



SUBJECT and GRADE	Life Sciences Grade 12											
TERM 2	Term 2 (Week 8)											
TOPIC	Reproduction in vertebrates (Diversity of reproductive strategies)											
AIMS OF LESSON	<p>At the end of this lesson you should be able to know the role of the following reproductive strategies in animals in maximising reproductive success in different environments (using relevant examples)</p> <ul style="list-style-type: none"> • External fertilisation and internal fertilisation • Ovipary, ovovivipary and vivipary • Amniotic egg • Precocial and altricial development • Parental care 											
RESOURCES	Paper based resources	Digital resources										
	<p>Refer to:</p> <ul style="list-style-type: none"> • Your textbook sections on vertebrate reproduction • Pages 17 -18 in your Mind the Gap Study Guide 	<p>Click on links below to download online resources on this topic/s:</p> <p>Refer to questions on the vertebrate reproduction at: https://drive.google.com/file/d/1ANnJ2RB0Kmm2ra5qomngi8-vP5oXuHv1/view?usp=sharing</p>										
INTRODUCTION	<ul style="list-style-type: none"> • Revise the previous lessons on human reproduction 											
CONCEPTS AND SKILLS	<p>Study the following definitions. (Note that at least 2 marks are awarded if you can define a term correctly in the examination)</p> <p>Amniotic egg - The type of egg produced by reptiles that has extra-embryonic membranes</p> <p>Precocial development – The type of development in birds where the hatchlings' eyes are open and their bodies are covered with feather</p>	<p>Know the meaning of instructional verbs in test and examination questions e.g.</p> <table border="1"> <thead> <tr> <th>Instructional verb</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Name</td> <td>Give the name of something</td> </tr> <tr> <td>Differentiate</td> <td>Use differences to qualify between two or more categories</td> </tr> <tr> <td>Tabulate</td> <td>Draw a table and indicate the answers as direct pairs.</td> </tr> <tr> <td>Describe</td> <td>State in sentences the main points of a process</td> </tr> </tbody> </table>	Instructional verb	Meaning	Name	Give the name of something	Differentiate	Use differences to qualify between two or more categories	Tabulate	Draw a table and indicate the answers as direct pairs.	Describe	State in sentences the main points of a process
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Altricial development – The type of development in some animals where the young are not fully developed and cannot move around immediately after being born or hatched.

External fertilisation - A type of fertilisation in which the nucleus of a sperm fuses with the nucleus of an ovum outside the body of the female

Internal fertilisation -The type of fertilisation associated with viviparous reproduction

Allantois - The structure in the amniotic egg that stores wastes

Vivipary - A type of reproduction in humans where the foetus develops inside the uterus

Diversity of reproductive strategies:

External fertilisation - takes place outside the female’s body e.g. in fish and amphibians. Large number of gametes are produced. More energy is used to produce a large number of gametes.

Internal fertilisation – takes place inside the female’s body. Fewer gametes are produced. Less energy used to produce a small number of gametes.

Ovipary – The embryo develops in an egg outside the female’s body e.g. in fish, some birds and reptiles. Large number of gametes are produced which requires a lot of energy

Explain	Give your answer in a cause-effect or statement and reason sequence
Compare	Give similarities and differences between concepts

Answer the following questions:

Question 1:

The table below shows a comparison of the composition of the amniotic egg in three different bird species:

COMPOSITION	BIRD SPECIES		
	1	2	3
Yolk (%)	17	36	22
Water content (%)	77	57	61
Energy (kcal/g)	1,04	1,44	1,14

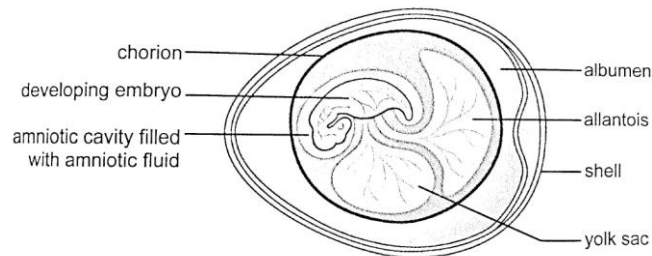
- 1.1 Define ovovivipary.
- 1.2 Which ONE of the bird species (1, 2 or 3) most probably shows a precocial development reproductive strategy?
- 1.3 Explain your answer to QUESTION 1.2
- 1.4 Which ONE of the bird species (1, 2 or 3) will possibly produce offspring requiring the highest degree of parental care?



Ovovivipary – The egg is retained/hatched in the female body and the young are born live. Female produces few eggs, which requires less energy.

Vivipary – Internal fertilization takes place and the fertilized egg develops into an embryo which is directly connected to the mother as it receives nutrients through a placenta e.g. mammals. The female produces few gametes which requires less energy.

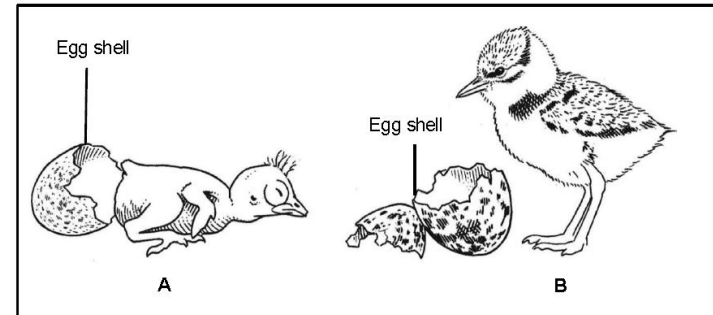
Amniotic egg - The type of egg produced by reptiles, birds that has extra-embryonic membranes. After internal fertilization the embryo is enclosed in an egg with a hard shell.



Precocial development - The type of development in some animals e.g. birds where the hatchlings' eyes are open and their bodies are covered with feather. Most of the energy is used on for prenatal development.

Question 2:

Study the diagram of one-day-old hatchlings **A** and **B** below. The diagram is not drawn to scale.



2.1 *State* TWO visible features in hatchling **A** which indicate altricial development.

2.2 The diagram represents vivipary. *Explain* ONE possible advantage of vivipary when compared to ovipary.

2.3 *Explain* why you would expect that the yolk content of the egg of hatchling **B** was more than that of hatchling **A**.

Question 3:

Describe how gaseous exchange and the nourishment of the embryo occur in an amniotic egg and how gaseous exchange and nourishment as well as protection of the foetus occur in humans.



	<p>Altricial development – The type of development in some animals where the young are not fully developed and cannot move around immediately after being born or hatched.</p> <p>Parental care – a behavioural pattern where parents spend time and energy on the feeding and protection of their offspring.</p> <p>Common errors made by learners in examinations:</p> <ul style="list-style-type: none"> • Learners unable to distinguish between altricial and precocial development • Learners unable to distinguish between ovipary, vivipary and ovovivipary 	<p>Question 4:</p> <p>The diagrams below represent organisms with different reproductive strategies.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="1205 477 1539 716"> <p>Female fish Male fish</p> <p>Diagram 1</p> </div> <div data-bbox="1545 477 1738 716"> <p>Diagram 2</p> </div> <div data-bbox="1745 477 1938 716"> <p>Diagram 3</p> </div> </div> <p>4.1 Which diagram(s) (1, 2 or 3) represent(s) organism(s):</p> <p>(a) Where external fertilisation takes place</p> <p>(b) Where extra-embryonic membranes develop to assist with the protection and nutrition of the embryo</p> <p>(c) Which is/are oviparous</p> <p>4.2 <i>Name</i> the type of egg produced by the organism represented in Diagram 2.</p>
ACTIVITIES/ASSESSMENT	<ul style="list-style-type: none"> • Complete the activities/questions on the above-mentioned sections of vertebrate reproduction in your textbook. • Work through the questions and activities on page 17 and 18 of your Mind the Gap Study Guide 	
CONSOLIDATION	<ul style="list-style-type: none"> • Define all the terminology relevant to the topic/s covered in this lesson • Work through the questions on vertebrate reproduction in past examination papers 	
VALUES	<p>By studying and learning about vertebrate reproduction you will develop a deep understanding of existing reproductive strategies in animals in maximising reproductive success in different environments</p>	