Aylsham High School Y9 Outcomes			
Biology			
B1 Cells and Body Systems	B2 Respiration	B3 Genetics	B4 Ecosystems
☐ Describe how glucose diffuses across the small intestine "membrane?" ☐ Describe how the small intestine is adapted to allow efficient diffusion of nutrients across its "membrane?" ☐ State the content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed ☐ Describe the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases ☐ Name some examples of lifestyle diseases including CVD, alcohol, smoking, diabetes and obesity ☐ Describe the cause and effects of the following lifestyle diseases: CVD, alcohol, smoking, diabetes and obesity ☐ Use of BMI and waist: hip ratios to measure obesity ☐ Name the three different types of microbes ☐ Observe some examples of microbes under a microscope,	☐ Describe the function of the heart ☐ Carry out a heart dissection ☐ Describe the features of the heart and its relation to its function (valves, thicker muscular wall on left side, septum) ☐ Investigate the effects of exercise on heart rate/breathing rate ☐ Explain the effects of exercise on heart rate and breathing rate (possibly 2 lessons) ☐ Define respiration ☐ State the word equation for aerobic respiration and state where the reactants come from ☐ Identify cell organelles and identify where respiration takes place in a cell ☐ Describe the difference between respiration and breathing ☐ Describe what is meant by diffusion ☐ Describe how gases are diffused across the alveoli into/out of the blood ☐ Describe how alveoli are adapted to allow efficient	☐ Describe the structure of DNA (as 2 strands coiled up to form a double helix; with complimentary base pairs ATGC that are held together by hydrogen bonds) ☐ Describe the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model ☐ Describe and investigate how to extract DNA from fruit or vegetable ☐ Calculate total magnification of microscope ☐ Demonstrate an understanding of number, size and scale including ability to estimate sizes of microscopic and larger objects ☐ Define chromosomes ☐ Define genes allele dominant recessive, phenotype and genotype ☐ Describe what causes variation within species (environmental and inherited variation) ☐ State that the variation between individuals within a species as being continuous or discontinuous, to include	☐ Describe the importance of plant reproduction through insect pollination in human food security ☐ Describe how organisms affect, and are affected by, their environment, including the accumulation of toxic materials ☐ Explain why preserving biodiversity is important ☐ Describe the use of gene banks to preserve hereditary material. ☐ State what soil is made of ☐ Describe what happens during decomposition (in terms of the role of bacteria/fungi and detritivores) and the conditions which effect the rate of decomposition ☐ Explain ways in which decay can be prevented ☐ Calculate the rate of decomposition ☐ Describe how carbon is recycled through the biosphere ☐ Explain how changes in an ecosystem can lead to endangerment and extinction ☐ Describe methods of conservation that can be used to

measure the size and calculate how big it would be in real life - Describe the characteristics of each different type of microbe (virus, bacteria, fungi) - For the diseases stated below, describe what microbe causes them, their basic symptoms and how they are transmitted - (some nice examples) - Describe physical and chemical barriers of the human body and include mucus, cilia, skin, lysozymes in tears and hydrochloric acid in stomach - Define pathogen, antigen, antibody, white blood cell - Describe the function of the white blood cell - Explain the role of the immune system in defence against disease including the terms listed above - Describe the effects of recreational drugs (including substance abuse) on behaviour, health and life processes	diffusion of gases across their "membrane?"	measurement and graphical representation of variation - Use a Punnett square to predict probability of inherited variation and diseases - Describe how sex of offspring is determined at fertilisation using a Punnett square - Describe the importance of mitosis for growth and repair - Describe the use of mitosis for asexual reproduction - Describe the importance of meiosis for the production of gamete cells and it resulting in genetic variation - Describe Darwin's theory of evolution by natural selection, including the result of some species becoming extinct due to poor adaptation to new environment	ensure the survival of organisms and habitats - Describe how deforestation can affect biodiversity - Describe how reforestation can affect biodiversity

Aylsham High School Y9 Outcomes				
Chemistry				
C1 Atoms and the periodic table	C2 Particle Theory	C3 Chemical Reactions	C4 Earth Sciences	C5 Metals
☐ Describe the relationship between the group number and the number of bonds an element can form ☐ Use electronic configuration to predict and explain the reactivity of elements in the periodic table ☐ Investigate the reactivity of the group 1 metals ☐ Explain why reactivity of group 1 metals increases as you go down the group, use knowledge of electron arrangement, shielding and forces of attraction between the nucleus and outer electron ☐ Using knowledge of electronic arrangement, explain why noble gases do not react (less than one) ☐ Explain how an ion is formed	☐ Describe what happens to particles during a state chance, in particular what happens to the forces of attraction between particles ☐ Explain what is happening in the changes of state for the increase/decrease of salol's temperature ☐ Describe how energy is stored in materials as their temperature increases in terms of particle movement ☐ Predict the state of substances using melting and boiling points at a given temperature	☐ Define ion ☐ State what ions are found in acids and alkalis ☐ Explain what makes an acid more acidic (in terms of ion concentration) ☐ Carry out a titration reaction ☐ State what is meant by rate for a reaction ☐ State how the rate of a chemical reaction can be affected by catalysts, temperature, concentration and surface area ☐ Investigate the effect of a catalyst on the decomposition of hydrogen peroxide ☐ Investigate how the rate of a chemical reaction can be affected by the temperature of HCl reacting with Mg ☐ Investigate how the rate of a chemical reaction can be affected by concentration of potassium iodide in the iodine clock reaction ☐ Investigate how the rate of a chemical reaction can be affected by surface area of	☐ Explain how rocks change into different types in the rock cycle, identify the different types of rock in the rock cycle (possibly 2 lessons) ☐ Describe and explain how carbon dioxide, methane and water vapour causes the greenhouse effect ☐ Evaluate data to investigate the correlation between carbon dioxide concentration and temperature change ☐ Describe the effects of climate change	☐ State the general word equation for metal carbonates + acids ☐ Investigate the reaction of metal carbonates and acid; suggest the name of the salts produced ☐ Describe the test for carbon dioxide using limewater ☐ Explain what is meant by thermal decomposition ☐ Carry out a thermal decomposition reaction ☐ Write word and balanced symbol equations; use state symbols ☐ Identify elements/compounds which have been reduced/oxidised in a reaction ☐ Explain what reduction and oxidation is in terms of loss or gain of oxygen

□ Identify the ions formed using the group number on the periodic table for any elements in groups 1,2,3,5,6 and 7 (less than one) □ Explain how a metal and non-metal form compounds which are neutral overall □ Use the knowledge of a neutral compound to form metal and non-metal compounds □ Recall Avagadro's constant □ Explain how Avagadro's constant is used to predict the mass of reactants or products in a reaction □ Use the equation mass = moles ÷ relative formula mass to carry out simple calculations		different lengths of magnesium ribbon and magnesium powder □ Describe and explain the collision theory in terms of particles colliding with enough energy for a reaction to take place □ Explain how the rate of a chemical reaction can be affected by temperature, concentration and surface area, using collision theory □ Draw a graph using the results of one of the rate of reaction investigations, calculate the gradient of the graph to explain what the effects of the rate of reaction		□ Describe how materials found in ores are a limited resource and the importance of recycling metals □ Describe properties of ceramic, polymers and composites and how they are used

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Physics					
P1 Forces	P2 Motion	P3 Energy	P4 Waves	P5 Electricity and magnetism	P6 Astronomy
☐ Use free body diagrams to represent stationary, constant speed, acceleration and deceleration; relate to balanced and unbalanced forces ☐ Analyse d-t graphs to find the speed of an object ☐ Use gradients on a d-t graph to describe/compare the motion of objects	☐ Describe a moment as a force around a pivot ☐ Recall the 2 factors which effect the size of the moment- the force and the distance from the pivot ☐ Calculate moments using moment = force x distance ☐ Identify balanced and unbalanced turning effects ☐ Investigate the behaviour of moments	☐ Analyse the changes involved in the ways energy is stored or changed when an object's GPE changes, an object collides with another object, an object is accelerated, and object decelerates and when a kettle is used to boil water ☐ Describe the difference between elastic and inelastic distortion ☐ Investigate the relationship between force exerted on a spring and the extension of a spring ☐ Apply knowledge of forces (being balanced/unbalanced and term resultant force) to explain the motion of an object suspended on a spring ☐ Explain how work is done ☐ Calculate the work done when applying forces to a spring	☐ Describe light from a source is collected by the eye and how the eye transfers chemical signals in the rods and cones/receptor cells into electrical signals which travel the optic nerve to the brain. This forms an image in the brain, enabling us to see. ☐ Describe how cameras collect light to form an image on a sensor which is converted into electrical signals to form an image ☐ Investigate and describe how white light is split by prisms	☐ Investigate and describe differences in resistance between conducting and insulating components ☐ Describe what causes resistance ☐ Investigate and describe the effects of increasing resistance on current and potential difference in a circuit ☐ Recall the equation for resistance ☐ Calculate resistance, current and potential difference ☐ Describe and explain the effects of resistance	☐ State the age of our sun ☐ Describe how a solar system is formed ☐ Describe what could happen to our sun and our solar system in the future ☐ State the approximate age of our universe ☐ Describe (in very basic terms) the big bang theory ☐ Describe possible futures of the universe (big crunch, big chill, big rip)

			Recall the colours and the different frequencies of light Describe white light as a mixture of all three primary colours State the effects of absorption on colour Describe how the 7 colours of light are absorbed or reflected to give an object its colour Explain the effects of diffuse scattering and specular reflection at a surface- explain how different materials absorb and reflect light differently. A material must be reflecting light for us to see it, but if you	(thermal energy) Name devices that use resistance to generate thermal energy in useful ways Describe main energy sources used to generate electricity including their advantages and disadvantages Explain how electricity is generated in a dynamo and a large-scale generator Investigate and compare the power ratings of different appliances Compare amounts of energy transferred (kWh)	

			cannot see your reflection in the material, it must be matt and it scatters the light it reflects. Whereas when the material is smooth it reflects light in a linear fashion which enables you to see a reflection in it.	Calculate domestic fuel bills, fuel uses and costs	