



B1 - Reproduction and Genetics

Number of weeks (between 6&8)	Content of the unit	Assumed prior learning (tested at the beginning of the unit)
<p>67 weeks 28 lessons</p>	<ul style="list-style-type: none"> • Human reproductive systems • Plant and animal reproductive mechanisms • Variation and inheritance • Genetics 	<ul style="list-style-type: none"> • Notice that animals, including humans, have offspring which grow into adults • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Assessment points and tasks	Written feedback points	Learning Outcomes (tested at the end and related to subject competences)
<ul style="list-style-type: none"> - Pre-unit test (baseline) - Badger 7G (formative) - 6 mark question (formative) - Scientific skills investigation (formative) - End of unit test (summative) 	<ul style="list-style-type: none"> - diagnostic marking on badger - diagnostic marking on 6 mark question - diagnostic marking on skills investigation - feedback on progress after end of topic test <p>(*these opportunities in AfL column)</p>	<ul style="list-style-type: none"> I can name some tissues and organs in the human reproductive systems I can describe the functions of some tissues and organs in the human reproductive systems I can describe the stages of pregnancy and birth I can discuss the impact of maternal lifestyle on the foetus I can name some tissues and organs in the reproductive systems of plants I can describe the functions of some tissues and organs in the reproduction systems of plants I can explain how gametes are involved in fertilisation I can describe the stages of the menstrual cycle I can describe methods of seed and fruit dispersal I can investigate methods of dispersal mechanisms quantitatively I can evaluate some methods used to resolve infertility problems I can make links between the menstrual cycle, fertilisation and infertility problems I can state that all organisms show variation, both within a species and between species I can describe how variation is caused by inherited and environmental factors I can state that genetic information is inherited I can state that due to variation, some individuals within a species will compete more successfully I can define biodiversity I can state that gene banks are important in maintaining biodiversity I can describe how gene banks may be used to maintain biodiversity I can describe how more successful competition can result in extinction I can explain that variation can be continuous or discontinuous, including the use of data I can describe the role of DNA, genes and chromosomes in heredity I can discuss the roles of Watson, Crick, Wilkins and Franklin in the discovery and development of the DNA model I can explain how variation and environmental pressures can drive natural selection and lead to evolution I can explain the use of gene banks to maintain biodiversity and preserve hereditary material



B1 - Reproduction and Genetics

Lesson	Clear learning intentions	Clear success criteria	Hook	Presentation of content	Guided practice	Independent practice (homework)	Closure
1 Pre-unit assessment	How much do I know from KS2?	To complete the exam	Word-search on keywords from KS2	Mind map of what pupils remember from KS2 as refreshers before exam	Pupils complete baseline test in silence	Hand out homework booklets to be put in the back of exercise books	Pupil complete sentences: <i>One thing I know about this topic is...</i> <i>One thing I don't understand is...</i> <i>One question I have is...</i>
2..Plant reproductive systems	What is the plant reproductive system made of?	I can name some tissues and organs(H) in the reproductive systems of plants I can explain some of the functions of tissues/organs of the reproductive system (E) I can describe the functions of some tissues and organs in the reproduction systems of plants (D)	Show a picture of the structure of the flower. Name as many parts on the whiteboards	Pupils given DARTS activity to match the names and descriptions of the parts of the flower placing it on the diagram Pupils to work in groups.	Practical whole class dissection of the parts of a flower. Pupils use a worksheet to stick on the different parts and label. Pupils can describe the functions of each. Discuss self and cross pollination recap of KS2 content.		Peer asses matching the parts to the labels and the functions
3 . Seed and fruit dispersal	How do plants reproduce?	I can name some methods of seed and fruit dispersal(H) I can explain some methods of seed/fruit dispersal (E) I can describe methods of seed and fruit dispersal(D)	Show different types of flowers with seeds e.g. sycamore What are we going to learn in today's lesson	Use PowerPoint slides to show the pictures of seeds and fruit and match up to the ways it is dispersed e.g. wind, water, insect, animal etc. Pupils write descriptions for each one in a story form	Writing frames and story boards To describe how seeds and fruit are dispersed. Provide pictures already photocopies for pupils to use.		<u>True/false statement.</u> Teacher to read statements and pupils write on Mini-whiteboards
4.Scientific skills investigation	How can I plan an experiment to investigate	I can describe methods of seed and fruit dispersal(D) I can explain some methods of seed/fruit dispersal (E) I can investigate methods of dispersal mechanisms quantitatively(C)	What is an investigation?	Recap how to plan for an investigation: Aim, method,. Discuss independent ,dependant, and control variable Demo- using templates of different wing lengths eg. 2 cm, 4cm and 6 cm. Cut out and attach a paper clip. Discuss control variable s and measurement to be made.	Either Pupils design their own seed/paper helicopters to act as dispersing seeds. Investigate the effect of shape on dispersal OR Provide templates of paper helicopter of different length of wings to see the effect of dispersal Pupils to write up the plan: Decide on the variables to control. Produce a results table to record results	Homework 1 to complete for next lesson.	Peer mark some aspects of the investigative write-up



B1 - Reproduction and Genetics

5.Scientific skills investigation	How can I carry out an investigation for	I can describe methods of seed and fruit dispersal(D) I can explain some methods of seed/fruit dispersal (E) I can investigate methods of dispersal mechanisms quantitatively(C)	Show pictures of different seeds and ask around the room how they are dispersed	Pupils peer asses each other write up (green pens) check for SPAG. Demo the experiment, get pupils to verbally explain the method	Discuss the risk assessment e.g using scissors to cut and dropping at a height. Draw a results table to record the results. Peer asses the results table check for correct headings and units Pupils to start the investigation and work in groups of 4's Draw a risk assessment table and write in the info.		Hot seating. Pupils called to the front and is given 1 minute to answer questions asked by other pupils in the class. The winner is the one who answers all in 1 minute
6.Scientific skills investigation	How can I carry out an investigation for	I can carry out the practical according to my written plan (E) I can describe methods of seed and fruit dispersal(D) I can investigate methods of dispersal mechanisms quantitatively (C)	Risk assessment table pupils to put post it notes on the board for hazards, risks, control measures and emergency action for the experiment as a reminder	Pupils to continue with investigation . Working in groups of max 4's.	Pupils to complete investigation and fill in results table. Discuss results and conclusion- List the main points of the findings and the links with the theory e.g surface area air resistance etc.		Peer assess conclusions of the investigation (green pens).
7. Human reproductive tissue and organs	What are the parts and functions of the human reproductive system?	I can name some tissues and organs in the human reproductive systems (H) I can describe the functions of some tissues and organs in the human reproductive systems (D) I can describe the functions of some tissues and organs in the human reproductive systems (D)	Display all the scientific keywords for male and female reproductive parts. Pupils write the slang names for them on a piece of paper and chuck in the bin	Emphasise the importance of using scientific vocab to state the names of the reproductive tissues/organ. Show 2 pictures of the female and male reproductive systems pupils to identify the names.	Have a large outline of male and female internal organs Place the name labels on the place nest to the part. Get pupils to correct the mistakes. Matching activity- match the function of each to the parts- power point board works	Homework 1 in booklet	Describe and guess: In pairs 1 pupil is describing the reproductive parts the other is guessing. Keep a tally of number of correct and incorrect answers
8.. Female reproductive system	What are the parts and functions of the female reproductive system?	I can name some parts of the female reproductive system () I can state some parts/functions of the female reproductive system () I can name and describe the functions of the parts of the female reproductive system ()	Anagrams of the keywords for the lesson. Pupils to unscramble and write sentences including each word Extension: Write one sentence including all the keywords	Who am i? Pupils to read out information of the different parts of the female reproductive system. Other pupils to guess to write on mini whiteboards	List the names of the parts and match to the functions of the female system. Quick test on the names and functions of the female reproductive system. Use board works and video clips		Taboo= Pupils invited to describe the parts of the female reproductive system without saying the word



B1 - Reproduction and Genetics

9. Menstrual cycle	What happens during the menstrual cycle?	I can state what the menstrual cycle is () I can describe the stages of the menstrual cycle () I can evaluate the importance of the menstrual cycle				Homework 2 in booklet	
10. Pregnancy	What are the stages of pregnancy?	I can state the stages of pregnancy () I can describe the stages of pregnancy () I can explain what happens during the different stages of pregnancy ()					
11. Birth	What happens after pregnancy during birth?	I can state the stages of birth () I can explain what happens during the different stages of birth () I can describe the stages of birth ()					
12 Fertilisation	What is fertilisation and what happens?	I can explain how gametes are involved in fertilisation. I can state that genetic information is inherited				Homework 3	
13. Infertility	What is infertility and infertility problems?	I can explain some of the problems with infertility I can evaluate some methods used to resolve infertility problems I can make links between the menstrual cycle, fertilisation and infertility problems					
14 6 mark question.	How can I answer a 6 mark question?					Homework 4	



B1 - Reproduction and Genetics

15. Variation and inheritance	What is variation and inheritance?	<p>I can state that all organisms show variation, both within a species and between species ()</p> <p>I can explain what causes variation within and between species ()</p> <p>I can describe how variation is caused by inherited and environmental factors ()</p>					
16. Continuous and discontinuous data	<p>What are the two types of variation?</p> <p>How can we use data to see these types?</p>	<p>I can state what is continuous & discontinuous variation ()</p> <p>I can explain that variation can be continuous or discontinuous, including the use of data ()</p> <p>I can evaluate data and compare data on continuous and discontinuous data ()</p>					
17 The discovery of DNA	Who discovered the DNA model?	<p>I can state the importance of DNA</p> <p>I can explain how DNA was discovered ()</p> <p>I can describe the role of DNA, genes and chromosomes in heredity ()</p> <p>I can discuss the roles of Watson, Crick, Wilkins and Franklin in the discovery and development of the DNA model ()</p>					
18. The DNA model	What is DNA made up of?	<p>I can state the main facts about the DNA model and who discovered it ().</p> <p>I can describe the role of DNA, genes and chromosomes in heredity ()</p> <p>I can discuss the roles of Watson, Crick, Wilkins and Franklin in the discovery and development of the DNA model ()</p>		<p>Royal institution lectures 2 mins video clip https://www.tes.co.uk/teaching-resource/video-resource-on-the-structure-of-dna-6402358</p>	<p>Pupils make their own DNA model in groups- using instruction sheet : materials needed :</p> <p>Straws, toothpicks, polystyrene foam, plasticine, playdoh, soft jelly sweets, marshmallows etc.</p> <p>https://www.youtube.com/watch?v=5MOdXjRPHmQ</p>	Homework 5	



B1 - Reproduction and Genetics

<p>19. and 20 Biodiversity and gene banks</p>	<p>What is biodiversity and how do gene banks help?</p>	<p>I can define biodiversity I can state that gene banks () are important in maintaining biodiversity I can describe how gene banks() may be used to maintain biodiversity ()</p>	<p>You have 1 minute to write the names of as many living things/organisms as possible? How many are there in the world? What is an ecosystem?</p>	<p>Video on what is biodiversity https://www.youtube.com/watch?v=ErATB1aMiSU. Pupils make notes and answer questions Resources on biodiversity https://www.tes.co.uk/teaching-resource/6-lessons-on-biodiversity-6040976</p>	<p>Fruit gene banks: https://www.youtube.com/watch?v=w0mqQex-v0c Pupils work on presentations using laptops/ICT on biodiversity and gene banks OR Pupils research on the pros and cons of gene banks and debate for and against https://www.youtube.com/watch?v=ZEtb41BNIG4 https://www.youtube.com/watch?v=RNg-EHU78kE</p>		<p>Presentation of biodiversity and gene banks- Pupils peer assess the presentation. Write down 3 facts you learnt about biodiversity and gene banks.</p>
<p>21 Competition and extinction</p>	<p>What happens when species compete and become extinct?</p>	<p>I can state what is competition and extinction () I can explain the difference between competition & extinction () I can state that due to variation, some individuals within a species will compete more successfully I can describe how more successful competition can result in extinction ()</p>	<p>Show pictures/images of animals/plants that are extinct Name the organisms? What do they all have in common?</p>	<p>What does extinction mean?</p>			



B1 - Reproduction and Genetics

22. Natural selection and evolution	What is evolution and natural selection?	<p>I can state what is natural selection and evolution</p> <p>I can explain how variation and environmental pressures can drive natural selection and lead to evolution</p> <p>I can evaluate the argument around the theory of evolution</p>		<p>Show video clip on evolution https://www.tes.co.uk/teaching-resource/biology-20-evolution-6352154. 11 min Pupils make notes and some to make questions for others to answer</p> <p>Class activity on role play of Darwin's finches. Pupils work in collaboration group work and are given implements e.g. chopsticks, tweezers to represent finches beaks. They are asked to write observations about the types of food they are able to pick up display seeds, fruit, worms(sweets etc.</p> <p>https://www.tes.co.uk/teaching-resource/biodiversity-and-evolution-darwin-s-finches-14-16-6232970</p>	<p>Discuss the observation what did Darwin find? How is this related to his theory of evolution? Why could the birds not eat certain types of food?</p>		Quick quiz on the main learning points from the lesson
23. GAT*	What grade am I working at?	See grade ladder on Badger	What was your solution for the UK and why?	Introduce GAT	Pupils complete GAT LA- need scaffolding Extension: Self-assess and improve	Homework 6	Pupils peer-assess SPAG
24. GAT*	What grade am I working at?	See grade ladder on Badger	What was your solution for the UK and why?	Introduce GAT	Pupils complete GAT LA- need scaffolding Extension: Self-assess and improve		Pupils peer-assess SPAG
25. Revision	What do I need to revise for the test?	<p>I can state facts from this topic (G)</p> <p>I can describe energy transfers from this topic (D)</p> <p>I can calculate using equations (C)</p> <p>I can rearrange equations (B)</p> <p>I can compare and evaluate energy resources (A)</p>	Peer assess homework	Discuss revision techniques. Check list of key points for this topic.	Practice revision techniques Complete exam questions in teams as practice (check questions are not in test!)	Revision set for test next lesson	Pupils RAG check list and identify areas to revise at home.
26. End of unit test*	24. Improving end of unit test	What do I need to do to improve?	Respond to feedback from test	Go through common mistakes on paper	Pupils become 'master' at one question they got wrong and explain to class/table.		