Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 9 Lesson 1 What are acids and alkalis/bases?	Acid Alkali Base pH scale Indicator Neutral Corrosive	Chemical reactions	What colour does litmus paper turn in an acid? What is the pH range of an acid? What is the pH of a neutral substance?	1. Describe the use of hazard symbols on containers 2. Recall that acids in solution are sources of hydrogen ions and alkalis in solution are sources of hydroxide ions. 3. Recall that a neutral solution has a pH of 7 and that acidic solutions have lower pH values and alkaline solutions higher pH values. 4. Recall the effect of acids and alkalis on indicators, including litmus, methyl orange and phenolphthalein. 5. Describe that the higher the concentration of hydrogen ions in an acidic solution, the lower the pH; and the higher the concentration of hydroxide	**Which of the following best describes acids and alkalis (bases)?** 1. Acids have a pH above 7 and alkalis have a pH below 7 2. Acids produce hydrogen ions (H^+) in water; alkalis produce hydroxide ions (OH^-) 3. Bases are always solids and acids are always liquids 4. Alkalis neutralise acids by releasing hydrogen ions	Describe how you would use indicators to identify the pH of 3 different unknown substances. Stretch Explain how the concentration of hydrogen ions (H^+) affects the pH of a solution. What happens to the pH if the concentration of H^+ increases? What happens if the concentration of OH^- increases?

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
				ions in an alkaline solution, the higher the pH. (H)		
Week 9 Lesson 2 What makes an acid? (HT only)	Hydrogen ion (H^+) Proton donor Aqueous Strong acid Weak acid Dissociation	Chemical reactions	What ion do acids release in water? Give an example of a common acid used in the lab. What is the opposite of an acid?	1. Recall that as hydrogen ion concentration in a solution increases by a factor of 10, the pH of the solution decreases by 1. 2. Explain the terms dilute and concentrated, with respect to amount of substances in solution. 3. Explain the terms weak and strong acids, with respect to the degree of dissociation into ions.	**Which statement best describes an acid?** 1. It has a pH above 7 and produces OH^- ions 2. It tastes sweet and neutralises alkalis 3. It releases H^+ ions in water and has a pH below 7 4. It is always solid and used in cooking	What would happen to the equilibrium if some of the hydrogen ions in ethanoic acid reacted?
Week 9 Lesson RC1 (Groups 4,5,6 only) **Responsive Curriculum** Cells and control	Mitosis Interphase Prophase Metaphase Anaphase Telophase Cytokinesis Neurone	**Cells and Systems**	Cells, growth, stem cells	Describe the stages of mitosis Describe and explain the uses of stem cells Describe a neurone Describe the reflex arc		Complete appropriate exam questions
Week 9 Lesson 3 How do acids and bases react?	Neutralisation Salt	Chemical reactions	What are the products of a reaction between	1. Recall that a base is any substance that reacts with an acid to form salt and	**What is the result of an acid-base reaction?**	Use the diagram to help you write a full method telling someone how to make a soluble salt. Your

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
	Water Base Exothermic		an acid and a base? What is the name of this type of reaction? What is a salt?	water only. 2. Explain the general reactions of aqueous solutions of acids with metal oxides to produce salts 3. Describe a neutralisation reaction as a reaction between an acid and a base. 4. Write word equations/ Write balanced chemical equations, including the use of the state symbols (s), (l), (g) and (aq)	1. Acid + base → water only 2. Acid + base → salt and water 3. Acid + base → gas and metal 4. Acid + base → acid rain	reactants are tin oxide and hydrochloric acid.
Week 9 Lesson 4 Core practical: Preparing Copper Sulfate (2 lessons)	Filtration Crystallisation Evaporation Excess reactant Soluble salt	Chemical reactions	What two substances are used to make copper sulfate crystals? Why is excess copper oxide added? What do you do after filtering the solution?	1. Investigate the preparation of pure, dry hydrated copper sulfate crystals starting from copper oxide including the use of a water bath. 2. Explain why, if soluble salts are prepared from an acid and an insoluble reactant: a) excess of the reactant is added b) the excess reactant is removed c) the solution remaining is only salt and water.		Evaluation

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 10 Lesson 1 Core practical: Preparing Copper Sulfate (2 lessons)	Filtration Crystallisation Evaporation Excess reactant Soluble salt	Chemical reactions	What two substances are used to make copper sulfate crystals? Why is excess copper oxide added? What do you do after filtering the solution?	1. Investigate the preparation of pure, dry hydrated copper sulfate crystals starting from copper oxide including the use of a water bath. 2. Explain why, if soluble salts are prepared from an acid and an insoluble reactant: a) excess of the reactant is added b) the excess reactant is removed c) the solution remaining is only salt and water.	**Which method is used to make pure copper sulfate crystals?** 1. Mix copper with sulfuric acid and filter 2. React copper oxide with sulfuric acid, filter, and evaporate 3. Heat copper sulfate and add water 4. Mix copper carbonate with hydrochloric acid	Describe the method for preparing pure, dry hydrated copper sulfate crystals from copper oxide and sulfuric acid. Explain why excess copper oxide is used in the reaction and how the excess is removed. Describe why the solution after removal of excess reactant contains only copper sulfate and water, and how this ensures the purity of the crystals formed.
Week 10 Lesson 2 Core practical: Reacting an acid and base	Reaction Reactants Products Neutralisation pH	Chemical reactions	What substances are made when acid and bases react? What is neutralisation?	1. Investigate the reaction of a base and an acid. 2. Plot a titration graph.		Describe the method for preparing pure, dry hydrated copper sulfate crystals from copper oxide and sulfuric acid. Explain why excess copper oxide is used in the reaction and how the excess is removed. Describe why the solution after removal of excess reactant contains only copper sulfate and water, and how this ensures the purity of the crystals formed.

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 10 Lesson RC2 Responsive curriculum lesson TBD						
Week 10 Lesson 3 What happens to the particles during neutralisation?	Hydrogen ion (H^+) Hydroxide ion (OH^-) Water molecule Ionic equation Neutralisation	Chemical reactions	What ion from the acid reacts with the hydroxide ion? What is formed when these ions react? Why is the solution neutral at the end?	1. Explain an acid-alkali neutralisation as a reaction in which hydrogen ions (H+) from the acid react with hydroxide ions (OH–) from the alkali to form water. 2. Explain why, if soluble salts are prepared from an acid and a soluble reactant: a) titration must be used b) the acid and the soluble reactant are then mixed in the correct proportions c) the solution remaining, after reaction, is only salt and water. 3. Describe how to carry out simple acid-alkali titrations, using burette, pipette and a suitable indicator, to prepare a pure, dry salt.	**During neutralisation, what happens to the ions?** 1. H^+ from the acid reacts with OH^- from the alkali to form water 2. OH^- ions are destroyed by heat 3. H^+ ions become salt 4. Water breaks down into ions	Explain what happens to the particles during neutralisation, describing how hydrogen ions (H^+) from an acid react with hydroxide ions (OH^-) from an alkali to form water. Explain why titration is necessary when preparing soluble salts from an acid and a soluble base, including how the acid and alkali must be mixed in the correct proportions to ensure the solution contains only salt and water after the reaction. Describe how to carry out a simple acid-alkali titration using a burette, pipette, and suitable indicator to prepare a pure, dry salt.
Week 10 Lesson 4 How do acids and metals and carbonates react?	Carbonate Salt Hydrogen gas Carbon dioxide	Chemical reactions	What gas is produced when acids react with metals? What gas is	1. Explain the general reactions of aqueous solutions of acids with metals and metal carbonates to produce	**Which reaction produces a salt and hydrogen gas?** 1. Acid + carbonate 2. Acid + metal	Explain how acids react with metals and metal carbonates in aqueous solutions to produce salts. Describe the chemical tests used to identify hydrogen gas and

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
	Effervescence		produced when acids react with carbonates? How can you test for carbon dioxide?	salts. 2. Describe the chemical test for: a) hydrogen b) carbon dioxide (using limewater) 3. Write balanced ionic equations (H)	3. Acid + alkali 4. Acid + water	carbon dioxide gas. Write balanced ionic equations for these reactions, showing the key ions involved.
Week 11 Lesson 1 Which salts are soluble?	Solubility Precipitate Insoluble Soluble Nitrate Sulfate Precipitation reaction	Chemical reactions	Are all nitrates soluble? Are most carbonates soluble or insoluble? What is a precipitate?	1. Recall the general rules which describe the solubility of common types of substances in water. 2. Predict, using solubility rules, whether or not a precipitate will be formed when named solutions are mixed together, naming the precipitate if any.	**Which of the following salts is generally soluble in water?** 1. Lead sulfate 2. Sodium chloride 3. Silver chloride 4. Barium sulfate	Write down the general solubility rules for common ionic substances in water. Include rules for: Nitrates Chlorides Sulfates Carbonates Hydroxides Use your solubility rules to predict whether a precipitate will form in each of the following reactions. If a precipitate forms: Name the precipitate Explain why it is insoluble A. Sodium sulfate + Barium chloride B. Potassium nitrate + Silver chloride

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
						C. Lead(II) nitrate + Potassium iodide
Week 11 Lesson 2 Acids Practise	Solubility Precipitate Insoluble Soluble Nitrate Sulfate Precipitation reaction	Chemical reactions	What are acids? What is the pH scale? What are the best indicators?	Recall content and practise exam questions.	**Which of the following reactions is a neutralisation?** 1. Acid + metal → salt + hydrogen 2. Acid + alkali → salt + water 3. Acid + carbonate → salt + carbon dioxide 4. Acid + water → dilute acid	Practise exam questions H + F
Week 11 Lesson RC2 Responsive curriculum lesson TBD						
Week 11 Lesson 3 What is DNA?	Chromosome Double helix Genetic code Nucleotide	Inheritance and Evolution Cells and Systems	Cells contain a nucleus where genetic material is stored Living organisms inherit traits from their parents	1. Recall where DNA is found in a eukaryotic cell. 2. Names the bases in DNA. 3. Recall the pairing of bases in DNA. 4. Describe how DNA strands are held together. 5. Describe the overall structure of DNA.	**What is the role of DNA in cells?** 1. It stores energy 2. It controls cell movement 3. It carries genetic instructions for traits 4. It digests proteins	Describe and explain the structure of DNA. (6 marks)

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 11 Lesson 4 Investigation: How do we extract DNA?	Cell Membrane Precipitate Filtration	Inheritance and Evolution Cells and Systems	Cells are made up of membranes that can be broken down DNA is found inside the nucleus of cells	1. Describe what DNA is and where it's found in cells 2. Follow a method to break open cells and release DNA 3. Identify the role of each ingredient in the extraction process 4. Observe and describe the appearance of extracted DNA 5. Explain why fruit is a good source for DNA extraction	**Which step helps release DNA from cells?** 1. Adding salt and detergent 2. Heating the sample 3. Using acid 4. Filtering the solution	Create a DNA Extraction Guide Imagine you're writing a step-by-step guide for someone who has never extracted DNA before. Help someone understand not just how to do it, but why each step matters.
Week 12 Lesson 1 Investigation: How do we extract DNA?	Cell Membrane Precipitate Filtration	Inheritance and Evolution Cells and Systems	Cells are made up of membranes that can be broken down DNA is found inside the nucleus of cells	1. Describe what DNA is and where it's found in cells 2. Follow a method to break open cells and release DNA 3. Identify the role of each ingredient in the extraction process 4. Observe and describe the appearance of extracted DNA 5. Explain why fruit is a good source for DNA extraction		Create a DNA Extraction Guide Imagine you're writing a step-by-step guide for someone who has never extracted DNA before. Help someone understand not just how to do it, but why each step matters.
Week 12 Lesson 2 What is Mitosis? (REVIEW)	Cell division Diploid Growth Repair	Inheritance and Evolution	Cells reproduce to make new cells Chromosomes	1. List the names and order the stages of the cell cycle including mitosis. 2. Describe what happens in	**What is the purpose of mitosis?** 1. To produce sex cells	A scientist observes a group of cells dividing rapidly and forming a mass. The cells show no signs of differentiation and ignore signals

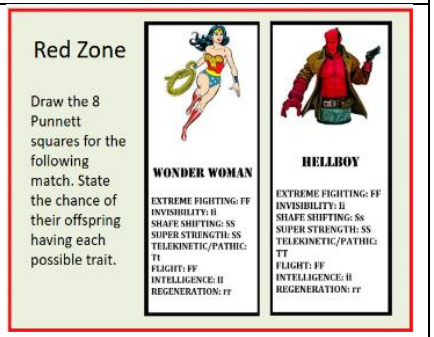
Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
		Cells and Systems	carry genetic information	each stage of the cell cycle, including mitosis. 3. Describe why mitosis is important for an organisms (growth, repair, asexual reproduction). 4. Explain why organisms may rely on asexual reproduction. 5. Describe how mitosis produces genetically identical, diploid cells. 6. Describe how cancers grow.	2. To reduce chromosome number 3. To create identical body cells 4. To mix genetic material	to stop dividing. Your Task: Write a short explanation (150–200 words) answering: - What part of the cell cycle is malfunctioning? - How does this relate to cancer? - Why are these cells dangerous to the organism? - How is this different from normal mitosis?
Week 12 Lesson RC3 Responsive curriculum lesson TBD						
Week 12 Lesson 3 What is Meiosis?	Gametes Haploid Variation	Inheritance and Evolution Cells and Systems	Reproduction involves the joining of male and female gametes Gametes contain half the genetic material of normal cells	1. Recall that gametes are produced by meiosis. 2. Describe what happens in meiosis (without details of the stages). 3. Explain why haploid gametes are needed for sexual reproduction. 4. Recall what an organism's genome is. 5. Describe where genes are found.	**What is the result of meiosis?** 1. Two identical cells 2. Four genetically different gametes 3. One large cell 4. Cells with double chromosomes	Compare meiosis and mitosis. (6 marks)

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
				6. Recall the function of genes.		
Week 12 Lesson 4 Modelling Meiosis.	Chromosome Crossing over Model	Inheritance and Evolution Cells and Systems	Chromosomes come in pairs in body cells Meiosis creates variation in offspring	1. Describe how models are used in science to help others understand tricky concepts 2. Build a model of meiosis 3. Present the model of meiosis to the class (Oracy)	**Which feature is unique to meiosis compared to mitosis?** 1. DNA replication 2. Chromosome pairing and crossing over 3. Cell division 4. Cytoplasm splitting	Meiosis presentations
Week 13 Lesson 1 How do alleles affect genotype and phenotype?	Allele Genotype Phenotype Dominant Heterozygous Homozygous	Inheritance and Evolution	Genes are made of DNA and control traits Traits can be inherited in different forms (e.g. eye colour)	1. Describe the difference between a gene and an allele. 2. Explain the effects of alleles on inherited characteristics. 3. Describe the relationship between a genotype and a phenotype. 4. Identify homozygous and heterozygous genotypes. 5. Use genetic diagrams to work out possible combinations of alleles in the offspring of parents. 6. Explain why the effects of some alleles in an	**Which statement is true about alleles?** 1. Alleles only affect physical traits 2. Genotype is the physical appearance 3. Different alleles can produce different phenotypes 4. All alleles are dominant	

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
				organism's genotype are not seen in its phenotype.		
Week 13 Lesson 2 How are genes inherited?	Inheritance Recessive Punnett square Offspring	Inheritance and Evolution	Offspring receive half their genes from each parent Some traits are dominant, others are recessive	1. Use Punnett squares to work out possible combinations of alleles in the offspring of parents. 2. Interpret family pedigree charts to work out possible inherited genotypes and phenotypes. 3. Describe how sex is determined in humans. 4. Calculate ratios of phenotypes (controlled by alleles of a single gene) when organisms are crossed. 5. Calculate probabilities of certain phenotypes occurring when organisms are crossed.	**How do offspring inherit traits from parents?** 1. Through learned behaviour 2. By receiving identical genes from both parents 3. Through random mutations 4. By inheriting alleles from each parent	Stick in your sheet about family pedigree charts and answer the following questions: Which letter shows a recessive allele? Why doesn't Carolyne have PKU? What is Brian's genotype? What is Richard's phenotype? What percentage of the first generation offspring have PKU? Calculate the probability that Sam has PKU.
Week 13 Lesson RC3 Responsive curriculum lesson TBD						
Week 13 Lesson 3 What happens when genes mutate?	Mutation DNA Protein Trait	Inheritance and Evolution	DNA controls how proteins are made Changes in DNA	1. Give examples of characteristics controlled by multiple genes. 2. Define the term mutation.	**What can result from a gene mutation?** 1. No change at all	In 2003, the first complete human genome was sequenced. The genomes of different people have small changes in the sequence of

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
			can affect how the body works	3. Describe some potential applications of mapping human genomes. 4. Explain how a mutation can cause variation (limited to changes in the protein formed, which can affect processes in which that protein is needed). 5. Give examples of mutations in human genes that affect the phenotype, and examples of those that have little or no obvious effect. 6. Explain why many mutations have no effect on the phenotype.	2. A change in protein structure and function 3. A change in blood type 4. A change in chromosome number	the DNA bases. Describe how these changes in DNA sequence can affect the individuals and how sequencing a person's genome could influence their medical treatment. (6 marks)
Week 13 Lesson 4 What are the types of variation and how do we identify them?	Continuous Discontinuous Environment Genetics	Inheritance and Evolution	Individuals of the same species can look different Variation can be caused by genes or the environment	1. Distinguish between genetic variation and environmental variation. 2. Distinguish between continuous and discontinuous variation. 3. Describe the cause of genetic variation (mutation and sexual reproduction). 4. Describe the causes of environmental variation (differences in	**Which of the following is an example of continuous variation?** 1. Blood type 2. Eye colour 3. Height 4. Tongue rolling	Describe and explain which type of variation each of the tables/charts are showing. For tables C and H, describe how you would present each data set in a chart. Explain your choices

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
				environmental, acquired characteristics). 5. Analyse the contribution of genes and environment to the variation in a characteristic.		
Week 14 Lesson 1 How do we know humans evolved? L1	Fossil Ancestor Adaptation Evidence	Inheritance and Evolution	Fossils show changes in organisms over time Humans share features with other primates	1. Define 'evolution'. 2. Recognise binomial species names. 3. Explain how evidence from fossils and stone tools supports current ideas about human evolution. 4. Recall how stone tools are dated from their environment. 5. Describe how stone tools created by human-like species have developed over time. 6. Describe the fossil evidence for human-like species that lived 4.4, 3.2 and 1.6 million years ago.	**Which evidence supports human evolution?** 1. Fossil records and DNA comparisons 2. Climate change 3. Ancient tools 4. Migration patterns	Figure 8 shows three stone tools found in different layers of rock. Explain how information from figure 8 provides evidence for human evolution. (6 marks)
Week 14 Lesson 2 How do we know humans evolved? L2	Fossil Ancestor Adaptation Evidence	Inheritance and Evolution	Fossils show changes in organisms over time Humans share	1. Define 'evolution'. 2. Recognise binomial species names. 3. Explain how evidence from fossils and stone tools supports current ideas	**Which feature shows change over time in human ancestors?** 1. Eye colour 2. Brain size and posture 3. Clothing	Figure 8 shows three stone tools found in different layers of rock. Explain how information from figure 8 provides evidence for human evolution. (6 marks)

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
			features with other primates	about human evolution. 4. Recall how stone tools are dated from their environment. 5. Describe how stone tools created by human-like species have developed over time. 6. Describe the fossil evidence for human-like species that lived 4.4, 3.2 and 1.6 million years ago.	4. Diet	
Week 14 Lesson RC4 Responsive Curriculum TBD						
Week 14 Lesson 3 What is Darwin's Theory of Evolution?	Natural selection Survival Competition Variation	Inheritance and Evolution Ecosystems and Environmental Interactions	Organisms compete to survive and reproduce Traits that help survival can be passed on	1. Recall the cause of genetic variation. 2. Describe how adaptations allow organisms to survive. 3. Explain how natural selection allows some members of a species to survive better than others when conditions change. 4. Explain how natural selection can lead to the evolution of a new species. 5. Explain how the	**What is the key idea in Darwin's theory?** 1. All organisms were created at once 2. Species change due to acquired traits 3. Natural selection leads to evolution 4. Evolution happens randomly	Woolly mammoths and elephants evolved from the same animal, they share a common ancestor. Scientists think that an area where this ancestor lived started getting colder. Explain how this would bring about different species. (4 marks)

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
				development of resistance in organisms supports Darwin's theory.		
Week 14 Lesson 4 How do we classify organisms?	Kingdom Species Taxonomy Characteristics	Inheritance and Evolution Ecosystems and Environmental Interactions	Living things can be grouped by similarities Species are defined by their ability to reproduce	1. Describe how organisms are classified into smaller and smaller groups (based on their characteristics). 2. Identify genus and species from a binomial name. 3. Identify an organism as a member of one of the five kingdoms. 4. Describe what genetic analysis is. 5. Explain why biologists often now classify organisms into three domains.	**What is the basis for classifying organisms?** 1. Their habitat 2. Their diet 3. Their physical and genetic characteristics 4. Their size	You've discovered a new organism and need to classify it correctly. Your task is to write a short report explaining how scientists would classify this organism step by step — starting from the five kingdoms and narrowing down to its genus and species. Include how genetic analysis could help and explain why modern biologists might use the three-domain system instead of just the five kingdoms. Your report should show that you understand how classification works, what binomial names mean, and how genetic evidence can change how we group living things.

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 15 Lesson 1 How did we end up with so many different breeds and varieties of species?	Selective breeding Traits Artificial selection Variation	Inheritance and Evolution Ecosystems and Environmental Interactions	Humans can choose which animals or plants to breed Traits can be passed from parents to offspring	1. Describe why new breeds and varieties are created. 2. Describe what is meant by a 'genetically modified organism'. 3. Describe how selective breeding is carried out. 4. Explain the impact of selective breeding on domesticated plants and animals.	**Which process explains the creation of new breeds?** 1. Natural disasters 2. Selective breeding 3. Mutation 4. Migration	Explain the process of selective breeding and discuss its advantages and disadvantages. (6)
Week 15 Lesson 2 Why do we genetically engineer organisms?	Genetic modification Gene transfer Desired trait Biotechnology	Inheritance and Evolution	Genes control traits in organisms Scientists can change DNA to give new characteristics	1. Describe the main stages of genetic engineering. (H) 2. Recall some uses of selectively bred organisms (in agriculture). 3. Recall some uses of genetically engineered organisms (in agriculture, in medicine). 4. Evaluate the benefits and risks of using selective breeding and genetic engineering to produce new varieties and breeds.	**What is the purpose of genetic engineering?** 1. To reduce biodiversity 2. To create random mutations 3. To give organisms useful traits 4. To remove DNA	Corn is one of the world's most important crop plants. Native Americans grew an early form of corn called teosinte. Modern corn has been developed by selective breeding of teosinte plants. Compare and contrast the use of selective H19breeding and genetic engineering to produce modern varieties of corn. (6)
Week 15 Lesson RC4 Responsive Curriculum TBD						

Holy Family Catholic School – Faculty of Science and Physiology

Science Autumn Half-Term 2 Year 10

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 15 Lesson 3 Genetics Practise	DNA, Genome, Inheritance, Variation	Inheritance and Evolution	Structure of DNA, Inheritance, Mitosis, Meiosis, Stone tools, Human fossil record.	Practise recall and exam questions	**Which of the following shows a dominant-recessive inheritance pattern?** 1. Blood type AB 2. Eye colour from two brown-eyed parents 3. Tongue rolling from one parent who can roll 4. Identical twins with different traits	Practise relevant exam questions