
	Describe what happens to heart rate, breathing rate and breath volume during exercise and why these changes occur			
	Explain what happens when muscles do not have enough oxygen and define the term oxygen debt			
	HT ONLY: Explain what happens to accumulated lactic acid in the body			
	Explain the importance of sugars, amino acids, fatty acids and glycerol in the synthesis and breakdown of carbohydrates, proteins and lipids			
	Explain what metabolism is, including examples			

Biology
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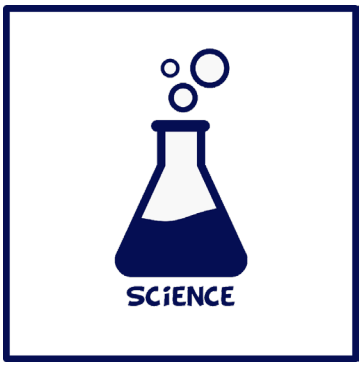

		Self Assessment		
Topic	**Knowledge/Skills**			
Ecology : Paper 2	Recall what an ecosystem is			
	Describe which resources animals and plants compete for, and why they do this			
	Explain the terms 'interdependence' and 'stable community'			
	Name some abiotic and biotic factors that affect communities			
	Explain how a change in an abiotic or biotic factor might affect a community			
	Describe structural, behavioural and functional adaptations of organisms			
	Describe what an extremophile is			
	Represent the feeding relationships within a community using a food chain and describe these relationships			
	Explain how and why ecologists use quadrats and transects			
	Describe and interpret predator-prey cycles			
	Describe the processes involved in the carbon cycle			
	Describe the processes involved in the water cycle			
	Describe what biodiversity is, why it is important, and how human activities affect it			
	Describe the impact of human population growth and increased living standards on resource use and waste production			
	Explain how pollution can occur, and the impacts of pollution			
	Describe how humans reduce the amount of land available for other animals and plants			
	Explain the consequences of peat bog destruction			
	Describe what deforestation is and why it has occurred in tropical areas			
	Explain the consequences of deforestation			
	Describe how the composition of the atmosphere is changing, and the impact of this on global warming			
	Describe some biological consequences of global warming			
	Describe both positive and negative human interactions in an ecosystem and explain their impact on biodiversity			
	Describe programmes that aim to reduce the negative effects of humans on ecosystems and biodiversity			

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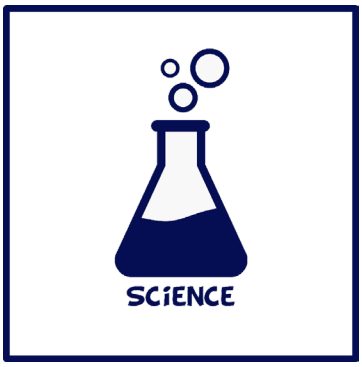
Paper 2



		Self Assessment		
Topic	Knowledge/Skills			
Homeostasis and response	Describe what homeostasis is and why it is important stating specific examples from the human body			
	Describe the common features of all control systems			
	State the function of the nervous system and name its important components			
	Describe how information passes through the nervous system			
	Describe what happens in a reflex action and why reflex actions are important			
	Explain how features of the nervous system are adapted to their function, including a reflex arc (inc all types of neurone and the synapse)			
	Describe the endocrine system, including the location of the pituitary, pancreas, thyroid, adrenal gland, ovary and testis and the role of hormones			
	State that blood glucose concentration is monitored and controlled by the pancreas			
	Describe the body's response when blood glucose concentration is too high			
	Explain what type 1 and type 2 diabetes are and how they are treated			
	HT ONLY: Describe the body's response when blood glucose concentration is too low			
	HT ONLY: Explain how glucagon interacts with insulin to control blood glucose levels in the body			
	Describe what happens at puberty in males and females, inc knowledge of reproductive hormones			
	Describe the roles of the hormones involved in the menstrual cycle (FSH, LH and oestrogen)			
	HT ONLY: Explain how the different hormones interact to control the menstrual cycle and ovulation			
	Describe how fertility can be controlled by hormonal and non-hormonal methods of contraception (giving specific examples from the spec)			
	HT ONLY: Explain how hormones are used to treat infertility, inc the steps in IVF			
	HT ONLY: Evaluate the risks and benefits of fertility treatments			
	HT ONLY: Describe the functions of adrenaline and thyroxine in the body, and recall where they are produced			
	HT ONLY: Explain the roles of thyroxine and adrenaline in the body as negative feedback systems			
	Describe what homeostasis is and why it is important stating specific examples from the human body			
	Describe the common features of all control systems			

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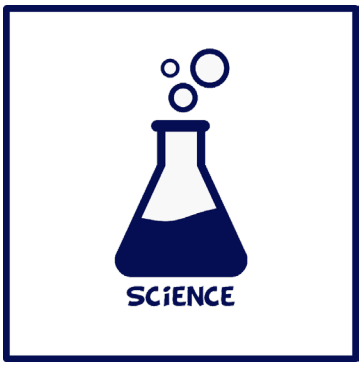
Paper 2



		Self Assessment		
Topic	Knowledge/Skills			
Inheritance, variation and evolution	Describe features of sexual and asexual reproduction			
	Describe what happens during meiosis and compare to mitosis			
	Describe what happens at fertilisation			
	Describe the structure of DNA and its role in storing genetic information inside the cell			
	Explain the term 'genome' and the importance of the human genome (specific examples from spec only)			
	Describe how characteristics are controlled by one or more genes, including examples			
	Explain important genetic terms: gamete, chromosome, gene, allele, genotype, phenotype, dominant, recessive, homozygous and heterozygous			
	Explain and use Punnet square diagrams, genetic crosses and family trees			
	HT ONLY: Construct Punnet square diagrams to predict the outcomes of a monohybrid cross			
	Describe cystic fibrosis and polydactyly as examples of inherited disorders			
	Evaluate social, economic and ethical issues concerning embryo screening when given appropriate information			
	Describe how the chromosomes are arranged in human body cells, including the function of the sex chromosomes			
	Explain how sex is determined and carry out a genetic cross to show sex inheritance			
	Describe what variation is and how it can be caused within a population			
	Describe mutations and explain their influence on phenotype and changes in a species			
	Explain the theory of evolution by natural selection			
	Describe how new species can be formed			
	Describe what selective breeding is			
	Explain the process of selective breeding, including examples of desired characteristics and risks associated with selective breeding			
	Describe what genetic engineering is, including examples, and how it is carried out			
	Explain some benefits, risks and concerns related to genetic engineering			
	HT ONLY: Explain the process of genetic engineering, to include knowledge of enzymes and vectors			
	Describe some sources of evidence for evolution			
	Describe what fossils are, how they are formed and what we can learn from them			
	Explain why there are few traces of the early life forms, and the consequences of this in terms of our understanding of how life began			
	Describe some of the causes of extinction			
	Describe how antibiotic-resistant strains of bacteria can arise and spread (inc MRSA)			
	Describe how the emergence of antibiotic-resistant bacteria can be reduced and controlled, to include the limitations of antibiotic development			
	Describe how organisms are named and classified in the Linnaean system			
	Describe and interpret evolutionary trees			
	Explain how scientific advances have led to the proposal of new models of classification, inc three-domain system			

Chemistry
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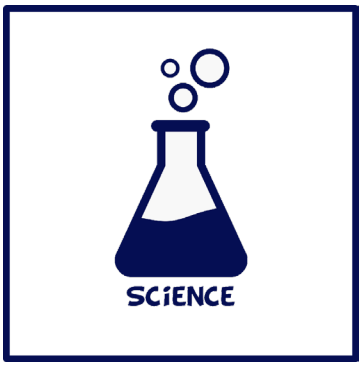
Paper 1



Topic	Knowledge/Skills	Self Assessment		
A simple model of the atom, symbols, relative atomic mass, electronic charge and isotopes	State that everything is made of atoms and recall what they are			
	Describe what elements and compounds are			
	State that elements and compounds are represented by symbols; and use chemical symbols and formulae to represent elements and compounds			
	Write word equations and balanced symbol equations for chemical reactions, including using appropriate state symbols			
	HT ONLY: Write balanced half equations and ionic equations			
	Describe what a mixture is			
	Name and describe the physical processes used to separate mixtures and suggest suitable separation techniques			
	Describe how the atomic model has changed over time due to new experimental evidence, inc discovery of the atom and scattering experiments (inc the work of James Chadwick)			
	Describe the difference between the plum pudding model of the atom and the nuclear model of the atom			
	State the relative charge of protons, neutrons and electrons and describe the overall charge of an atom			
	State the relative masses of protons, neutrons and electrons and describe the distribution of mass in an atom			
	Calculate the number of protons, neutrons and electrons in an atom when given its atomic number and mass number			
	Describe isotopes as atoms of the same element with different numbers of neutrons			
	Write word equations and balanced symbol equations for chemical reactions, including using appropriate state symbols			
	HT ONLY: Write balanced half equations and ionic equations			
	Describe what a mixture is			
	Name and describe the physical processes used to separate mixtures and suggest suitable separation techniques			
	Describe how the atomic model has changed over time due to new experimental evidence, inc discovery of the atom and scattering experiments (inc the work of James Chadwick)			
	Describe the difference between the plum pudding model of the atom and the nuclear model of the atom			
	State the relative charge of protons, neutrons and electrons and describe the overall charge of an atom			
	State the relative masses of protons, neutrons and electrons and describe the distribution of mass in an atom			
	Calculate the number of protons, neutrons and electrons in an atom when given its atomic number and mass number			
	Describe isotopes as atoms of the same element with different numbers of neutrons			
	Define the term relative atomic mass and why it takes into account the abundance of isotopes of the element			
	Calculate the relative atomic mass of an element given the percentage abundance of its isotopes			

Chemistry
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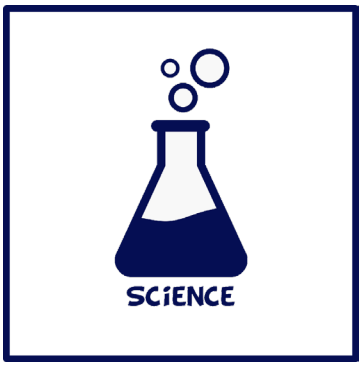
Paper 1



		Self Assessment		
Topic	Knowledge/Skills			
The periodic table	Recall how the elements in the periodic table are arranged			
	Describe how elements with similar properties are placed in the periodic table			
	Explain why elements in the same group have similar properties and how to use the periodic table to predict the reactivity of elements			
	Describe the early attempts to classify elements			
	Explain the creation and attributes of Mendeleev's periodic table			
	Identify metals and non-metals on the periodic table, compare and contrast their properties			
	Explain how the atomic structure of metals and non-metals relates to their position in the periodic table			
	Describe nobel gases (group 0) and explain their lack of reactivity			
	Describe the properties of noble gases, including boiling points, predict trends down the group and describe how their properties depend on the outer shell of electrons			
	Describe the reactivity and properties of group 1 alkali metals with reference to their electron arrangement and predict their reactions			
	Describe the properties of group 7 halogens and how their properties relate to their electron arrangement, including trends in molecular mass, melting and boiling points and reactivity			
	Describe the reactions of group 7 halogens with metals and non-metals			

		Self Assessment		
Topic	Knowledge/Skills			
Chemical bonds, ionic, covalent and metallic	Describe the three main types of bonds: ionic bonds, covalent bonds and metallic bonds in terms of electrostatic forces and the transfer or sharing of electrons			
	Describe how the ions produced by elements in some groups have the electronic structure of a noble gas and explain how the charge of an ion relates to its group number			
	Describe the structure of ionic compounds, including the electrostatic forces of attraction, and represent ionic compounds using dot and cross diagrams			
	Describe the limitations of using dot and cross, ball and stick, two and three-dimensional diagrams to represent a giant ionic structure			
	Work out the empirical formula of an ionic compound from a given model or diagram that shows the ions in the structure			
	Describe covalent bonds and identify different types of covalently bonded substances, such as small molecules, large molecules and substances with giant covalent structures			
	Represent covalent bonds between small molecules, repeating units of polymers and parts of giant covalent structures using diagrams			
	Draw dot and cross diagrams for the molecules of hydrogen, chlorine, oxygen, nitrogen, hydrogen chloride, water, ammonia and methane			
	Deduce the molecular formula of a substance from a given model or diagram in these forms showing the atoms and bonds in the molecule			
	Describe the arrangement of atoms and electrons in metallic bonds and draw diagrams the bonding in metals			
	Describe the three main types of bonds: ionic bonds, covalent bonds and metallic bonds in terms of electrostatic forces and the transfer or sharing of electrons			
	Describe how the ions produced by elements in some groups have the electronic structure of a noble gas and explain how the charge of an ion relates to its group number			

Chemistry
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Paper 1

Topic	Knowledge/Skills	Self Assessment		
Reactions of Acids	**HT ONLY**: Describe oxidation and reduction in terms of loss and gain of electrons			
	HT ONLY: Write ionic equations for displacement reactions, and identify which species are oxidised and reduced from a symbol or half equation			
	HT ONLY: Explain in terms of gain or loss of electrons that the reactions between acids and some metals are redox reactions, and identify which species are oxidised and which are reduced (Mg, Zn, Fe + HCl & H_2SO_4)			
	Explain that acids can be neutralised by alkalis, bases and metal carbonates and list the products of each of these reactions			
	Predict the salt produced in a neutralisation reaction based on the acid used and the positive ions in the base, alkali or carbonate and use the formulae of common ions to deduce the formulae of the salt			
	Describe how soluble salts can be made from acids and how pure, dry samples of salts can be obtained			
	Recall what the pH scale measures and describe the scale used to identify acidic, neutral or alkaline solutions			
	Define the terms acid and alkali in terms of production of hydrogen ions or hydroxide ions (in solution), define the term base			
	Describe the use of universal indicator to measure the approximate pH of a solution and use the pH scale to identify acidic or alkaline solutions			
	HT ONLY: Use and explain the terms dilute and concentrated (in terms of amount of substance) and weak and strong (in terms of the degree of ionisation) in relation to acids			
	HT ONLY: Explain how the concentration of an aqueous solution and the strength of an acid affects the pH of the solution and how pH is related to the hydrogen ion concentration of a solution			

Topic	Knowledge/Skills	Self Assessment		
How bonding and structure are related to the properties of substances	Name the three States of matter, identify them from a simple model and state which changes of state happen at melting and boiling points			
	Explain changes of state using particle theory and describe factors that affect the melting and boiling point of a substance			
	HT ONLY: Discuss the limitations of particle theory			
	Recall what (s), (l), (g) and (aq) mean when used in chemical equations and be able to use them appropriately			
	Explain how the structure of ionic compounds affects their properties, including melting and boiling points and conduction of electricity (sodium chloride structure only)			
	Explain how the structure of small molecules affects their properties			
	Explain how the structure of polymers affects their properties			
	Explain how the structure of giant covalent structures affects their properties			
	Explain how the structure of metals and alloys affects their properties, including explaining why they are good conductors			
	Explain why alloys are harder than pure metals in terms of the layers of atoms			
	Name the three States of matter, identify them from a simple model and state which changes of state happen at melting and boiling points			
	Explain changes of state using particle theory and describe factors that affect the melting and boiling point of a substance			

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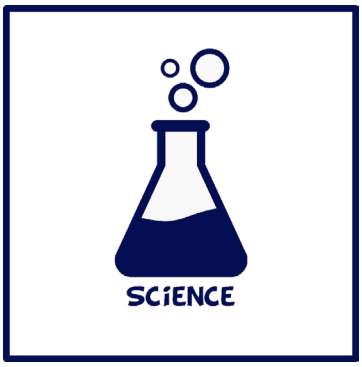
Paper 1



Topic	Knowledge/Skills	Self Assessment		
Chemical measurements, conservation of mass and the quantitative interpretation	Explain the properties of graphite, diamond and graphene in terms of their structure and bonding			
	Describe the structure of fullerenes, and their uses, including Buckminsterfullerene and carbon nanotubes			
	State that mass is conserved and explain why, including describing balanced equations in terms of conservation of mass			
	Explain the use of the multipliers in equations in normal script before a formula and in subscript within a formula			
	Describe what the relative formula mass (Mr) of a compound is and calculate the relative formula mass of a compound, given its formula			
	Calculate the relative formula masses of reactants and products to prove that mass is conserved in a balanced chemical equation			
	Explain observed changes of mass during chemical reactions in non-enclosed systems using the particle model when given the balanced symbol equation			
	Explain why whenever a measurement is made there is always some uncertainty about the result obtained			

Topic	Knowledge/Skills	Self Assessment		
Use of amount of substance in relation to masses of pure substances	**HT ONLY**: State that chemical amounts are measured in moles (mol) and explain what a mol is with reference to relative formula mass and Avogadro's constant			
	HT ONLY: Use the relative formula mass of a substance to calculate the number of moles in a given mass of the substance			
	HT ONLY: Calculate the masses of reactants and products when given a balanced symbol equation			
	HT ONLY: Use moles to write a balanced equation when given the masses of reactants and products (inc changing the subject of the equation)			
	HT ONLY: Explain the effect of limiting the quantity of a reactant on the amount of products in terms of moles or masses in grams			
	Calculate the mass of solute in a given volume of solution of known concentration in terms of mass per given volume of solution			
	HT ONLY: Explain how the mass of a solute and the volume of a solution is related to the concentration of the solution			
	HT ONLY: State that chemical amounts are measured in moles (mol) and explain what a mol is with reference to relative formula mass and Avogadro's constant			
	HT ONLY: Use the relative formula mass of a substance to calculate the number of moles in a given mass of the substance			
	HT ONLY: Calculate the masses of reactants and products when given a balanced symbol equation			
	HT ONLY: Use moles to write a balanced equation when given the masses of reactants and products (inc changing the subject of the equation)			
	HT ONLY: Explain the effect of limiting the quantity of a reactant on the amount of products in terms of moles or masses in grams			

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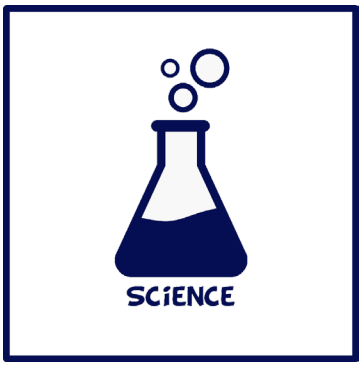
Paper 1



		Self Assessment		
Topic	**Knowledge/Skills**			
Reactivity of metals : Paper 1	Describe how metals react with oxygen and state the compound they form, define oxidation and reduction			
	Describe the arrangement of metals in the reactivity series, including carbon and hydrogen, and use the reactivity series to predict the outcome of displacement reactions			
	Recall and describe the reactions, if any, of potassium, sodium, lithium, calcium, magnesium, zinc, iron and copper with water or dilute acids			
	Relate the reactivity of metals to its tendency to form positive ions and be able to deduce an order of reactivity of metals based on experimental results			
	Recall what native metals are and explain how metals can be extracted from the compounds in which they are found in nature by reduction with carbon			
	Evaluate specific metal extraction processes when given appropriate information and identify which species are oxidised or reduced			
	Describe how metals react with oxygen and state the compound they form, define oxidation and reduction			
	Describe the arrangement of metals in the reactivity series, including carbon and hydrogen, and use the reactivity series to predict the outcome of displacement reactions			
	Recall and describe the reactions, if any, of potassium, sodium, lithium, calcium, magnesium, zinc, iron and copper with water or dilute acids			

Chemistry
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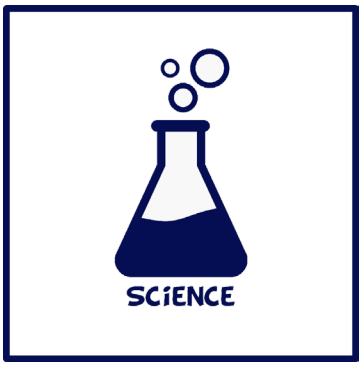
Paper 1



		Self Assessment		
Topic	**Knowledge/Skills**			
Electrolysis: Paper 1	Describe how ionic compounds can conduct electricity when dissolved in water and describe these solutions as electrolytes			
	Describe the process of electrolysis			
	Describe the electrolysis of molten ionic compounds and predict the products at each electrode of the electrolysis of binary ionic compounds			
	Explain how metals are extracted from molten compounds using electrolysis and use the reactivity series to explain why some metals are extracted with electrolysis instead of carbon			
	Describe the electrolysis of aqueous solutions and predict the products of the electrolysis of aqueous solutions containing single ionic compounds			

		Self Assessment		
Topic	Knowledge/Skills			
Exothermic and endothermic reactions	Describe how energy is transferred to or from the surroundings during a chemical reaction			
	Explain exothermic and endothermic reactions on the basis of the temperature change of the surroundings and give examples of everyday uses			
	Describe what the collision theory is and define the term activation energy			
	Interpret and draw reaction profiles of exothermic and endothermic reactions, inc identifying the relative energies of reactants and products, activation energy and overall energy change			
	HT ONLY: Explain the energy changes in breaking and making bonds and calculate the overall energy change using bond energies			
	Describe how energy is transferred to or from the surroundings during a chemical reaction			
	Explain exothermic and endothermic reactions on the basis of the temperature change of the surroundings and give examples of everyday uses			
	Describe what the collision theory is and define the term activation energy			
	Interpret and draw reaction profiles of exothermic and endothermic reactions, inc identifying the relative energies of reactants and products, activation energy and overall energy change			

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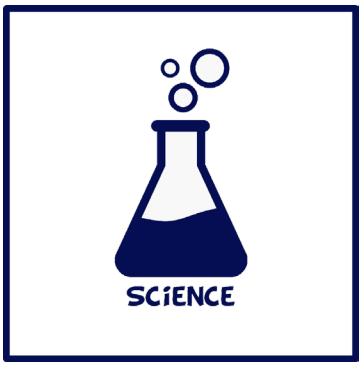
Paper 2



Topic	Knowledge/Skills	Self Assessment		
Rate of reaction	Calculate the rate of a chemical reaction over time, using either the quantity of reactant used or the quantity of product formed, measured in g/s or cm^3/s			
	Draw and interpret graphs showing the quantity of product formed or reactant used up against time and use the tangent to the graph as a measure of the rate of reaction			
	HT ONLY: Calculate the gradient of a tangent to the curve on the graph of the quantity of product formed or reactant used against time and use this as a measure of the rate of reaction			
	Describe how different factors affect the rate of a chemical reaction, including the concentration, pressure, surface area, temperature and presence of catalysts			
	Use collision theory to explain changes in the rate of reaction, including discussing activation energy			
	Describe the role of a catalyst in a chemical reaction and state that enzymes are catalysts in biological systems			
	Draw and interpret reaction profiles for catalysed reactions			

Topic	Knowledge/Skills	Self Assessment		
Reversible reactions and dynamic equilibrium	Explain what a reversible reaction is, including how the direction can be changed and represent it using symbols: A + B ⇌ C + D			
	Explain that, for reversible reactions, if a reaction is endothermic in one direction, it is exothermic in the other direction			
	Describe the State of dynamic equilibrium of a reaction as the point when the forward and reverse reactions occur at exactly the same rate			
	HT ONLY: Explain that the position of equilibrium depends on the conditions of the reaction and the equilibrium will change to counteract any changes to conditions			
	HT ONLY: Explain and predict the effect of a change in concentration of reactants or products, temperature, or pressure of gases on the equilibrium position of a reaction			
	Explain what a reversible reaction is, including how the direction can be changed and represent it using symbols: A + B ⇌ C + D			
	Explain that, for reversible reactions, if a reaction is endothermic in one direction, it is exothermic in the other direction			

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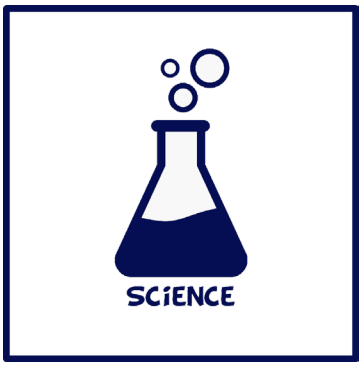
Paper 2

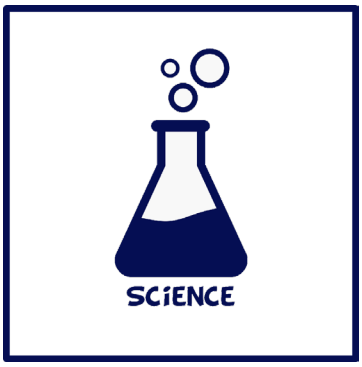


		Self Assessment		
Topic	Knowledge/Skills			
Carbon compounds as fuels and feedstock	Describe what crude oil is and where it comes from, including the basic composition of crude oil and the general chemical formula for the alkanes			
	State the names of the first four members of the alkanes and recognise substances as alkanes from their formulae			
	Describe the process of fractional distillation, state the names and uses of fuels that are produced from crude oil by fractional distillation			
	Describe trends in the properties of hydrocarbons, including boiling point, viscosity and flammability and explain how their properties influence how they are used as fuels			
	Describe and write balanced chemical equations for the complete combustion of hydrocarbon fuels			
	Describe the process of cracking and state that the products of cracking include alkanes and alkenes and describe the test for alkenes			
	Balance chemical equations as examples of cracking when given the formulae of the reactants and products			
	Explain why cracking is useful and why modern life depends on the uses of hydrocarbons			

		Self Assessment		
Topic	Knowledge/Skills			
Purity, formulations and chromatography & Identification of gases	Define a pure substance and identify pure substances and mixtures from data about melting and boiling points			
	Describe a formulation and identify formulations given appropriate information			
	Describe chromatography, including the terms stationary phase and mobile phase and identify pure substances using paper chromatography			
	Explain what the Rf value of a compound represents, how the Rf value differs in different solvents and interpret and determine Rf values from chromatograms			
	Explain how to test for the presence of hydrogen, oxygen, carbon dioxide and chlorine			

		Self Assessment		
Topic	Knowledge/Skills			
The composition and evolution of the Earth's atmosphere	Describe the composition of gases in the Earth's atmosphere using percentages, fractions or ratios			
	Describe how early intense volcanic activity may have helped form the early atmosphere and how the oceans formed			
	Explain why the levels of carbon dioxide in the atmosphere changes as the oceans were formed			
	State the approximate time in Earth's history when algae started producing oxygen and describe the effects of a gradually increasing oxygen level			
	Explain the ways that atmospheric carbon dioxide levels decreased			

Chemistry
Review of Learning
Paper 2

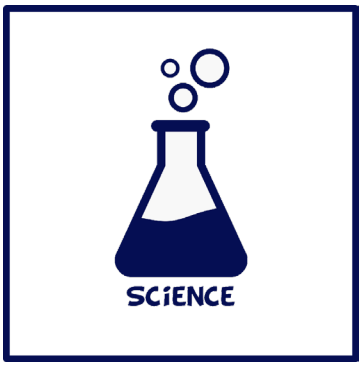


		Self Assessment		
Topic	Knowledge/Skills			
Carbon dioxide and methane as greenhouse gases	Name some greenhouse gases and describe how they cause an increase in Earth's temperature			
	List some human activities that produce greenhouse gases			
	Evaluate arguments for and against the idea that human activities cause a rise in temperature that results in global climate change			
	State some potential side effects of global climate change, including discussing scale, risk and environmental implications			
	Define the term carbon footprint and list some actions that could reduce the carbon footprint			

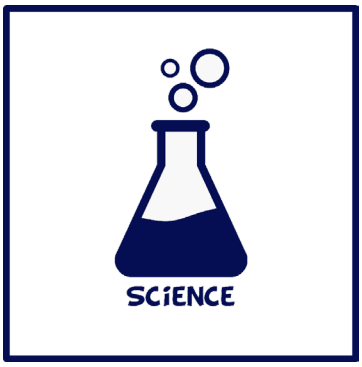
		Self Assessment		
Topic	Knowledge/Skills			
Common atmospheric pollutants and their sources	Describe the combustion of fuels as a major source of atmospheric pollutants and name the different gases that are released when a fuel is burned			
	Predict the products of combustion of a fuel given appropriate information about the composition of the fuel and the conditions in which it is used			
	Describe the properties and effects of carbon monoxide, sulfur dioxide and particulates in the atmosphere			
	Describe and explain the problems caused by increased amounts of these pollutants in the air			

		Self Assessment		
Topic	Knowledge/Skills			
- Life cycle assessment and recycling	Describe, carry out and interpret a simple comparative life cycle assessment (LCA) of materials or products			
	Discuss the advantages and disadvantages of LCAs			
	Carry out simple comparative LCAs for shopping bags made from plastic and paper			
	Discuss how to reduce the consumption of raw resources and explain how reusing and recycling reduces energy use (inc environmental impacts)			

Chemistry
Review of Learning
Paper 2



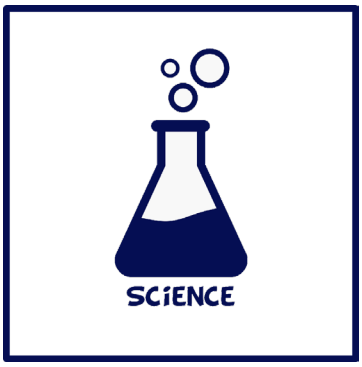
		Self Assessment		
Topic	Knowledge/Skills			
Using the Earth's resources and obtaining potable water	State what humans use Earth's resources for, give some examples of natural resources that they use			
	Define the term finite and distinguish between finite and renewable resources			
	Explain what sustainable development is and discuss the role chemistry plays in sustainable development, including improving agricultural and industrial processes			
	State examples of natural products that are supplemented or replaced by agricultural and synthetic products			
	Discuss the importance of water quality for human life, including defining potable water			
	Describe methods to produce potable water, including desalination of salty water or sea water and the potential problems of desalination			
	Describe waste water as a product of urban lifestyles and industrial processes that includes organic matter, harmful microbes and harmful chemicals			
	Describe the process of sewage treatment and compare the ease of obtaining potable water from waste water as opposed to ground or salt water			
	HT ONLY: Name and describe alternative biological methods for extracting metals, including phytomining and bioleaching			
	HT ONLY: Evaluate alternative methods for extracting metals			



Physics
Review of Learning

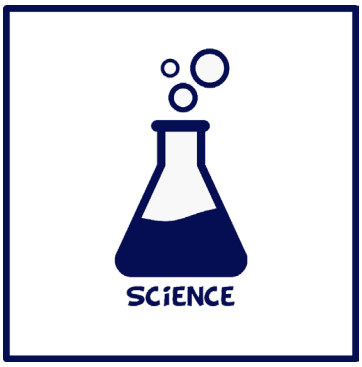
Topic	Knowledge/Skills	Self Assessment		
Particle Model	Calculate the density of a material by applying the equation: [ρ = m/V]			
	Recognise/draw simple diagrams to model the difference between solids, liquids and gases			
	Use the particle model to explain the properties of different states of matter and differences in the density of materials			
	Recall and describe the names of the processes by which substances change state			
	Use the particle model to explain why a change of state is reversible and affects the properties of a substance, but not its mass			
	State that the internal energy of a system is stored in the atoms and molecules that make up the system			
	Explain that internal energy is the total kinetic energy and potential energy of all the particles in a system			
	Calculate the change in thermal energy by applying the equation *[ΔE =m c Δθ]*			
	Calculate the specific latent heat of fusion/vaporisation by applying, , the equation: *[E = mL]*			
	Interpret and draw heating and cooling graphs that include changes of state			
	Distinguish between specific heat capacity and specific latent heat			
	Explain why the molecules of a gas are in constant random motion and that the higher the temperature of a gas, the greater the particles' average kinetic energy			
	Explain, with reference to the particle model, the effect of changing the temperature of a gas held at constant volume on its pressure			
	Calculate the change in the pressure of a gas or the volume of a gas (a fixed mass held at constant temperature) when either the pressure or volume is increased or decreased			

Topic	Knowledge/Skills	Self Assessment		
Atomic Structure	Describe the basic structure of an atom and how the distance of the charged particles vary with the absorption or emission of electromagnetic radiation			
	Define electrons, neutrons, protons, isotopes and ions			
	Relate differences between isotopes to differences in conventional representations of their identities, charges and masses			
	Describe how the atomic model has changed over time due to new experimental evidence, inc discovery of the atom and scattering experiments (inc the work of James Chadwick)			
	Describe and apply the idea that the activity of a radioactive source is the rate at which its unstable nuclei decay, measured in Becquerel (Bq) by a Geiger-Muller tube			
	Describe the penetration through materials, the range in air and the ionising power for alpha particles, beta particles and gamma rays			
	Apply knowledge of the uses of radiation to evaluate the best sources of radiation to use in a given situation			
	Use the names and symbols of common nuclei and particles to complete balanced nuclear equations, by balancing the atomic numbers and mass numbers			
	Define half-life of a radioactive isotope			
	HT ONLY: Determine the half-life of a radioactive isotope from given information and calculate the net decline, expressed as a ratio, in a radioactive emission after a given number of half-lives			
	Compare the hazards associated with contamination and irradiation and outline suitable precautions taken to protect against any hazard the radioactive sources may present			
	Discuss the importance of publishing the findings of studies into the effects of radiation on humans and sharing findings with other scientists so that they can be checked by peer review			



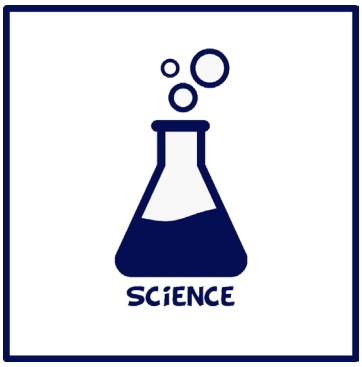
Physics
Review of Learning

		Self Assessment		
Topic	Knowledge/Skills			
Energy	Define a system as an object or group of objects and state examples of changes in the way energy is stored in a system			
	Describe how all the energy changes involved in an energy transfer and calculate relative changes in energy when the heat, work done or flow of charge in a system changes			
	Use calculations to show on a common scale how energy in a system is redistributed			
	Calculate the kinetic energy of an object by applying the equation: *[$E_k = ½mv^2$]*			
	Calculate the amount of elastic potential energy stored in a stretched spring by applying, , the equation: *[$E_e = ½ke^2$]*			
	Calculate the amount of gravitational potential energy gained by an object raised above ground level by applying, the equation: *[$E_p = mgh$]*			
	Calculate the amount of energy stored in or released from a system as its temperature changes by applying, , the equation: *[$\Delta E = mc\Delta\theta$]*			
	Define the term 'specific heat capacity'			
	Define power as the rate at which energy is transferred or the rate at which work is done and the watt as an energy transfer of 1 joule per second			
	Calculate power by applying the *equations: [$P = E/t$ & $P = W/t$]*			
	Explain, using examples, how two systems transferring the same amount of energy can differ in power output due to the time taken			
	State that energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed and so the total energy in a system does not change			
	Explain that only some of the energy in a system is usefully transferred, with the rest 'wasted', giving examples of how this wasted energy can be reduced			
	Explain ways of reducing unwanted energy transfers and the relationship between thermal conductivity and energy transferred			
	Describe how the rate of cooling of a building is affected by the thickness and thermal conductivity of its walls			
	Calculate efficiency by applying the equation: *[efficiency = useful energy output / total energy input]*			
	Calculate efficiency by applying the equation: *[efficiency = useful power output / total power input]*			
	HT ONLY: Suggest and explain ways to increase the efficiency of an intended energy transfer			
	List the main renewable and non-renewable energy resources and define what a renewable energy resource is			
	Compare ways that different energy resources are used, including uses in transport, electricity generation and heating			
	Explain why some energy resources are more reliable than others, explaining patterns and trends in their use			
	Evaluate the use of different energy resources, taking into account any ethical and environmental issues which may arise			
	Justify the use of energy resources, with reference to both environmental issues and the limitations imposed by political, social, ethical or economic considerations			



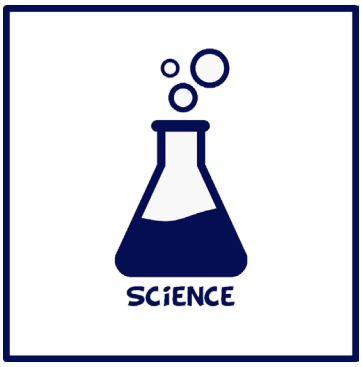
Physics
Review of Learning

		Self Assessment		
Topic	Knowledge/Skills			
Electricity	Draw and interpret circuit diagrams, including all common circuit symbols			
	Define electric current as the rate of flow of electrical charge around a closed circuit			
	Calculate charge and current by applying the formula: *[Q = It]*			
	Explain that current is caused by a source of potential difference and it has the same value at any point in a single closed loop of a circuit			
	Describe and apply the idea that the greater the resistance of a component, the smaller the current for a given potential difference (p.d.) across the component			
	Calculate current, potential difference or resistance by applying the equation: *[V = IR]*			
	Define an ohmic conductor			
	Explain the resistance of components such as lamps, diodes, thermistors and LDRs and sketch/interpret IV graphs of their characteristic electrical behaviour			
	Explain how to measure the resistance of a component by drawing an appropriate circuit diagram using correct circuit symbols			
	Show by calculation and explanation that components in series have the same current passing through them			
	Show by calculation and explanation that components connected in parallel have the same the potential difference across each of them			
	Calculate the total resistance of two components in series as the sum of the resistance of each component using the equation: *[$R_{total} = R_1 + R_2$]*			
	Explain qualitatively why adding resistors in series increases the total resistance whilst adding resistors in parallel decreases the total resistance			
	Solve problems for circuits which include resistors in series using the concept of equivalent resistance			
	Explain the difference between direct and alternating voltage and current, stating what UK mains is			
	Identify and describe the function of each wire in a three-core cable connected to the mains			
	State that the potential difference between the live wire and earth (0 V) is about 230 V and that both neutral wires and our bodies are at, or close to, earth potential (0 V)			
	Explain that a live wire may be dangerous even when a switch in the mains circuit is open by explaining the danger of providing any connection between the live wire and earth			
	Explain how the power transfer in any circuit device is related to the potential difference across it and the current through it			
	Calculate power by applying the equations: *[P = VI]* and *[$P = I^2 R$]*			
	Describe how appliances transfer energy to the kinetic energy of motors or the thermal energy of heating devices			
	Calculate and explain the amount of energy transferred by electrical work by applying the equations: *[E = Pt]* and *[E = QV]*			
	Explain how the power of a circuit device is related to the potential difference across it, the current through it and the energy transferred over a given time.			
	Describe, with examples, the relationship between the power ratings for domestic electrical appliances and the changes in stored energy when they are in use			
	Identify the National Grid as a system of cables and transformers linking power stations to consumers			
	Explain why the National Grid system is an efficient way to transfer energy, with reference to change in potential difference reducing current			



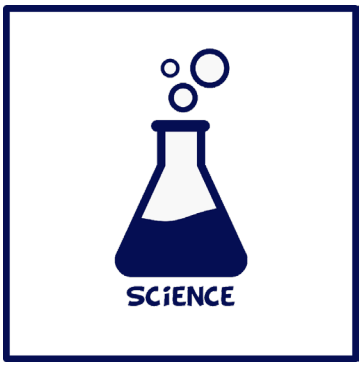
Physics
Review of Learning

		Self Assessment		
Topic	Knowledge/Skills			
Waves	Describe waves as either transverse or longitudinal, defining these waves in terms of the direction of their oscillation and energy transfer and giving examples of each			
	Define waves as transfers of energy from one place to another, carrying information			
	Define amplitude, wavelength, frequency, period and wave speed and Identify them where appropriate on diagrams			
	State examples of methods of measuring wave speeds in different media and Identify the suitability of apparatus of measuring frequency and wavelength			
	Calculate wave speed, frequency or wavelength by applying, , the equation: *[$v = f\lambda$] and* calculate wave period by applying the equation: *[$T = 1/f$]*			
	Identify amplitude and wavelength from given diagrams			
	Describe a method to measure the speed of sound waves in air			
	Describe a method to measure the speed of ripples on a water surface			
	Required practical 20: make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid			
	Describe what electromagnetic waves are and explain how they are grouped			
	List the groups of electromagnetic waves in order of wavelength			
	Explain that because our eyes only detect a limited range of electromagnetic waves, they can only detect visible light			
	HT ONLY: Explain how different wavelengths of electromagnetic radiation are reflected, refracted, absorbed or transmitted differently by different substances and types of surface			
	Illustrate the refraction of a wave at the boundary between two different media by constructing ray diagrams			
	HT ONLY: Describe what refraction is due to and illustrate this using wave front diagrams			
	Required practical activity 21: investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface.			
	HT ONLY: Explain how radio waves can be produced by oscillations in electrical circuits, or absorbed by electrical circuits			
	Explain that changes in atoms and the nuclei of atoms can result in electromagnetic waves being generated or absorbed over a wide frequency range			
	State examples of the dangers of each group of electromagnetic radiation and discuss the effects of radiation as depending on the type of radiation and the size of the dose			
	State examples of the uses of each group of electromagnetic radiation, explaining why each type of electromagnetic wave is suitable for its applications			



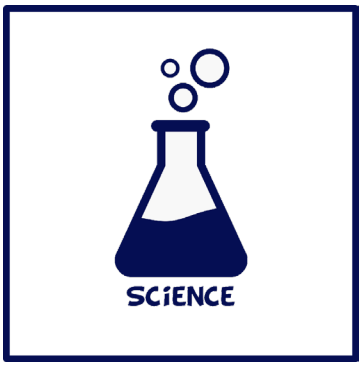
Physics
Review of Learning

		Self Assessment		
Topic	Knowledge/Skills			
Forces	Identify and describe scalar quantities and vector quantities			
	Identify and give examples of forces as contact or non-contact forces			
	Describe the interaction between two objects and the force produced on each as a vector			
	Describe weight and explain that its magnitude at a point depends on the gravitational field strength			
	Calculate weight by using the equation: *[W = mg]*			
	Represent the weight of an object as acting at a single point which is referred to as the object's 'centre of mass'			
	Calculate the resultant of two forces that act in a straight line			
	HT ONLY: describe examples of the forces acting on an isolated object or system			
	HT ONLY: Use free body diagrams to qualitatively describe examples where several forces act on an object and explain how that leads to a single resultant force or no force			
	HT ONLY: Use free body diagrams and accurate vector diagrams to scale, to resolve multiple forces and show magnitude and direction of the resultant			
	HT ONLY: Use vector diagrams to illustrate resolution of forces, equilibrium situations and determine the resultant of two forces, to include both magnitude and direction			
	Describe energy transfers involved when work is done and calculate the work done by using the equation: *[W = Fs]*			
	Describe what a joule is and state what the joule is derived from			
	Convert between newton-metres and joules.			
	Explain why work done against the frictional forces acting on an object causes a rise in the temperature of the object			
	Describe examples of the forces involved in stretching, bending or compressing an object			
	Explain why, to change the shape of an object (by stretching, bending or compressing), more than one force has to be applied – this is limited to stationary objects only			
	Describe the difference between elastic deformation and inelastic deformation caused by stretching forces			
	Describe the extension of an elastic object below the limit of proportionality and calculate it by applying the equation: *[F = ke]*			
	Explain why a change in the shape of an object only happens when more than one force is applied			
	Describe and interpret data from an investigation to explain possible causes of a linear and non-linear relationship between force and extension			
	Calculate work done in stretching (or compressing) a spring (up to the limit of proportionality) by applying, , the equation: *[$E_e = ½ke^2$]*			
	Define distance and displacement and explain why they are scalar or vector quantities			
	Express a displacement in terms of both the magnitude and direction			
	Explain that the speed at which a person can walk, run or cycle depends on a number of factors and recall some typical speeds for walking, running, cycling			



Physics
Review of Learning

		Self Assessment		
Topic	Knowledge/Skills			
Forces	Make measurements of distance and time and then calculate speeds of objects in calculating average speed for non-uniform motion			
	Explain why the speed of wind and of sound through air varies and calculate speed by applying the equation: *[$s = v\,t$]*			
	Explain the vector–scalar distinction as it applies to displacement, distance, velocity and speed			
	HT ONLY: Explain qualitatively, with examples, that motion in a circle involves constant speed but changing velocity			
	Represent an object moving along a straight line using a distance-time graph, describing its motion and calculating its speed from the graph's gradient			
	Draw distance–time graphs from measurements and extract and interpret lines and slopes of distance–time graphs,			
	Describe an object which is slowing down as having a negative acceleration and estimate the magnitude of everyday accelerations			
	Calculate the average acceleration of an object by applying the equation: *[$a = \Delta v/t$]*			
	Represent motion using velocity–time graphs, finding the acceleration from its gradient and distance travelled from the area underneath			
	HT ONLY: Interpret enclosed areas in velocity–time graphs to determine distance travelled (or displacement)			
	HT ONLY: Measure, when appropriate, the area under a velocity– time graph by counting square			
	Apply, but not recall, the equation: *[$v^2 - u^2 = 2as$]*			
	Explain the motion of an object moving with a uniform velocity and identify that forces must be in effect if its velocity is changing, by stating and applying Newton's First Law			
	Define and apply Newton's second law relating to the acceleration of an object			
	Recall and apply the equation: *[$F = ma$]*			
	HT ONLY: Describe what inertia is and give a definition			
	Estimate the speed, accelerations and forces of large vehicles involved in everyday road transport			
	Apply Newton's Third Law to examples of equilibrium situations			
	Describe factors that can affect a driver's reaction time			
	Explain methods used to measure human reaction times and recall typical results			
	Explain how the braking distance of a vehicle can be affected by different factors, including implications for road safety			
	Explain how a braking force applied to the wheel does work to reduce the vehicle's kinetic energy and increases the temperature of the brakes			
	Explain and apply the idea that a greater braking force causes a larger deceleration and explain how this might be dangerous for drivers			
	HT ONLY: Estimate the forces involved in the deceleration of road vehicles			
	HT ONLY: Calculate momentum by applying the equation: *[$p = mv$]*			
	HT ONLY: Explain and apply the idea that, in a closed system, the total momentum before an event is equal to the total momentum after the event			
	HT ONLY: Describe examples of momentum in a collision			



Physics

Review of Learning

		Self Assessment		
Topic	Knowledge/Skills			
Magnetism and Electromagnetism	Describe the attraction and repulsion between unlike and like poles of permanent magnets and explain the difference between permanent and induced magnets			
	Draw the magnetic field pattern of a bar magnet, showing how field strength and direction are indicated and change from one point to another			
	Explain how the behaviour of a magnetic compass is related to evidence that the core of the Earth must be magnetic			
	Describe how to plot the magnetic field pattern of a magnet using a compass			
	State examples of how the magnetic effect of a current can be demonstrated and explain how a solenoid arrangement can increase the magnetic effect of the current			
	Draw the magnetic field pattern for a straight wire carrying a current and for a solenoid (showing the direction of the field)			
	Interpret diagrams of electromagnetic devices in order to explain how they work			
	HT ONLY: State and use Fleming's left-hand rule and explain what the size of the induced force depends on			
	HT ONLY: Calculate the force on a conductor carrying a current at right angles to a magnetic field by applying, , the equation: *[F = BIL]*			
	HT ONLY: Explain how rotation is caused in an electric motor			

GCSE History

History

Review of Learning

Paper 1 Medicine in Britain

Topic		Key knowledge/skills	Self-Assessment Red	Amber	Green
c1250 - c1500: Medicine in medieval England	Ideas about the cause of disease and illness	What were the supernatural and religious explanations for the cause of disease?			
		What was the Theory of the Four Humours?			
		What was the Miasma Theory?			
		How significant was the continuing influence in England of Hippocrates and Galen?			
	Approaches to prevention and treatment	What were the religious actions towards the prevention and treatment of illness?			
		Why was bloodletting and used?			
		How did people in the Middle Ages attempt to purify the air?			
		What herbal remedies were used to prevent and treat illness?			
		What new and traditional approaches were there to hospital care in the C13th?			
		What was the role of the physician, apothecary and barber surgeon in treatment and care?			
	CASE STUDY	Dealing with the Black Death, 1348-49; what approaches to treatment and attempts to prevent its spread were used?			
c1500 - c1700: The Medical Renaissance in England	Ideas about the cause of disease and illness	How far did explanations of the cause of disease and illness continue?			
		What were the new scientific approaches to medicine? (including the work of Thomas Sydenham in improving diagnosis)			
		How did the Printing Press influence medicine?			
		How did the work of the Royal Society change ideas about medicine?			
	Approaches to prevention and treatment	How far did approaches to prevention, treatment and care in the community and in hospitals continue?			
		Why was the work of Vesalius significant?			
	CASE STUDIES	Why was the work of Harvey significant?			
		How did London deal with the Great Plague in 1665? Approaches to treatment and attempts to prevent its spread.			
c1700 - c1900: Medicine in C18th and C19th Britain	Ideas about the cause of disease and illness	How far did explanations of the cause of disease and illess change?			
		What was the impact of Pasteur's Germ Theory including Robert Koch's developments			
	Approaches to prevention and treatment	How far did care and treatment in hospitals change after Nightingale?			
		What impact did anaesthetics and antiseptics have on surgery?			
		What new approaches to prevention were developed?			
		How significant was the 1875 Public Health Act in preventing disease?			
	CASE STUDIES	What impact did Jenner's development of the vaccination have on the prevention of disease?			
		How did London attempt to prevent the spread of Cholera? How significant was Dr John Snow in preventing the spread of Cholera from 1854?			
c1900-present: Medicine in modern Britain	Ideas about the cause of disease and illness	How has knowledge of genetics advanced understanding of the spread of illness and disease?			
		How has the influence of lifestyle factors advanced the understanding of illness and disease?			
		What impact has the availability of blood tests, scans and monitors had on the diagnosis of illness and disease?			
	Approaches to prevention and treatment	What impact has the NHS had on care and treatment?			
		What has been the impact of science and technology on care and treatment? (advances in medicines, including magic bullets and antibiotics.)			
		How significant has science and technology been in improving surgical treatment in hospitals?			
		What new approaches to prevention have been developed?			
	CASE STUDIES	How significant were individuals in the development of penicillin?			
		What developments have taken place in the fight against lung cancer in the C21st?			

History

Review of Learning

Paper 1 Medicine in Britain & Western Front

Topic	Key knowledge/skills	Self Assessment Red	Amber	Green
The British sector of the Western Front, 1914-18: injuries, treatment and the trenches	What was the British sector of the Western front and the theatre of war in Flanders and northern France?			
	Describe the trench system. How were mines used at Hill60 near Ypres? How were tunnels, caves and quarries used at Arras? How was the nature of the terrain and problems of the transport and communications infrastructure significant for medical treatment?			
	What conditions required medical treatment on the Western Front, including problems of ill health arising from the trench environment? What was the nature of wounds from rifles and explosives? What were the effects of gas attacks?			
	Describe the work of the RAMC and FANY. Describe the system of transport: stretcher bearers, horse and motor ambulances.			
	What were the stages of treatment areas? Describe the underground hospital at Arras.			
	What was the significance of the Western Front for experiments in surgery and medicine?			
	How did the understanding of infection and move towards aseptic surgery develop during WW1? In what ways did x-rays; blood transfusions and the storage of blood develop during WW1?			
Knowledge, selection and use of sources for historical enquiries	What national sources are relevant to the period and issue?			
	What local sources relevant to the period and issue?			
	What are the strengths and weaknesses of different types of source for specific enquiries?			
	How should you frame questions relevant to the pursuit of a specific enquiry?			
	How should you select appropriate sources for specific investigations?			

History

Review of Learning

Paper 3 Weimar and Nazi Germany

Topic		Key knowledge/skills	Self-Assessment Red	Amber	Green
Key topic 1: The Weimar Republic 1918–29	The origins of the Republic, 1918–19	The legacy of the First World War. The abdication of the Kaiser, the armistice and revolution, 1918–19.			
		The setting up of the Weimar Republic. The strengths and weaknesses of the new Constitution.			
	The early challenges to the Weimar Republic '19–23	Reasons for the early unpopularity of the Republic, including the 'stab in the back' theory and the key terms of the Treaty of Versailles.			
		Challenges to the Republic from Left and Right: Spartacists, Freikorps, the Kapp Putsch.			
		The challenges of 1923: hyperinflation; the reasons for, and effects of, the French occupation of the Ruhr.			
	The recovery of the Republic, 1924–29	Reasons for economic recovery, including the work of Stresemann, the Rentenmark, the Dawes and Young Plans and American loans and investment.			
		The impact on domestic policies of Stresemann's achievements abroad: the Locarno Pact, joining the League of Nations and the Kellogg-Briand Pact.			
	Changes in society, 1924–29	Changes in the standard of living, including wages, housing, unemployment insurance.			
		Changes in the position of women in work, politics and leisure.			
		Cultural changes: developments in architecture, art and the cinema.			
Key Topic 2: Hitler's rise to power, 1919–33	Development of Nazi Party, 1920–22	Hitler's early career: joining the German Workers' Party and setting up the Nazi Party, 1919–20.			
		The early growth and features of the Party. The Twenty-Five Point Programme. The role of the SA.			
	The lean years, 1923–29	The reasons for, events and consequences of the Munich Putsch.			
		Reasons for limited support for the Nazi Party, 1924–28. Party reorganisation and Mein Kampf. The Bamberg Conference of 1926.			
	The growth in support for the Nazis, 1929–32	The growth of unemployment – its causes and impact. The failure of successive Weimar governments to deal with unemployment from 1929 to January 1933. The growth of support for the Communist Party.			
		Reasons for the growth in support for the Nazi Party, including the appeal of Hitler and the Nazis, the effects of propaganda and the work of the SA.			
	Hitler becomes Chancellor 1932–33	Political developments in 1932. The roles of Hindenburg, Brüning, von Papen and von Schleicher.			
		The part played by Hindenburg and von Papen in Hitler becoming Chancellor in 1933.			

Paper 1 Medicine in Britain

History

Review of Learning

Paper 3 Weimar and Nazi Germany

Topic		Key knowledge/skills	Self-Assessment		
			Red	Amber	Green
Key topic 3: Nazi control and dictatorship, 1933–39	The creation of a dictatorship, 1933–34	The Reichstag Fire. The Enabling Act and the banning of other parties and trade unions.			
		The threat from Röhm and the SA, the Night of the Long Knives and the death of von Hindenburg. Hitler becomes Führer, the army and oath of allegiance.			
	The police state	The role of the Gestapo, the SS, the SA and concentration camps			
		Nazi control of the legal system, judges and law courts.			
		Nazi policies towards the Catholic and Protestant Churches, including the Reich Church and the Concordat.			
	Controlling and influencing attitudes	Goebbels and the Ministry of Propaganda: censorship, Nazi use of media, rallies and sport, including the Berlin Olympics of 1936.			
		Nazi control of culture and the arts, including art, architecture, literature and film.			
	Opposition, resistance and conformity	The extent of support for the Nazi regime.			
		Opposition from the Churches, including the role of Pastor Niemöller.			
		Opposition from the young, including the Swing Youth and the Edelweiss Pirates.			
Key Topic 4: Life in Nazi Germany, 1933–39	Nazi policies towards women	Nazi views on women and the family.			
		Nazi policies towards women, including marriage and family, employment and appearance.			
	Nazi policies towards the young	Nazi aims and policies towards the young. The Hitler Youth and the League of German Maidens.			
		Nazi control of the young through education, including the curriculum and teachers.			
	Employment and living standards	Nazi policies to reduce unemployment, including labour service, autobahns, rearmament and invisible unemployment.			
		Changes in the standard of living, especially of German workers. The Labour Front, Strength Through Joy, Beauty of Labour.			
	The persecution of minorities	Nazi racial beliefs and policies and the treatment of minorities: Slavs, 'gypsies', homosexuals and those with disabilities.			
		The persecution of the Jews, including the boycott of Jewish shops and businesses (1933), the Nuremberg Laws and Kristallnacht.			

History
Review of Learning

Paper 2 Superpower relations and the Cold War

Topic		Key knowledge/skills	Self-Assessment Red	Amber	Green
Key topic 1: The origins of the Cold War, 1941–58	Early tension between East and West	The Grand Alliance. The outcomes of the Tehran, Yalta and Potsdam conferences.			
		The ideological differences between the superpowers and the attitudes of Stalin, Truman and Churchill.			
		The impact on US-Soviet relations of the development of the atomic bomb, the Long and Novikov telegrams and the creation of Soviet satellite states in Eastern Europe.			
	The development of the Cold War	The impact on US-Soviet relations of the Truman Doctrine and the Marshall Plan, 1947.			
		The significance of Cominform (1947), Comecon (1949) and the formation of NATO (1949).			
		Berlin: its division into zones. The Berlin Crisis (blockade and airlift) and its impact. The formation of the Federal Republic of Germany and German Democratic Republic.			
	The Cold War intensifies	The significance of the arms race and the formation of the Warsaw Pact.			
		Events in 1956 leading to the Hungarian Uprising, and Khrushchev's response			
		The international reaction to the Soviet invasion of Hungary.			
Key Topic 2: Cold War crises, 1958–70	Increased tension between East and West	The refugee problem in Berlin, Khrushchev's Berlin ultimatum (1958), and the summit meetings of 1959–61.			
		Soviet relations with Cuba, the Cuban Revolution and the refusal of the USA to recognise Castro's government. The significance of the Bay of Pigs incident.			
		Opposition in Czechoslovakia to Soviet control: the Prague Spring.			
	Cold War crises	The construction of the Berlin Wall, 1961.			
		The events of the Cuban Missile Crisis.			
		The Brezhnev Doctrine and the re-establishment of Soviet control in Czechoslovakia.			
	Reaction to crisis	Impact of the construction of the Berlin Wall on US-Soviet relations. Kennedy's visit to Berlin in 1963.			
		The consequences of the Cuban Missile Crisis: the 'hotline', the Limited Test Ban Treaty 1963; the Outer Space Treaty 1967; and the Nuclear Non-Proliferation Treaty 1968.			

History
Review of Learning

Paper 2 B Henry VIII and his Ministers

Topic		Key knowledge/skills	Self-Assessment Red	Amber	Green
Key topic 1: Henry VIII and Wolsey 1509 - 1529	Henry the Renaissance Prince	Society and Government in 1509			
		Henry VIII strengths and weaknesses			
	Wolsey and his Domestic Reforms	Wolsey's background and rise to power.			
		Amicable Grant, Subsidy, Enclosure, Eltham Ordinances, Star Chamber			
	Wolsey's Foreign Policy	Treaty of London, Field of the Cloth of Gold			
		War with France, Treaty of More, Treaty of Westminster and Treaty of Cambrai.			
	Henry's annulment	Papal Dispensation, Bible verses, Marriage Certificate, Nunery and Cardinal Campeggio.			
		Fall of Wolsey			
Key Topic 2: Henry VIII and Cromwell 1529-1540	The Annulment + Rise of Cromwell	Restraint of Appeals, Act of Succession and Supremacy.			
		Background of Cromwell and travels of Europe			
		Rise to Chief Minister			
	Henry's marriages	Anne Boleyn rise and fall			
		Jane Seymour			
	Cromwell's reforms	Parliament and changes to the Royal Council (Privy Council), Justice system			
		Act of Union, Court of Augmentations, Court of First fruit and Tenths			
	Fall of Cromwell	Anne of Cleves Marriage			
		Duke of Norfolk, power of Cromwell, Act of Six Articles.			

GEOGRAPHY

GCSE Geography

Geography
Review of Learning

THEME 1 – LANDSCAPES AND PHYSICAL PROCESSES

Key knowledge/skills	Self Assessment		
	Red	Amber	Green
What are distinctive landscapes?			
Issues linked to distinctive landscapes and how can they be managed?			
The Lake District National Park			
What is weathering?			
What is erosion?			
What are river processes – erosion, transportation, and deposition?			
Features of the upper course			
Features of the middle course			
Features of the lower course			
What is the river system?			
What causes rivers to flood – physical and human?			
What are flood hydrographs?			

Geography
Review of Learning

THEME 2 – RURAL TO URBAN LINKS

Key knowledge/skills	Self Assessment		
	Red	Amber	Green
Where do people live in the UK and why?			
What are urban spheres of influence?			
What are the features of rural areas?			
What is counter-urbanisation?			
Impacts of counter-urbanisation - City			
Impacts of counter-urbanisation - Rural			
Rural deprivation and sustainability			
What are the issues linked to an ageing population?			
What is migration?			
Why migrate to the UK?			
Why does the UK need to build more homes?			
What are sustainable cities?			
Sustainable city living in London			
Should we build on the green belt?			
Where does retailing occur?			
Advantages and disadvantages of internet shopping			
The high street fights back			
What is urbanisation and where are the worlds megacities?			
What are the causes and consequences of urbanisation?			
How can we improve squatter settlements			
Mumbai – a global megacity			
Challenges facing Mumbai - Housing			
Challenges facing Mumbai – Jobs			
Challenges facing Mumbai - Transport			
Cardiff – a global city			
Cardiff – the growth of a city			
Ethnicity and wealth in Cardiff			

THEME 2 – RURAL TO URBAN LINKS

Geography
Review of Learning

THEME 3 – TECTONIC HAZARDS

Key knowledge/skills	Self Assessment Red	Amber	Green
Where do earthquakes and volcanoes occur?			
What causes earthquakes and volcanoes?			
What are the main features of volcanoes?			
Strato and Composite Volcanoes?			
What are the features of volcanic landscapes?			
What happens when volcanoes erupt – good or bad?			
Case Study: Mt. Merapi – Indonesia (LIC)			
Vulnerability and Tectonic Hazards			
Reducing the impacts of volcanoes			
What are earthquakes and the impacts they have?			
How do we prepare for earthquakes?			

THEME 5 – WEATHER, CLIMATE AND ECOSYSTEMS CHECKLIST

Key knowledge/skills	Self Assessment Red	Amber	Green
Is the climate changing – natural causes of climate change?			
Causes of global warming			
Consequences of global warming			
Solutions to global warming			
What are tropical storms			
Drought in California			
What is the monsoon climate?			
Factors affecting the UK climate			
How do air masses affect the UK?			
What are anticyclones?			
What are depressions?			
What are urban microclimates?			
What are the world's major ecosystems?			
What are tropical rainforests?			
Tropical rainforest processes			
Vegetation of the tropical rainforests			
What are semi-arid grasslands?			
Semi-arid processes			
Causes of deforestation			
Consequences of deforestation			
Sustainable rainforest management			
Human activity in the grasslands			
Sustainable management of the grasslands			

Geography
Review of Learning

THEME 6 – DEVELOPMENT AND RESOURCE ISSUES

Key knowledge/skills	Self Assessment		
	Red	Amber	Green
What is the development gap?			
How do we measure development?			
What are the impacts of globalisation?			
Multinationals – good or bad?			
What is trade?			
Unfair trade in Ghana			
Is trade fair?			
What is Aid?			
What is tourism?			
Tourism in Mexico – good or bad			
How is the demand for water changing?			
How are water resources being managed?			
Regional patterns of inequality in India			
Is there a north-south divide in the UK? Why?			
Reducing regional inequality in the UK			

THEME 7 – SOCIAL DEVELOPMENT ISSUES

Key knowledge/skills	Self Assessment		
	Red	Amber	Green
How do we measure development?			
The challenge of child labour			
How do we tackle child labour?			
Challenges of refugee movements			
Malaria in Sub-Saharan Africa			
HIV in Sub-Saharan Africa			
The Ebola Outbreak			

MODERN FOREIGN LANGUAGES

GCSE MFL

French / German / Spanish

GCSE MFL

Review of Learning

French / German / Spanish

MODERN FOREIGN LANGUAGES

		Self Assessment		
Topic	Key knowledge/skills	Red	Amber	Green
Technology	What we do with technology / time frequencies / pros and cons of technology and social media			
Free time	What activities we do in our free time / who with / how often and where / what we did last weekend / what we are going to do next weekend			
Holidays	Describing where we go on holiday / future & ideal holidays / / past tense holidays / holiday activities / modes of transport / weather			
Family and Friends	Describing our family and friends / how we get on with our family / qualities of a good friend / role models			

		Self Assessment		
Topic	Key knowledge/skills	Red	Amber	Green
Healthy Lifestyle	Food & opinions / comparing good & bad habits / illness & injuries / wellbeing & what is good and bad for you			
Where I live	What's in my town / where I live & opinions / Ideal home			
School	Subjects, teachers & opinions / describing my school/ school rules / school uniform			
The Environment	Climate change / actions to help the environment / social & climate issues			
Future Plans	Future Plans & Aspirations / Different career paths / Jobs			

RELIGIOUS EDUCATION

GCSE RE

GCSE RE

Review of Learning

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Christian Practises	Can I explain what a sacrament is and give examples of the 7 for Catholics, and state the 2 for Protestants?			
	Can I outline what happens in an infant baptism?			
	Can I outline what happens in a Believer's baptism?			
	Can I explain why Christmas is celebrated and how it is celebrated?			
	Can I explain why Easter is celebrated and how it is celebrated?			
	Can I give examples of what Churches do in their local community? (E.g. food banks, street pastors, Parish Nursing)			
	Can I explain what evangelism and mission are?			
	Can I explain what the Great Commission is and how it links to mission and evangelism?			
	Can I explain what the Alpha Course is as an example of evangelism?			
	Can I explain how Christians work to grow Church numbers?			
	Can I explain the Christ for all Nations organisation which promotes evangelism to grow Church numbers?			
	Can I explain why Christians work for reconciliation?			
	Can I give at least two examples of how Christians work for reconciliation? E.g. Corrymeala, Irish Churches Peace Project – link to Northern Ireland Troubles.			
	Can I explain what persecution is and examples of Christians being persecuted around the world?			
	Can I give examples of how Christians work to help those who are being persecuted and why they want to do this?			
Buddhist Practices	Can I explain what puja is and where it takes place (home, temple)?			
	Can I describe features of a Buddhist shrine (statues, candles, incense, offerings)?			
	Can I explain why worship is important for Buddhists?			
	Can I explain the purpose of meditation in Buddhism?			
	Can I describe samatha meditation and how it is practised?			
	Can I describe vipassana meditation and how it differs from samatha?			
	Can I explain the purpose of visualisation practices in Mahayana Buddhism?			
	Can I explain why chanting is used in Buddhism?			
	Can I explain the significance of mantras such as *Om Mani Padme Hum*?			
	Can I explain the meaning and practices of Wesak?			
	Can I explain the meaning and practices of Parinirvana Day?			
	Can I explain how Buddhist communities help others (e.g., meditation centres, charities, relief work)?			
	Can I explain the role of monks and nuns in Buddhism?			
	Can I explain why lay Buddhists support the monastic community?			
	Can I explain the Five Moral Precepts and give examples of how they are applied?			
	Can I explain the Six Perfections (Mahayana)?			
	Can I explain compassion (karuna) and loving-kindness (metta)?			

GCSE RE

Review of Learning

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Christian Beliefs	Can I explain what Christians believe about the Trinity and the Oneness of God?			
	Can I explain at least two ways believing in the Trinity may influence/impact a Christian today?			
	Can I explain what Christians believe about creation referring to Genesis 1:1-3, John 1:1-3 and the role of the Holy Spirit?			
	Can I describe what happened at Jesus' crucifixion and explain why this is such an important event?			
	Can I explain at least two ways believing in the crucifixion of Jesus may influence/impact a Christian today?			
	Can I describe what happened at Jesus' resurrection and ascension and explain why this is such an important event?			
	Can I explain at least two ways believing in the resurrection and ascension of Jesus may influence/impact a Christian today?			
	Can I explain the role of law and grace in salvation?			
	Can I explain different Christian views about what happens after death, including judgement and resurrection?			
	Can I explain what the Parable of the Sheep and Goats teaches about judgement?			
	Can I explain Catholic views on heaven, hell and purgatory?			
	Can I explain different Christian views about what heaven and hell are like?			
	Can I explain at least two ways believing in the afterlife may influence/impact a Christian today?			
	Can I explain what Christians believe about sin, including original sin?			
	Can I explain what Christians believe about salvation, including the different ways salvation can be gained (following God's law, receiving God's grace and being guided by the Holy Spirit)?			
Buddhism Beliefs	Can I explain who Siddhartha Gautama was and outline key events in his life (the Four Sights, asceticism, enlightenment)?			
	Can I explain the meaning of the term *Dhamma* and why it is important for Buddhists?			
	Can I explain the concept of dependent arising (paticcasamuppada)?			
	Can I explain *anicca* (impermanence) with examples?			
	Can I explain *dukkha* (suffering) and the different types?			
	Can I explain *anatta* (no fixed self) using examples like Nagasena and the chariot?			
	Can I explain each of the Four Noble Truths clearly?			
	Can I explain how the Four Noble Truths link to suffering and liberation?			
	Can I explain why some Buddhists see the Four Noble Truths as the most important teaching?			
	Can I explain each step of the Eightfold path and how Buddhists try to follow it?			
	Can I explain what nirvana/nibbana is?			
	Can I explain karma and how it affects rebirth?			
	Can I explain samsara and why Buddhists aim to escape it?			
	Can I explain key differences between Theravada and Mahayana Buddhism?			
	Can I explain the concepts of arhat and bodhisattva?			
	Can I explain Pure Land Buddhism and why some Buddhists follow it?			

GCSE RE

Review of Learning

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Peace and Conflict	Can I explain key concepts e.g. peace, justice, forgiveness and reconciliation?			
	Can I explain Christian beliefs about each of those four key concepts?			
	Can I explain different reasons for wars, including greed, self-defence and retaliation?			
	Can I explain different Christian beliefs to the three issues of violence, weapons of mass destruction and pacifism?			
	Can I describe different Christian attitudes to the use of nuclear weapons and weapons of mass destruction, including the work of the Christian Campaign for Nuclear Disarmament?			
	Can I describe the criteria for the Just War theory?			
	Can I apply the Just War theory to the Falklands War and explain whether the war was justified?			
	Can I describe the features of a Holy War?			
	Can I give a couple of examples of Holy wars?			
	Can I outline what happened in the Northern Ireland troubles?			
	Can I evaluate whether religion is a cause of war and violence?			
	Can I explain Christian beliefs and teachings about pacifism and peace making?			
	Can I describe the work of the Anglican Pacifist Fellowship and the work of individuals influenced by Christian teachings towards peace making?			
	Can I explain contemporary British attitudes (religious and non-religious) towards war and violence?			
	Can I explain Christian responses to the victims of war, including the work of Caritas and Christian Aid?			
	Can I explain why some people turn to violent protest and terrorism with examples			
	Can I explain Christian views on violent protest and terrorism?			

GCSE RE

Review of Learning

Topic	Key knowledge/skills	Self Assessment		
		Red	Amber	Green
Religion and Life	Can I outline what happens in the 6 day creation story?			
	Can I explain how literalist Christians and non-literalists (liberal Christians) interpret the 6 day creation story?			
	Can I explain what the Big Bang theory is and evidence which supports it (e.g. Red Shift Effect)?			
	Can I explain what literalist and non-literalist Christians believe about the Big Bang theory?			
	Can I explain what evolution is and evidence which supports it (e.g. DNA, fossils etc)?			
	Can I explain what literalist and non-literalist Christians believe about evolution?			
	Can I explain why Christians feel awe and wonder about the universe as God's creation?			
	Can I explain at least three Christian teachings about stewardship?			
	Can I state what is meant by non-renewable and renewable resources and give examples for each?			
	Can I explain the problem with using non-renewable resources and possible solutions?			
	Can I state what is meant by pollution and give examples of different types of pollution?			
	Can I give examples of solutions to the problem of pollution?			
	Can I explain what Christians believe about pollution?			
	Can I give examples of how animals are used by humans? (food etc)			
	Can I explain Christian teachings for and against using animals for food?			
	Can I give arguments for and against animals being used for experiments?			
	Can I explain Christian teachings about animal experimentation?			
	Can I outline the UK law on abortion?			
	Can I give non-religious arguments for and against abortion?			
	Can I explain Christian teachings for and against abortion?			
	Can I outline the different types of euthanasia? (voluntary, involuntary, active, passive)			
	Can I give non-religious arguments for and against euthanasia?			
	Can I explain Christian teachings for and against euthanasia?			
	Can I explain Christian teachings about the afterlife?			
	Can I give non-religious arguments for and against belief in the afterlife (e.g. near-death experiences, stories of remembering past lives, ghosts etc).			
	Can I explain what Christians believe about the value of human life?			
	Can I explain what is meant by the sanctity of life and Christian teachings that link to this?			
	Can I explain what is meant by quality of life?			

GCSE RE

Review of Learning

		Self Assessment		
Topic	Key knowledge/skills	Red	Amber	Green
Relationships and Families	Can I identify how laws and general attitudes have changed towards homosexuality in Britain over the last century?			
	Can I explain why some Christians are against homosexual relationships and only support heterosexuality?			
	Can I explain why some Christians support homosexual relationships?			
	Can I explain why some Christians agree with sex before marriage and some do not?			
	Can I explain why all Christians disagree with adultery?			
	Can I give examples of artificial and natural methods of contraception and why it is used?			
	Can I explain why Catholics do not agree with using artificial contraception and why other Christians agree?			
	Can I describe the different types of marriage in the UK today? (same-sex, civil partnership etc.)			
	Can I explain Christian teachings about the nature of marriage? (What it should be like, i.e. heterosexual/homosexual)			
	Can I explain Christian teachings about the purpose of marriage? (What it's for)			
	Can I explain why some Christians allow cohabitation and some do not?			
	Can I give different reasons for and against divorce?			
	Can I explain why Catholics disagree with divorce?			
	Can I explain why the Church of England allows divorce?			
	Can I describe the different types of families in Great Britain?			
	Can I explain Christian teachings about the nature of families?			
	Can I explain what Christians are taught about the role of parents and children?			
	Can I explain the three main purposes of families?			
	Can I identify how attitudes have changed about the roles of men and women I Britain over the last century?			
	Can I give examples of gender prejudice and discrimination? (for both genders)			

GCSE RE

Review of Learning

		Self Assessment		
Topic	Key knowledge/skills	Red	Amber	Green
Crime and Punishment	Can I explain different ideas about what makes an action good? (Does it have to follow the law?)			
	Can I explain different ideas about what makes an action evil? (Is it just something against the law?)			
	Can I give reasons for and against the view that your intentions are more important than your actions?			
	Can I explain why poverty might lead people to commit crime and the Christian view on this?			
	Can I explain why upbringing might lead people to commit crime and the Christian view on this?			
	Can I explain why mental illness might lead people to commit crime and the Christian view on this?			
	Can I explain why addiction might lead people to commit crime and the Christian view on this?			
	Can I explain why greed might lead people to commit crime and the Christian view on this?			
	Can I explain why hate might lead people to commit crime and the Christian view on this?			
	Can I explain why opposition to an unjust law might lead people to commit crime and the Christian view on this?			
	Can I explain two Christian beliefs about lawbreakers?			
	Can I give examples of hate crimes and the Christian views towards these crimes?			
	Can I describe what theft is and the Christian view towards theft?			
	Can I describe what murder is and the Christian view towards murder?			
	Can I explain what is meant by retribution and the Christian attitude towards it?			
	Can I explain what is meant by deterrence and the Christian attitude towards it?			
	Can I explain what is meant by reformation and the Christian attitude towards it?			
	Can I explain two Christian attitudes towards suffering (in general)?			
	Can I explain why some people might think that a loving God should not allow suffering (the problem of evil)			
	Can I explain how Christians respond to the problem of evil and suffering?			
	Can I explain two Christian beliefs about people causing suffering to others?			
	Can I describe what happens in prison and the Christian attitude towards it?			
	Can I describe what corporal punishment is and the Christian attitude towards it?			
	Can I describe what community service is and the Christian attitude towards it?			
	Can I explain at least two Christian beliefs about forgiveness?			
	Can I give arguments to support the death penalty (non-religious)?			
	Can I give arguments against the death penalty (non-religious)?			
	Can I explain Christian beliefs for and against the death penalty?			

COMPUTER SCIENCE

GCSE Computer Science

GCSE Computer Science

Review of Learning

Paper 1 Principals of Computer Science

Topic	Key knowledge/skills	Self Assessment		
Decomposition and abstraction Algorithms	Computational Thinking concepts • Decomposition • Abstraction			
	Benefits of using subprograms			

	Create, interpret, correct, and refine algorithms (flowcharts, pseudocode*, program code) that use:
	• Sequence
	• Selection
	• Repetition
	  ○ Count-controlled (FOR)
	  ○ Condition-controlled (WHILE)
	• Iteration (over every item in a data structure)
	• Input, processing, output to solve problems
	**Pseudocode is used to denote an informal written description of a program. Pseudocode uses imprecise English Language statements and does not require and strict programming syntax.*			

	Create, interpret, correct, and refine algorithms that use
	• Variables and Constants
	• One-and Two-dimensional data structures
	  ○ Strings
	  ○ Records
	  ○ Arrays			

	Create, interpret, correct, and refine algorithms using:
	• Arithmetic operators
	  ○ Addition
	  ○ Subtraction
	  ○ Division
	  ○ Multiplication
	  ○ Modulus
	  ○ Integer division
	  ○ Exponentiation
	• Relational operators
	  ○ Equal to
	  ○ Less than
	  ○ Greater than
	  ○ Not equal to
	  ○ Less than or equal to
	  ○ Greater than or equal to
	• Logical operators
	  ○ AND
	  ○ OR
	  ○ NOT			

	Use trace tables to determine what value a variable holds at a given point in an algorithm.			
	Identify and correct types of errors that appear in algorithms and programming • Syntax • Logic • Runtime			

	Understand algorithms
	• Bubble sort
	• Merge sort
	• Linear search
	• Binary search
	
	Use logical reasoning and test data to evaluate an algorithm's
	• Fitness for purpose
	• Efficiency
	  ○ Number of compares
	  ○ Number of passes through a loop
	  ○ Use of memory			

Truth Tables	Apply logical operators in truth tables with up to three inputs to solve problems. • AND • OR • NOT			

GCSE Computer Science

Review of Learning

Paper 1 Principals of Computer Science

		Self Assessment		
Topic	Key knowledge/skills			
Topic 2 Data Binary	Use binary to represent data • Numbers • Text • Sound • Graphics • Program instructions			
	How computers represent and manipulate • Unsigned integers • Signed integers • Two's complement			
	Convert between denary and 8-bit binary numbers • 0 to 255, • 128 to +127			
	Use of binary to • Add together two positive binary patterns • Apply logical and arithmetic binary shifts • Overflow			
	Hexadecimal • Use • Convert between hexadecimal and binary			
	How computers encode characters using 7-bit ASCII			
	How bitmap images are represented in binary • Pixels • Resolution • Colour depth			
	How analogue sound is represented in binary • Amplitude • Sample rate • Bit depth • Sample interval			
	Limitations of binary representation of data when constrained by the number of available bits.			
	Data storage • Bit • Nibble • Byte • Kibibyte • Mebibyte • Gibibyte • Tebibyte • Calculate file sizes and data capacity requirements			
Data Representation	Data compression • Lossless • Lossy			

GCSE Computer Science

Review of Learning

Paper 1 Principals of Computer Science

		Self Assessment		
Topic	Key knowledge/skills			

Topic 3 Computers Hardware	Von Neumann architecture
	• Main memory (RAM)
	• CPU
	  ○ Control unit
	  ○ Arithmetic logic unit
	  ○ Registers
	• Fetch-Decode-Execute Cycle
	  ○ Clock
	  ○ Address bus
	  ○ Data bus
	  ○ Control bus			

	Secondary storage • Magnetic • Optical • Solid state			
	Embedded systems			
	Operating system • File management • Process management • Peripheral management • User management			
	Utility software • File repair • Backup • Data compression • Disk defragmentation • Anti-malware			
	Robust software and methods of identifying vulnerabilities • Audit trails • Code reviews			
	• Low-level • High-level programming languages			
	Translates high-level code into Machine code • Interpreter • Compilers			
Software	Operating system • File management • Process management • Peripheral management • User management			
	Utility software • File repair • Backup • Data compression • Disk defragmentation • Anti-malware			
	Robust software and methods of identifying vulnerabilities • Audit trails • Code reviews			
Programming Languages	• Low-level • High-level programming languages			
	Translates high-level code into Machine code • Interpreter • Compilers			

GCSE Computer Science

Review of Learning

Paper 1 Principals of Computer Science

		Self Assessment		
Topic	Key knowledge/skills			
Topic 4 Networks	Types of Networks • LAN • WAN			
	Network Topologies • Bus • Star • Mesh			
	understand how the internet is structured (IP addressing, routers)			

	Wired and wireless Connectivity
	• Performance
	  ○ Speed
	  ○ Range
	  ○ Latency
	  ○ Bandwidth			

	Network speeds
	• Bits per second
	  ○ Kilobit
	  ○ Megabit
	  ○ Gigabit
	• File size
	• Transmission rate
	• Time			

	Network protocols • Ethernet • Wi-Fi • TCP/IP • HTTP • HTTPS • FTP			
	Email protocols • POP3 • SMTP • IMAP			

	Data Transmission
	• 4-layer Model
	  ○ Application
	  ○ Transport
	  ○ Internet
	  ○ Link
	• TCP/IP model			

	Network vulnerabilities • Penetration testing • Ethical hacking Methods of protecting networks • Access control • Physical security • Firewalls			

GCSE Computer Science

Review of Learning

Paper 1 Principals of Computer Science

		Self Assessment		
Topic	Key knowledge/skills			
Topic 5 Issues and Impact	Environmental issues • Energy consumption • Manufacture • Replacement cycle • Disposal			
	Collection and use of personal data • Privacy • Ownership • Consent • Misuse • Data protection			
	Use of • Artificial intelligence • Machine learning • Robotics ○ Accountability ○ Safety ○ Algorithmic bias ○ Legal liability			
	Intellectual property protection for computer systems and software • Copyright • Patents • Trademarks • Licencing			
	Threats to digital systems • Malware ○ Viruses ○ Worms ○ Trojans ○ Ransomware ○ Key loggers • Hackers ○ Unpatched software ○ Out-of-date anti-malware • Social engineering			
	Protecting digital systems and data • Anti-malware • Encryption • acceptable use policies • Backups and Recovery procedures			

GCSE Computer Science

Review of Learning

Paper 2 Application of Computational Thinking

		Self Assessment		
Topic	Key knowledge/skills			
Topic 6 Problem Solving with Programming	Solving Problems using • Decomposition • Abstraction			
	Read, Write and Analyse and refine High-Level Programming languages			
	Convert algorithms Flowcharts Pseudocode			
	Programming layout techniques • Indentation • Comments • Meaningful identifiers • White space			
	Identify, locate and correct program errors • Logic • Syntax • Runtime			
	Logical reasoning and test data to evaluate a programs's fitness for purpose and efficiency. • Number of Compares • Number of passes through a loop • Use of memory			
	Structural components of programs Constant Variables Initialisation and assignment statements command sequences Selection Repetition Iteration data structures Subprograms Parameters input/output			
	Write programs that make appropriate use of Sequencing Selection Repetition (count-controlled, condition-controlled) iteration (over every item in a data structure)			
	Write programs that make appropriate use of primitive data types Integer Real Boolean Char one-and two-dimensional structured data types String Array Record			

GCSE Computer Science

Review of Learning

Paper 2 Application of Computational Thinking

		Self Assessment		
Topic	Key knowledge/skills			

Topic 6 Problem Solving with Programming	Write programs that make appropriate use of
	• Variables
	• Constants
	• String Manipulation
	  ○ Length
	  ○ Position
	  ○ Substrings
	  ○ Case conversion			

	Write programs that
	• Accept and respond appropriately to user input
	• Read from and write to comma separated value text fields
	• Implement validation
	  ○ length check
	  ○ Presence check
	  ○ Range check
	  ○ Pattern check
	• Implement authentication
	  ○ ID and password
	  ○ Lookup			

	Write programs that use arithmetic operators • Addition • Subtraction • Division • Multiplication • Modulus • Integer division • Exponentiation			
	Write programs that use relational operators • Equal to • Less than • Greater than • Not equal to • Less than or equal to • Greater than or equal to			
	Write programs that use logical operators • AND • OR • NOT			

	Write programs that use
	• Pre-existing Subprograms
	  ○ built-in
	  ○ Library
	• User-devised subprograms
	  ○ Procedures
	  ○ Functions			

	Write functions that may or may not take parameters but • Must return values, and procedures • Do not return values			
	Write programs that make appropriate use of • Global • Local variables			