

Class:8	Subject: Science	Topic: Reproduction in Animals
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REPRODUCTION IN ANIMALS - SUMMARY SHEET		
Learner Previous Knowledge	Life processes : Movement, digestion and respiration in animals	
Target Knowledge for this Topic	Reproduction Study various modes of asexual reproduction (Budding, Binary fission) and sexual reproduction in animals; Learn about different animals based on the process of reproduction and classify them accordingly (viviparous and oviparous)	
Learning Goals		
More Complex Learning Goal- Students will be able to distinguish between asexual and sexual reproduction; compare and contrast process of reproduction in different animals and various modes of asexual reproduction.		
Target Learning Goal- Students will be able to describe how different animals reproduce.		
Simpler Learning Goal- Students will be able to list different modes of reproduction in animals; state what viviparous and oviparous animals are with examples.		
Period No.	Lesson Objectives	Teaching Learning Materials Required
1	State the organs of male reproductive system and explain their functions.	- Board and markers - Reference sheet 1 - Reproductive organ chart
2	State the organs of female reproductive system and explain their functions.	- Board and markers - Reference sheet 2 - Reproductive organ chart
3	- Explain the process of fertilization. - Understands different types of fertilization	- Board and markers - Worksheet 1
4	Explain the process of development of embryo.	- Board and markers - Worksheet 2 - Reference sheet 3
5 and 6	Classify animals on the basis of viviparity and oviparity	- Board and markers - Worksheet 3

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	Recall the life cycle of frog and butterfly	
7 and 8	Understand different modes of asexual reproduction in animals.	- Board and markers - Worksheet 4 - Reference sheet 4

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Period 1

Lesson Objectives

At the end of this lesson students will be able to:

- State the organs of male reproductive system and explain their functions.

Teaching Learning Materials required

- Board and markers
- Reference sheet 1
- Reproductive organ chart

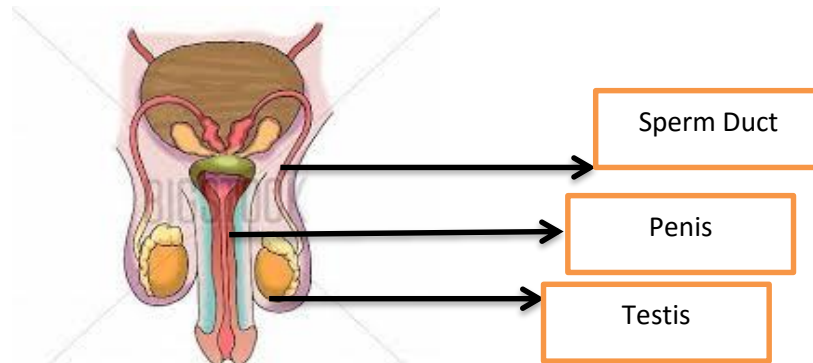
Details of Teaching Learning Experience

Seating Arrangement: - In groups of 4 or 5

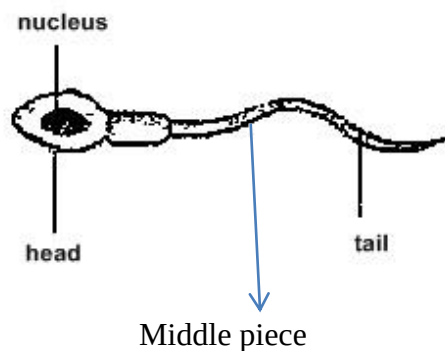
Lesson Beginning <u>Time:</u> 10min <u>Purpose:</u> • Activate the prior knowledge	<u>Discussion</u> • Introduce the topic to the class by seeking response for the question 'What is Reproduction?' • Have a whole class discussion and pose questions such as: ○ Why is reproduction necessary as a life process? ○ Do you think reproduction in humans is external or internal? • Collect response from different groups and arrive at a common consensus.
Lesson Middle <u>Time:</u> 20 min. <u>Purpose:</u> • Develop conceptual understanding	• Discuss that the male and female have different reproductive system. • Announce that today they will study about male reproductive system. • With the help of reference sheet 1 explain the different organs of the reproductive system and structure of sperm. • Use the reproductive organ chart for better understanding.
Lesson End <u>Time:</u> 5 min <u>Purpose:</u> • Finish up • Homework Distribution	<u>Finish up</u> • Clear any doubts that students may have. <u>Homework Assignment</u> • In your Science notebook, write the functions of the following organs ○ Penis ○ Testis ○ Sperm Duct

Reference sheet 1

Male Reproductive System



- The male reproductive system includes the testes, penis and the sperm ducts.
- The testes produce sperms which are male gametes. The sperm are microscopic but they have three parts: a head, middle piece and a tail.



- The penis is the external organ which delivers the sperms into the female reproductive system.
- The two sperm ducts carry the sperms from the two testes into the penis to be transferred to the female reproductive system.

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Period 2

Lesson Objectives

At the end of this lesson students will be able to:

- State the organs of female reproductive system and explain their functions.

Teaching Learning Materials required

- Board and markers
- Reference sheet 2
- Reproductive organ chart

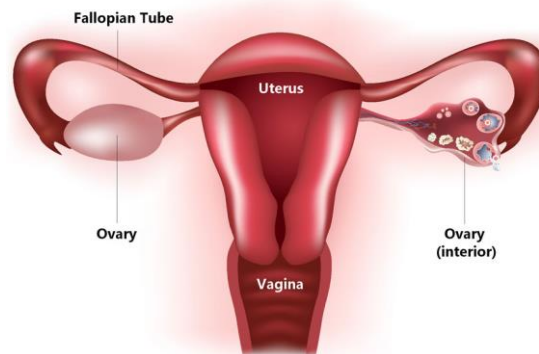
Details of Teaching Learning Experience

Seating Arrangement: In groups of 4-5 each

Lesson Beginning <u>Time:</u> 5 min <u>Purpose:</u> • Activate prior knowledge	<u>Recap</u> • Ask the students to share answers of the home assignment. • Collate their answers on the board. • If required explain the functions of the organs again.
Lesson Middle <u>Time:</u> 25min. <u>Purpose:</u> • Develop conceptual understanding	• Inform the students that now they will learn about female reproductive system and its organ • Discuss the different organs of female reproductive with the help of the reference sheet 2. • Use the reproductive organ chart for better understanding.
Lesson End <u>Time:</u> 5 min <u>Purpose:</u> • Finish Up • Home Assignment	<u>Finish up</u> • Clear doubts, if any. <u>Homework Assignment</u> • In your Science notebook, write the functions of the following organs ○ Uterus ○ Fallopian tube ○ Ovaries

Reference sheet 2

Female Reproductive System



Ovaries: They are two solid egg-shaped structures located next to the uterus. They produce female hormones as well as ova (commonly called "eggs"), the female gametes.

Fallopian Tubes (Oviducts): The fallopian tubes are a pair of muscular tubes that extend from the corners of the uterus to the edge of the ovaries. They carry egg cells toward the uterus and sperm cells toward the egg cell.

Uterus: It is a hollow muscular organ which protects and nourishes a fetus (developing baby inside the mother's body) until it is ready to live outside the mother's body.

Egg cell: Ova are produced from special cells. Each month, a mature ovum is released. The ovum travels from the ovary to the fallopian tube, where it may be fertilized before reaching the uterus.

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Lesson Plan 3

Lesson Objectives

At the end of this lesson students will be able to:

- Explain the process of fertilization.
- Understands different types of fertilization.

Teaching Learning Materials required

- Board and markers
- Worksheet 1

Details of Teaching Learning Experience

Seating Arrangement: Normal

Lesson Beginning <u>Time:</u> 5 min <u>Purpose:</u> • Activate prior knowledge.	• Recap the previous class's topic by asking the students to share the answers of their homework. • Write the question on board: • 'Does fertilization happens only internally within the female body or are there other means it can happen?' Let a few students guess or respond with answers. • Inform the students that now they will find out the answer to the question and learn in what ways does fertilization occur for a new offspring to be born?
Lesson Middle <u>Time:</u> 25 min. <u>Purpose:</u> • Develop conceptual understanding	• Discuss about the fertilization with the help of fig 9.5 and 9.6 of NCERT book. • Discuss the internal and external fertilization with the help page number 104 and 105 of NCERT book. • Distribute worksheet 1 to the students. • Let them attempt the question on their own. • After the completion of the worksheet, let them discuss the answers. • They must arrive at answers after discussion. • Ensure that all the students agree to a common answer for each question.

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Lesson End <u>Time:</u> 5 min <u>Purpose:</u> • Finish Up	<u>Finish Up</u> • Wrap up the discussion by clearing any doubts that the students may have.
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Worksheet 1

Skill: Comprehension

1. Arrange the following in correct order to show the process of fertilization.

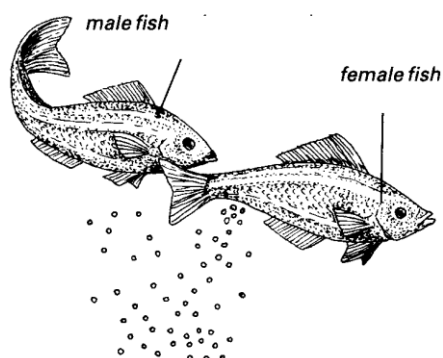
- a) The result of the fusion of sperm and egg is called a fertilized egg or a zygote.
- b) Sperm travels through the vagina into the oviduct.
- c) The nuclei of the sperm fuse with the egg to form a single nucleus.
- d) Each month a matured egg is given out by the ovaries.
- e) The fertilized egg then develops into a baby inside the mother's uterus.

2. There are two types of fertilizations in mammals: internal and external. Based on your knowledge of fertilization, can you guess whether the human system has internal fertilization or external? Give reason for your answer.

3. You must have often heard people saying that the baby has its father's nose and its mother's complexion. Why do you think a baby resembles its parents?

4. Which kind of animals shows internal fertilization?

5. What kind of fertilization is happening here? How can you tell?



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6. Where is the egg fertilized in internal fertilization?

7. Write differences and similarities in external and internal fertilization.

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Period 4

Lesson Objectives

At the end of this lesson students will be able to:

- Explain the process of development of embryo.

Teaching Learning Materials required

- Board and markers
- Worksheet 2
- Reference sheet 3

Details of Teaching Learning Experience

Seating Arrangement: - In groups of 4 or 5

Lesson Beginning <u>Time:</u> 5 min. <u>Purpose:</u> Generate interest	<u>Recap</u> • Ask the students to define fertilization. • Ask them to hypothesize what happens after the fertilization. • Instruct the students that today they will learn how the zygote formed during fertilization develops.
Lesson Middle <u>Time:</u> 25 min. <u>Purpose:</u> Develop conceptual understanding	• Discuss the development of embryo from zygote with the help of the reference sheet 3 • Let them attempt Annexure 4B now. • Have a whole class discussion and discuss answers. • Let each group answer at least one question. Collect all responses after asking the class if they agree or disagree. Write the correct responses on the board.
Lesson End <u>Time:</u> 5 min <u>Purpose:</u> • Finish Up	<u>Finish Up</u> • Finish the topic by clarifying any doubts that the students may have.

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Worksheet 2

Skill: Comprehension

1. What is zygote?

2. How does a zygote develop into a ball of cells?

3. What is foetus?

4. Where does the embryo develop?

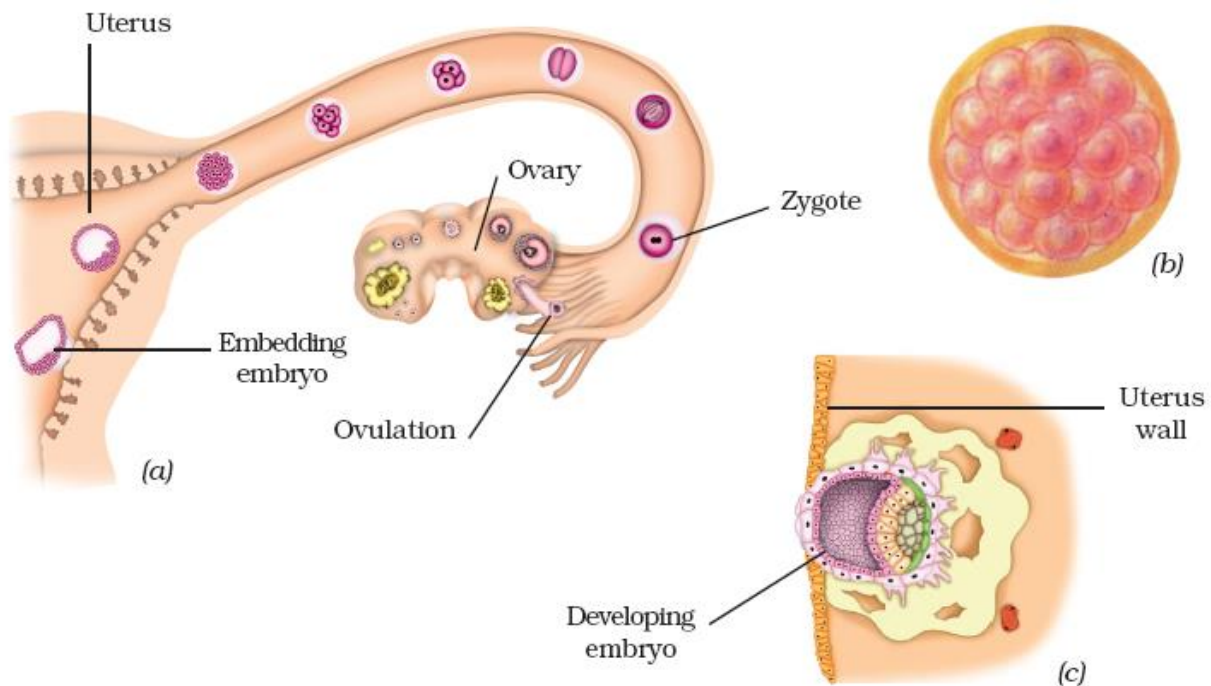
5. How much time does it take for a zygote to develop into a fully formed foetus?

6. How is the foetus attached to its mother's body?

Reference sheet 3

Observe the diagram which shows how a zygote develops into a fully formed baby.

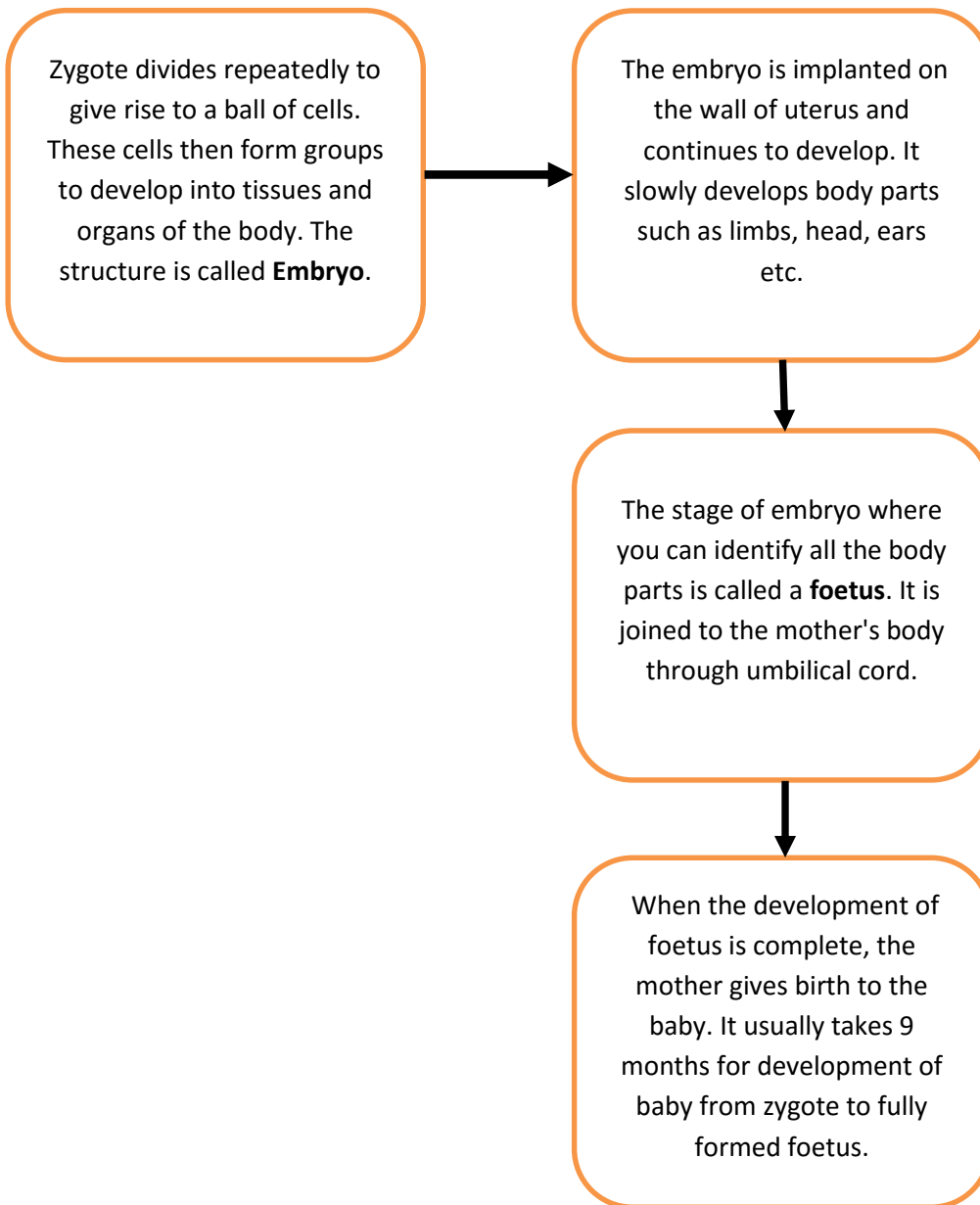
a) Development of embryo from zygote b) Ball of cells c) Developing embryo d) Foetus



Foetus



Stages of development of embryo



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Lesson Plan 5 and 6

Lesson Objectives

At the end of this lesson students will be able to:

- Classify animals on the basis of viviparity and oviparity
- Recall the lifecycle of butterfly and frog

Teaching Learning Materials required

- Board and markers
- Worksheet 3

Details of Teaching Learning Experience

Seating Arrangement: - In groups of 4 or 5

Lesson Beginning <u>Time:</u> 10 min <u>Purpose:</u> Activate prior knowledge	• Ask them to recall the types of fertilizations that they have studied until now. • Ask them to state one difference between the internal and external fertilization. • Collate their responses on the board.
Lesson Middle <u>Time:</u> 55 min. <u>Purpose:</u> • Develop conceptual understanding	• Distribute worksheet 3 to all the students and ask them to attempt only the first question. • Ask the students to first complete the worksheet independently. They can then discuss the answers in groups. • Let there now be a brainstorming session in the whole class in which each answer is discussed. • Let the whole class arrive at a common consensus with respect to the answers. • Ask the students to recall the life cycle of butterfly. • Ask few students to come on the board and make the diagram. • Discuss about the life cycle of frog and butterfly. • Explain the term metamorphosis. • Ask them to think whether humans also show metamorphosis. • Discuss their responses and come to a consensus.

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Lesson End <u>Time:</u> 5 min <u>Purpose:</u> Finish Up	<u>Finish Up</u> Wrap up the class by clearing doubts.
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Worksheet 3

Skill: Comprehension

1. Classify the following animals correctly in the given table.

dog, frog, chicken, cow, fly, crow, goat, tortoise, pigeon, human, lizard, cat

Animals that lay egg	
Animals that give birth to young ones	

2. Animals which give birth to young ones are called viviparous animals and those which lay eggs are called oviparous animals. Which animals, from the list in Question 1, are oviparous?

3. Say 'True' or 'False' for the following statement and give reason for your answer.

a) A viviparous animal will only have internal fertilization.

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b) An oviparous animal will only have external fertilization because it lays eggs.

4. Give two differences between viviparous and oviparous animals.

5. Give 2 examples of animals which are oviparous and show internal fertilization.

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Period 7 and 8

Lesson Objectives

At the end of this lesson students will be able to:

- Understand different modes of asexual reproduction in animals

Teaching Learning Materials required

- Board and markers
- Worksheet 4
- Reference sheet 4

Details of Teaching Learning Experience

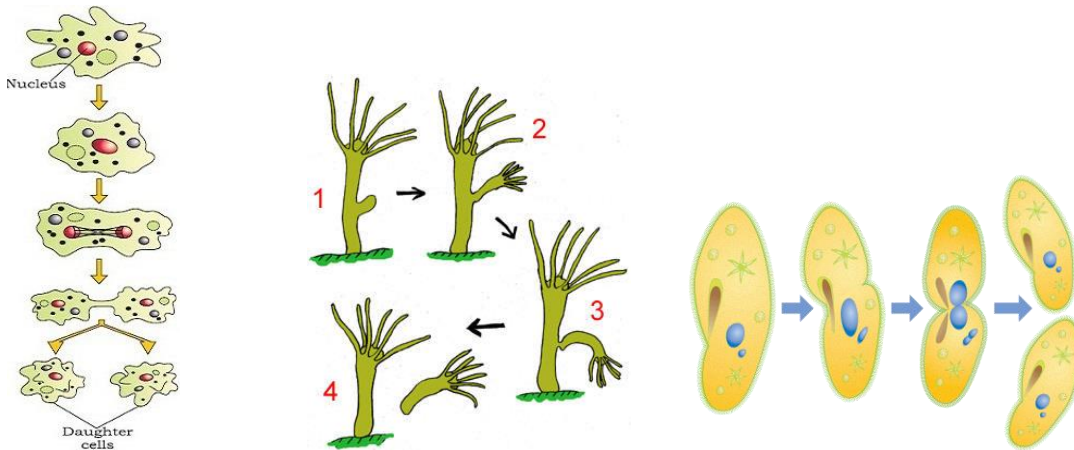
Seating Arrangement: - In groups of 4 or 5

Lesson Beginning <u>Time:</u>10 min. <u>Purpose:</u> Recap the previous learning	<u>Whole Class Discussion</u> • Ask the students that in all kinds of fertilizations that they studied so far, both male and female are necessary for reproduction. This is sexual reproduction. Now ponder, are there any animals which reproduce by themselves without the help of a mate? • Pose the question: 'Do microorganisms also produce eggs? How do they reproduce?' • Encourage some students to guess or put forth any information/knowledge that they may have. • Inform the students that now they will find out the answer to these questions.
Lesson Middle <u>Time:</u> 55 min. <u>Purpose:</u> Develop conceptual understanding	• Ask the students to read topic 9.3 from their NCERT book. • Draw the diagram of asexual reproduction in animals on the board and explain different modes of it. • Distribute worksheet 4 to students and let them attempt the questions in groups. • Make sure all are in consensus with respect to answers. • Now there can be a whole class quiz. Each group can be considered as a team or the entire class can be divided into 3-4 major teams. • Put forth questions and assign a point to every correct answer.

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	• Refer to reference sheet 4 for quiz questions. • Arrive at a common consensus for each answer.
Lesson End <u>Time:</u> 5 min <u>Purpose:</u> • Finish Up	<u>Finish Up</u> • Finish up the discussion by clarifying any doubts.

Worksheet 4**Skill: Comprehension****1. What is asexual reproduction?**

2. Observe the pictures and name the type of reproduction happening here.

3. What is the key or the major difference between sexual and asexual reproduction?

4. Can you think of a reason why asexual reproduction is seen in microscopic animals only and not in large animals living on land or in water?

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Reference sheet 4

Quiz questions

1. What is asexual reproduction?
2. How is asexual reproduction different from sexual reproduction?
3. Why is binary fission a method of asexual reproduction?
4. Why is the method by which amoeba reproduces called as binary fission?
5. Which animal, other than amoeba reproduces by binary fission?
6. Why do you see asexual reproduction only in very simple animals?
7. What is the difference in binary fission and budding?
8. What can be the advantage of binary fission or budding?