

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 1 Lesson 1						
Week 1 Lesson 2						
Week 1 Lesson 3 Caring for offspring 01 Caring for Offspring	Offspring, Aftercare, Sexual reproduction, Parenting behaviour	Cells and systems & inheritance and evolution	☐ Life cycles (KS2) ☐ Growth and survival (KS2) ☐ Vertebrates/in vertebrates (KS2)	1. Recall ways in which animals care for their offspring 2. Define the term sexual reproduction 3. Recall the names of animals that reproduce sexually 4. Explain the implications of a certain level of animal offspring aftercare in different situations.	An elephant has very few offspring but gives them years of care. Why? A. The offspring are more likely to survive ☒ B. The offspring do not need food C. The parents cannot reproduce again D. The offspring grow by themselves immediately	Some animals, such as sea turtles, produce hundreds of offspring and provide no aftercare. Other animals, such as elephants, produce very few offspring and care for them for many years. Explain why different animals have different levels of offspring aftercare and how this affects the survival of their offspring. (6 marks) Mark Scheme ☐ Offspring aftercare helps young animals survive. ☐ Animals with lots of offspring often provide little or no care. ☐ Many of these offspring die due to predators, lack of food

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
						or disease. ☐ Producing large numbers increases the chance that some survive. ☐ Animals with few offspring usually provide more parental care. ☐ Aftercare provides protection, food and learning opportunities. ☐ A higher proportion of offspring survive to adulthood.
Week 2 Lesson 1 Human Reproduction 02 Human Reproduction	Testes, Sperm, Ovary, Uterus	Cells and systems & inheritance and evolution	☐ Organs (KS2/KS3) ☐ Organ systems (KS3) ☐ Functions of organs (KS2)	1. State the main parts of the male & female reproductive systems 2. Describe the functions of the main parts of the male and female reproductive systems	Which structure produces egg cells? A. Uterus B. Ovary ☒ C. Testes D. Penis	•Write an article called “The Journey of The Sperm”. In it you need to describe where sperm cells are made and how they reach the egg cells.
Week 2 Lesson 2 Genes 04 Genes	Chromosome, Gene, DNA, Nucleus	Cells and systems & inheritance and evolution	☐ Cells (KS3) ☐ Nucleus (KS3) ☐ Inheritance of characteristics (KS2)	1. Recall what chromosomes are made of. 2. Recall the number of pairs of chromosomes in most human cells. 3. Recall where genes are found.	Where are genes found? A. In the cytoplasm B. In chromosomes ☒ C. In the cell membrane D. In blood	Write a paragraph linking together the words nucleus, chromosome, DNA and gene. Stretch: Draw a diagram to go along with it.

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
				4. Recall how genes control characteristics (in terms of containing instructions). 5. Describe the structure of DNA.		
Week 2 Lesson 3 Fertilisation 03 Fertilisation	Gamete, Egg cell, Sperm cell, Zygote	Cells and systems & inheritance and evolution	☐ Specialised cells (KS3) ☐ Cells and nuclei (KS3) ☐ Life cycles (KS2)	1. Define the term gametes 2. Recall the features of egg and sperm cells 3. Describe how gametes fuse to form a zygote.	What is formed when a sperm cell fuses with an egg cell? A. Embryo B. Foetus C. Zygote ☒ D. Chromosome	During ovulation an egg is released. Explain the changes to an egg immediately after a sperm enters it.
Week 3 Lesson 1 Becoming pregnant 04 Genes & Becoming Pregnant	Fertilisation, Embryo, Foetus, Placenta	Cells and systems & inheritance and evolution	☐ Cell division and growth (KS3) ☐ Organ systems (KS3) ☐ Healthy lifestyle (KS2)	1. Describe what happens following the fertilisation of an egg cell including cell division 2. Describe the supply and removal of materials from and to the foetus 3. Describe the effects of some substances that may harm a developing foetus.	Which structure allows exchange of oxygen, nutrients and waste between mother and foetus? A. Uterus B. Placenta ☒ C. Ovary D. Cervix	Describe what happens after fertilisation until a foetus develops, and explain how the foetus obtains the substances it needs for growth. (6 marks) Mark Scheme ☐ Fertilisation occurs when a sperm cell fuses with an egg cell. ☐ A zygote is formed. ☐ The zygote divides repeatedly by cell division. ☐ It develops into an embryo and later a foetus. ☐ The foetus develops in the uterus.

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
						☐ Oxygen and nutrients pass from the mother's blood to the foetus through the placenta. ☐ Waste products, such as carbon dioxide, pass from the foetus to the mother.
Week 3 Lesson 2 Gestation & birth 05 Gestation & Birth	Ultrasound scan, Labour, Birth canal,	Cells and systems & inheritance and evolution	☐ Human life cycle (KS2) ☐ Growth and development (KS2) ☐ Nutrition (KS2)	1. Identify stages of growth from embryo to newborn baby and recall how these stages can be checked. 2. Describe what happens during labour and birth in humans. 3. Explain why breast milk is best for newborn babies.	Why is breast milk considered best for newborn babies? A. It contains antibodies that help protect against disease  B. It makes babies grow instantly C. It contains no nutrients D. It prevents babies from sleeping	Explain what happens during labour and birth, and explain one reason why breast milk is beneficial for newborn babies. (6 marks) Mark Scheme ☐ Labour begins with contractions of the uterus. ☐ The cervix dilates (opens). ☐ The baby moves through the birth canal/vagina. ☐ The baby is delivered. ☐ The placenta is delivered after the baby. ☐ Breast milk contains all the nutrients a baby needs. ☐ Breast milk contains antibodies that help protect the baby from disease.

Holy Family Catholic School – Faculty of Science and Physiology
Science Autumn Term 1 Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 3 Lesson 3 Growing up 06 Growing Up	Puberty, Adolescence, Hormone, Secondary sexual characteristics	Cells and systems & inheritance and evolution	☐ Growth and development (KS2) ☐ Hormones (KS3 introduction) ☐ Reproductive systems (previous lesson)	1. Identify the role of sex hormones in puberty. 2. Describe what happens to parts of the body during puberty and adolescence.	What causes the physical changes seen during puberty? A. Enzymes B. Hormones  C. Chromosomes D. Nutrients	Puberty causes many changes to the body during adolescence. Explain the role of hormones in puberty and describe changes that happen to males and females during this time. (6 marks) Mark Scheme ☐ Hormones are chemical messengers. ☐ Hormones trigger the changes of puberty. ☐ Girls begin ovulation and menstruation. ☐ Breasts develop and hips widen. ☐ Boys begin sperm production. ☐ Voice breaks/deepens and facial hair develops. ☐ Both sexes experience growth spurts and increased body hair.
Week 4 Lesson 1 Menstrual cycle 07 Menstrual Cycle	Menstruation, Ovulation, Menstrual cycle, Period	Cells and systems & inheritance and evolution	☐ Reproduction (previous lessons) ☐ Hormones (Lesson 7)	1. Explain the purpose of the menstrual cycle. 2. Recall the length and stages of the menstrual cycle.	In a typical 28-day menstrual cycle, when does ovulation usually occur? A. Day 1 B. Day 7	Complete the sentence by putting a cross (X) in the box next to your answer. In this menstrual cycle ovulation is most likely to occur on

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
			Human life cycle (KS2)	3. Use knowledge of the menstrual cycle to predict timings.	C. Day 14  D. Day 28	
Week 4 Lesson 2 Plant reproduction 08 Plant Reproduction	flower, pollen, ovule, fertilisation	Cells and systems & inheritance and evolution	How do most plants reproduce? What do the male and female parts of a flower produce?	1. Describe the main features of asexual and sexual reproduction 2. Explain how inherited variation is caused (does not include genes). 3. Explain the difference in outcomes of asexual and sexual reproduction in plants.	Which statement best describes how flowering plants reproduce? A) Seeds are produced after fertilisation of ovules by pollen B) Seeds are produced by photosynthesis in leaves C) Seeds are produced when pollen lands on the petals D) Seeds are produced by roots absorbing water	Compare sexual and asexual reproduction in plants. Explain why some plants use both methods and evaluate the advantages and disadvantages of each in different environments.
Week 4 Lesson 3 Pollination 09 Pollination	pollination, stigma, pollen tube, seed	Cells and systems & inheritance and evolution	What is pollination? What happens during fertilisation in plants?	1. Describe how the structures of a flower are adapted to their functions. 2. Describe how plants avoid self-pollination. 3. Explain why plants try to avoid self-pollination. 4. Explain how some pollen	Which adaptation correctly matches the structure of a flower to its function? A) Brightly coloured petals – attract pollinators B) Stigma covered in wax – prevent pollen attachment	Describe two mechanisms a plant uses to avoid self-pollination and explain why this is important for genetic diversity.

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
				grains are adapted to their functions.	C) Long filament – store nectar for insects D) Ovary exposed – protect seeds from damage	
Week 5 Lesson 1 Seeds 10 Seeds	ovary, fertilised, embryo, seed coat	Cells and systems & inheritance and evolution	What forms inside the ovary after fertilisation? Why is seed dispersal important for plants?	1. Explain the functions of the different parts of a seed. 2. Describe the importance of hybridisation in plant breeding. 3. Explain the production of seedless fruits using hybridisation.	Which process produces seeds in flowering plants? A) Pollination B) Fertilisation C) Germination D) Photosynthesis	Explain the process of fertilisation in plants and how it leads to seed formation. Include the roles of pollen, ovule, and embryo development.
Week 5 Lesson 2 Seed dispersal 11 Seed Dispersal	wind, animals, water, explosion	Inheritance and evolution	What does dispersal mean? How do plants produce seeds?	1. Recall different methods of seed dispersal. 2. Explain the importance of seed dispersal. 3. Evaluate different methods of seed dispersal.	Which of the following is NOT a method of seed dispersal? A) Wind B) Water C) Animals D) Germination	Compare different seed dispersal methods (wind, water, animals, explosion) and explain how each method is adapted to the plant's environment. Consider why would a plant evolve to use more than one dispersal strategy?
Week 5 Lesson 3 Germination 12 Germination	germination, water, temperature, roots	Inheritance and evolution	What conditions are needed for something to grow? What	1. Recall how seeds germinate to produce plants. 2. Describe the life cycle of different types of plants.	Which condition is NOT essential for seed germination? A) Water B) Oxygen C) Light	Explain the conditions required for seed germination and why each is essential. Things to include: What happens inside the seed during germination (water, oxygen and temperature)?

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
			does a growing seed look like?		D) Warmth	
Week 6 Lesson 1 Photosynthesis 13 Photosynthesis	sunlight, water, carbon dioxide, chlorophyll	Biological molecules and processes	What are the reactants for photosynthesis ? Name one factor that could affect the rate of photosynthesis .	1. Model photosynthesis using a word equation. 2. Recall where photosynthesis occurs. 3. Recall and explain the factors which affect the rate of photosynthesis.	Which factor does NOT affect the rate of photosynthesis? A) Light intensity B) Carbon dioxide concentration C) Temperature D) Oxygen concentration	Identify the reactants and products of photosynthesis and discuss how light intensity, carbon dioxide concentration, and temperature affect the rate of photosynthesis. Include why these factors influence the process.
Week 6 Lesson 2 Plant adaptations 14 Plant Adaptations	Stomata Diffusion Gas exchange Leaves	Cells and Systems	How does diffusion help gases move around?	What is the main function of stomata? A: To control gas exchange B: To absorb minerals C: To store glucose D: To strengthen the leaf Correct answer: A	1. Label the parts of a leaf 2. Describe the function of each leaf part. 3. Explain why the stomata are important for the plant.	The stomata are open during the day but closed during the night to reduce water loss. - Why would they need to be open during the day? - Why is it better for them to be closed at night?
Week 6 Lesson 3 Plant adaptations 2 15 Plant Adaptations 2	Roots Osmosis Xylem vessels Transpiration	Cells and Systems	How do roots absorb water and minerals?	What drives water up the xylem during transpiration? A: Gravity B: Root pressure only C: Pull from evaporation at the leaf D: Active transport in the stem Correct answer: C	1. State the role of the roots and xylem. 2. Describe what happens during transpiration.	Sketch a root hair cell and describe how it is adapted to its function. Explain how water moves from the soil into the plant.

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 7 Lesson 1 Plant products 16 Plant Products	Energy storage Growth Structure Metabolism	Biological Molecules and Processes	How do plants make glucose? (PS) What is glucose converted into in plants?	Which substance do plants need to make amino acids? A Starch B: Lipids C: Oxygen D: Nitrates Correct answer: D	1. Describe how a range of different substances are made by plants from glucose and recall their uses. 2. Explain the importance of nitrates. 3. Recall the steps in seed germination.	Complete the plant products sheet.
Week 7 Lesson 2 Reproduction Consolidation	Pollination Fertilisation Gamete Offspring	Cells and Systems	What are the structures and functions of the reproductive organs in humans and plants? What is fertilisation and how does it happen in plants and animals?	1. Recall structure and function of reproductive organs in humans 2. Recall structure and function of reproductive organs in plants 3. Recall definition of pollination and fertilisation	Which statement is correct about sexual reproduction in plants and animals? A. Only animals reproduce sexually. B. Sexual reproduction involves one parent and produces identical offspring. C. Sexual reproduction involves the fusion of male and female gametes.  D. Sexual reproduction does not involve cells.	Both flowering plants and mammals reproduce sexually. Compare sexual reproduction in a flowering plant and a mammal. Include similarities and differences in your answer. (6 marks) Mark Scheme ☐ Both use sexual reproduction. ☐ Both require male and female gametes. ☐ Fertilisation occurs in both. ☐ Plant male gametes are found in pollen; mammal male gametes are sperm. ☐ Plant female gametes are found in ovules; mammal female gametes are egg cells. ☐ Plants require pollination before fertilisation.

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
						☒ Fertilisation leads to seeds in plants and embryo development in mammals.
Week 7 Lesson 3 Passport to science – using protractors 1. Using protractors .pptx	Protractor Angle Degrees		Measuring length (KS2), reading scales (KS2), working accurately (KS3) and scientific equipment (KS3)	1. Identify the parts of a protractor. 2. Measure angles accurately in degrees. 3. Draw angles using a protractor. 4. Explain why accurate measurements are important in science.	When measuring an angle with a protractor, where should the centre mark be placed? A. On the longest line B. On the vertex  C. On the largest number D. Anywhere on the angle	Explain how to accurately measure an angle using a protractor.
Week 8 Lesson 1 Passport to science – building circuits 2. Building Circuits.pptx	Circuit Cell Component Current		KS2: electrical devices and conductors and insulators KS3: energy transfers	1. Identify common circuit components. 2. Construct a simple series circuit. 3. Draw a circuit using symbols. 4. Explain why a circuit must be complete.	Why does a bulb not light in an incomplete circuit? A. The bulb is broken B. The current cannot flow around the circuit  C. The wires are too long D. The cell has too much energy	A student builds a circuit containing a cell, wires and a bulb, but the bulb does not light. Explain three possible reasons why the bulb does not light and how each problem could be fixed. (6 marks)

Holy Family Catholic School – Faculty of Science and Physiology

Science

Autumn Term 1

Year 8

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 8 Lesson 2 Passport to science – using a Bunsen burner 3. Using a Bunsen burner .pptx	Bunsen burner Air hole Safety flame Roaring flame		KS2: states of matter, heat transfer KS3: laboratory safety, energy changes	1. Identify the parts of a Bunsen burner. 2. Use a Bunsen burner safely. 3. Produce a safety flame and roaring flame. 4. Explain when each flame should be used.	Which flame should be used when a Bunsen burner is not actively heating something? A. Roaring blue flame B. Invisible flame C. Safety flame  D. Any flame	Describe how to safely light and use a Bunsen burner for heating in a science lesson. (6 marks)
Week 8 Lesson 3 Passport to science – making observations 4. Making Observations.pptx	Observation Qualitative Quantitative Evidence		KS2: fair testing, measuring equipment KS3: variables, data collection	1. Distinguish between observations and conclusions. 2. Make qualitative observations. 3. Make quantitative observations. 4. Record observations clearly and accurately.	Which is a quantitative observation? A. The liquid is blue. B. The powder looks rough. C. The temperature increased by 12°C.  D. The solution became cloudy.	A student is observing a reaction between vinegar and baking soda. Describe four observations they could make and explain why accurate observations are important in science. (6 marks)