



Master Lesson Plan

For

Reproduction in Animals

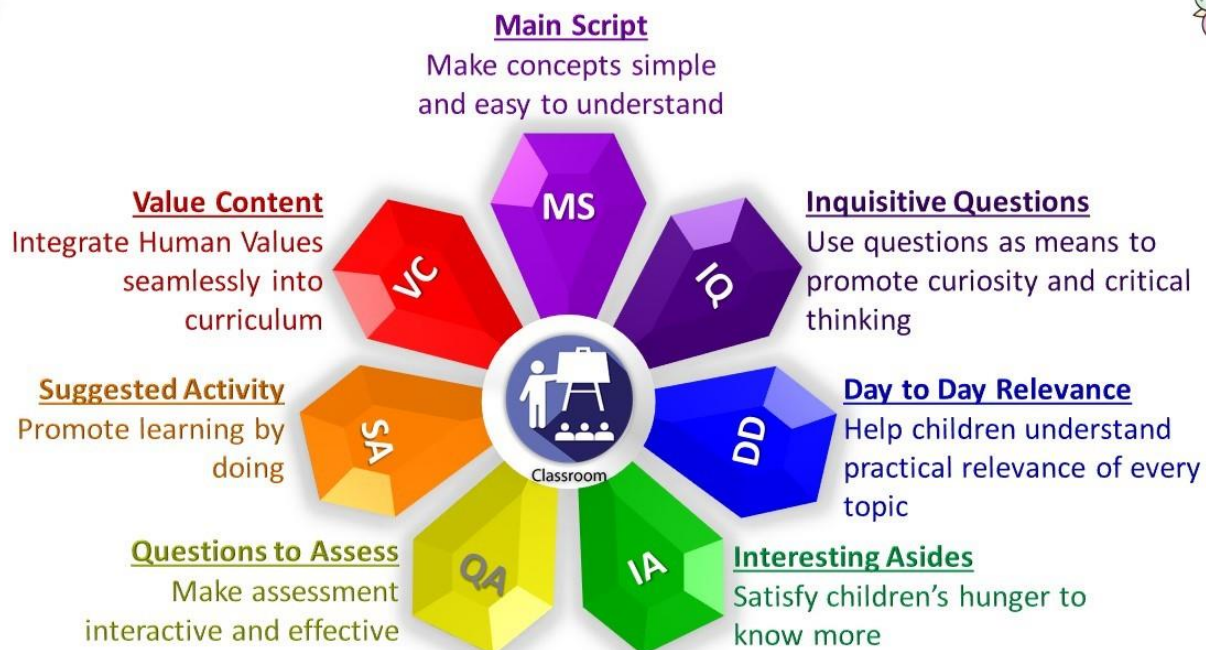
Board	Standard	Subject	Chapter	Language	Reference Link	Creation
CBSE	STD VIII	Science	Reproduction in Animals	English	Reproduction in Animals	2020-12

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Master Lesson Plan (MLP) - Covers the entire chapter with the help of these 7 asset types



For more information on how to use the lesson plan effectively, please scroll to the guidelines at the end of this document.

Reproduction in Animals

1. MS_ Objectives_ Reproduction in animals

Notes to the teacher: This asset lays down the proposed plan for transacting this chapter. It states the asset objectives of the MLP. This asset is for teacher's reference and need not be taught to the students:

Students will be able to...

- explore the purpose of reproduction
- describe the process of animal reproduction
- recognize the method of reproduction in Frogs.
- identify the different parts of the male reproductive system
- appreciate the advances in research in human cloning
- discuss the female reproductive system
- adapt to the new practices of keeping their reproductive system healthy
- identify oviparous & viviparous animals
- demonstrate the different kinds of reproduction in amoeba
- describe human fertilisation
- relate to the concept of transformation
- examine the process of invitro fertilisation
- assess themselves about reproduction
- revise the chapter 'Reproduction in animals'

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Main Script	The Human Body	Reproductive system, Male reproductive system, Female reproductive system, Reproductive health

2. IQ_ Why Reproduce?

[Notes to the teacher – Teacher may enable the students to think and come out with as many answers as possible before giving out the right answer/ answers]

1. Why living organisms reproduce?

Suggested Answer:

Organisms reproduce:

1. To continue one's progeny:

Every individual organism sees that their species continues to live on this earth forever. Organisms protect their species from going extinct and continue their progeny.



2. For survival of the species: Reproduction introduces a new member in the group. Reproduction ensures that all the species survive in nature. In this way reproduction balances and maintains the environment. To save the species and life on earth reproduction becomes necessary. If any organisms stops reproducing, then the whole species would become extinct forever.



2. What will happen if organisms fail to reproduce?

Suggested Answer: If organisms fail to reproduce, populations will diminish and disappear because organisms would die from old age, disease, accidents, predation, etc.

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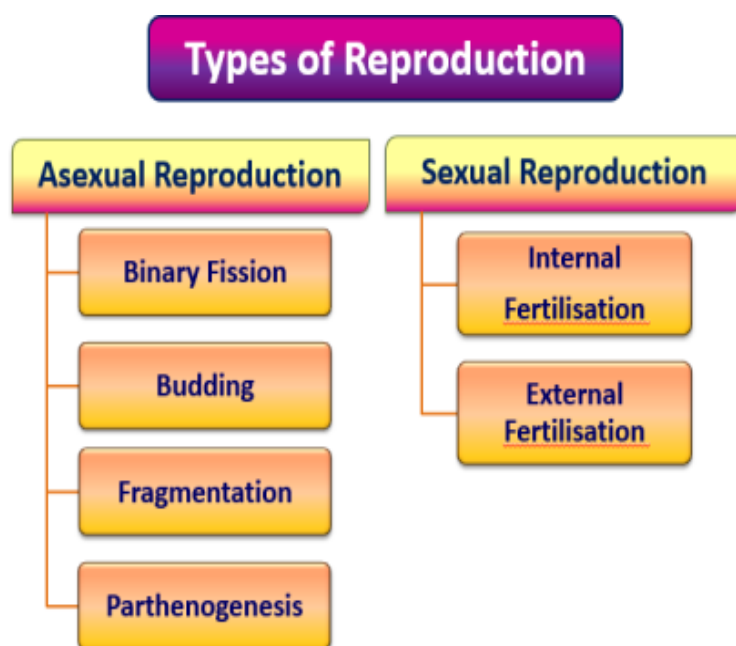
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Time to teach	Asset Type	Theme	Sub Theme
3 Minutes	Inquisitive Questions	The Human Body	Reproductive system

3. MS_ Reproduction in Animals

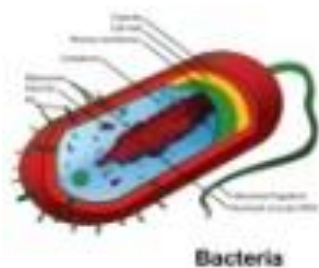
Reproduction is a process of producing young ones.

There are different modes of reproduction:



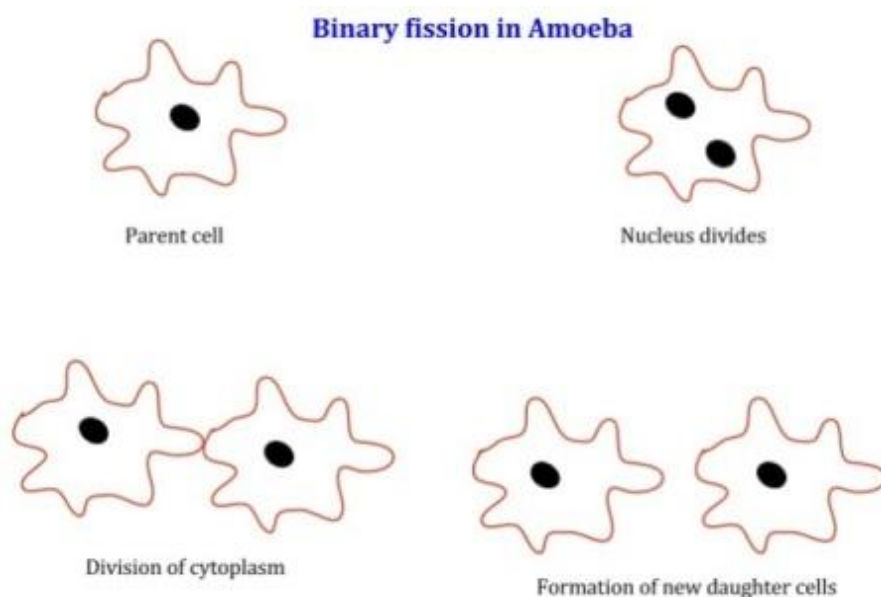
Asexual reproduction:-

Asexual reproduction is a process in which new individuals are produced from a single parent. This type of reproduction is mainly seen in the lower organisms such as amoeba, hydra, bacteria, star fishes, etc

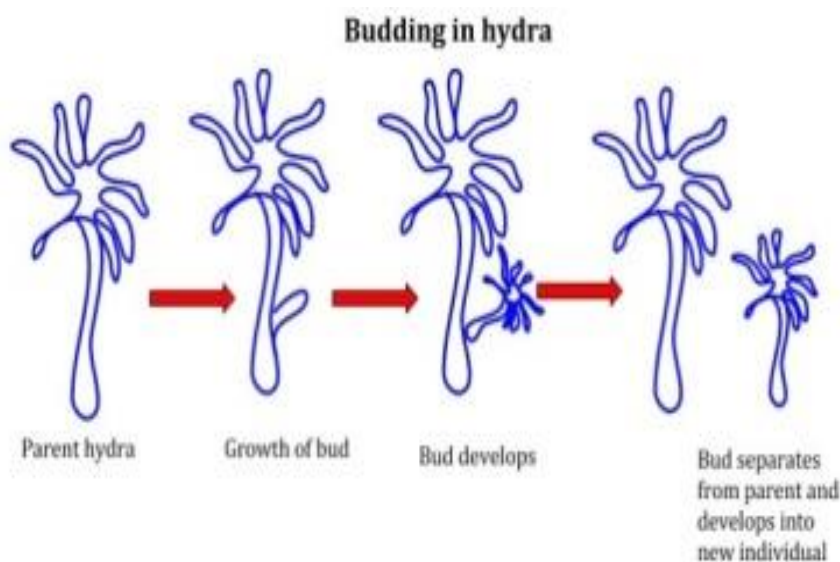


Binary fission:

Binary fission is a process of asexual reproduction in which the parent organism divide equally into two, producing two new daughter cells. The newly formed daughter cells develop into amoeba. This type of reproduction is mainly seen in amoeba.

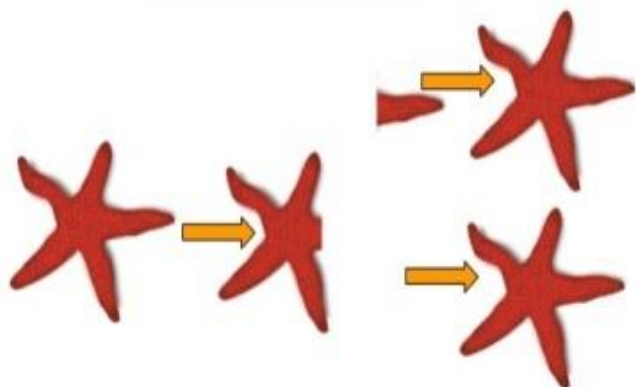
**Budding:**

It is a type of asexual reproduction in which new organisms are produced from tiny buds present in the parent organism. The tiny buds get detached from the parent plant and grow as adult individuals. This type of reproduction is seen in organisms like hydra etc

**Fragmentation:**

Fragmentation is a type of asexual reproduction in which the parent splits into "fragments or pieces". Each fragment then grows into a new individual.

Fragmentation in starfish

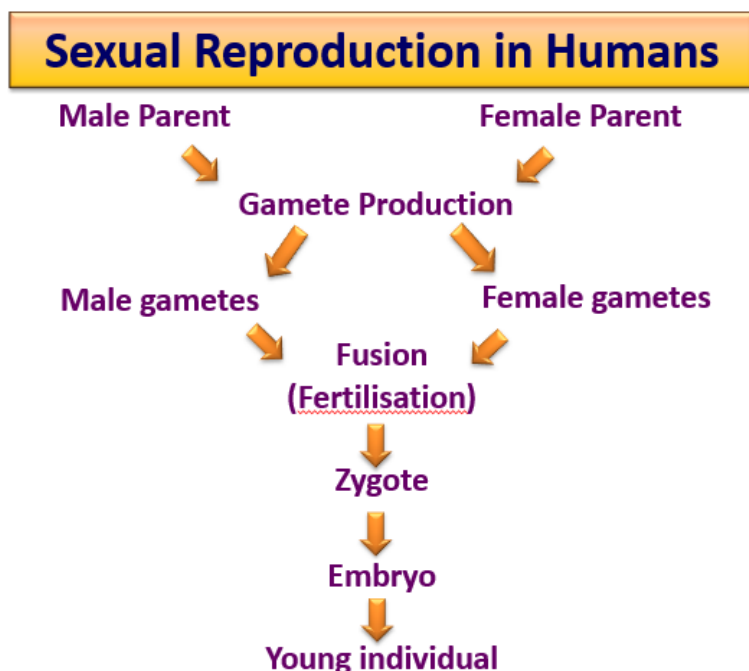
**Parthenogenesis:**

Parthenogenesis is a mode of asexual reproduction in which a new individual is formed from an unfertilized egg. This type of reproduction is seen in many plants, ants, bees, few reptiles etc.

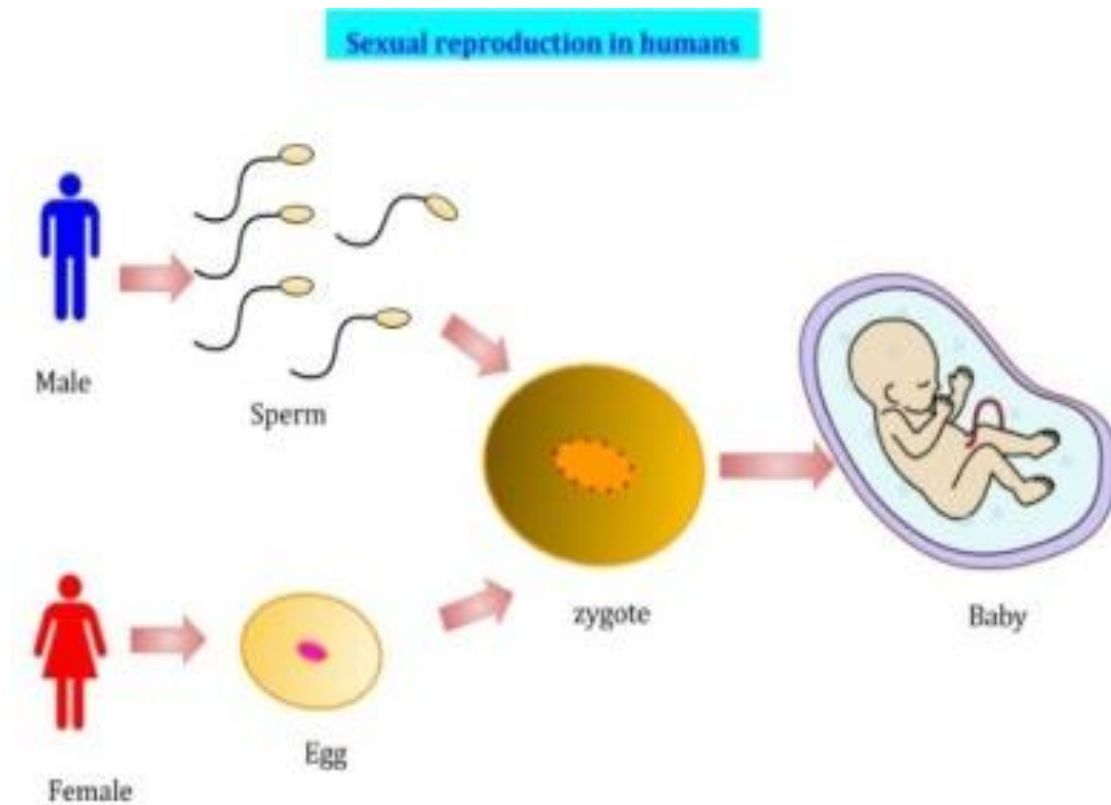
Sexual reproduction:-

Sexual reproduction is a type of reproduction seen in animals that involves two parents; male and female. This type of reproduction involves the fusion of male gamete (sperm) and the female gamete (egg).

Flow chart showing the event of sexual reproduction.



Sexual reproduction is seen in higher animals such as Birds, Reptiles and Mammals



Sexual reproduction is of two types:

Internal fertilisation:-

It is a type of sexual reproduction in which the fusion of gametes - the sperm and the egg takes place inside the body of the female parent. Eg. Birds, reptiles, mammals. An advantage is that the survival rate is higher but the number of offspring is less.



Example:- mammals (lions, elephants, rats, humans, dolphins), birds, reptiles, whales etc.

External fertilisation:-

It is a type of sexual reproduction in which the fusion of gametes takes place outside the body of the female parent. The male organism comes and fertilizes it by spraying sperms near the ova so that the sperms can reach the ova and fuse with it to form a zygote. Eg. Fishes, frogs. The number of offspring is higher, but the chances of survival is less in case of external fertilisation.

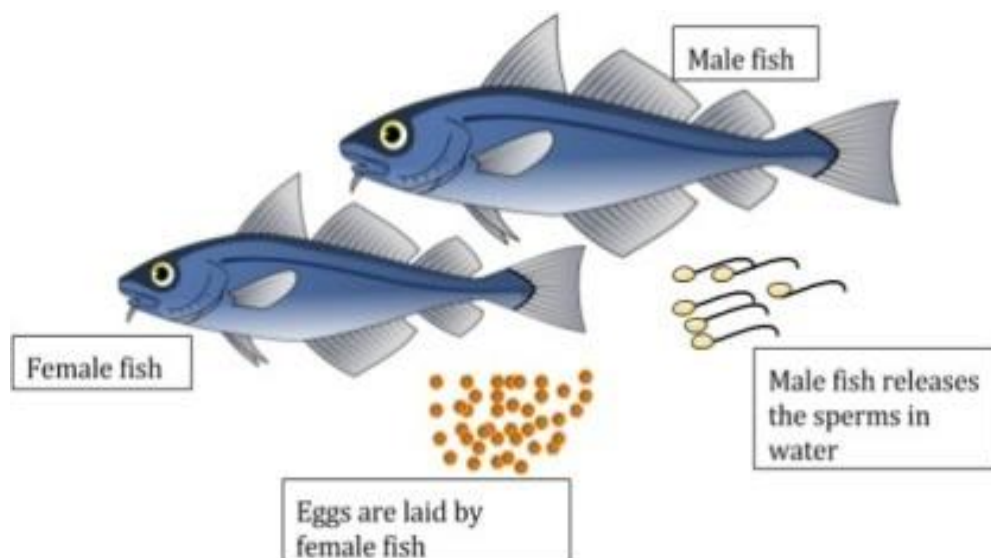


Image Source:

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Hydra: <https://commons.wikimedia.org/wiki/File:Hydra.svg> public domain Rodrigo H. Castilhos

Bacteria: https://commons.wikimedia.org/wiki/File:Average_prokaryote_cell-en.svg public domain by its author, LadyofHats

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Original contribution- Budding in hydra- @ zulu.karthik@gmail.com CC:

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Time to teach	Asset Type	Theme	Sub Theme
15 Minutes	Main Script	The Animal Kingdom	Sexual reproduction, Fertilization (examples), Binary fission (Asexual reproduction, Sexual Fertilization, Budding

4. IA_ Reproduction in Frogs

In spring, frogs and toads migrate to the ponds and lakes. In France, near Sologne, south of Orleans, amphibians migrate in such large numbers that accidents occur on the motor way. So, special tunnels have been constructed under the motorway to facilitate the migratory activity. These tunnels are called **Crapauducts**.



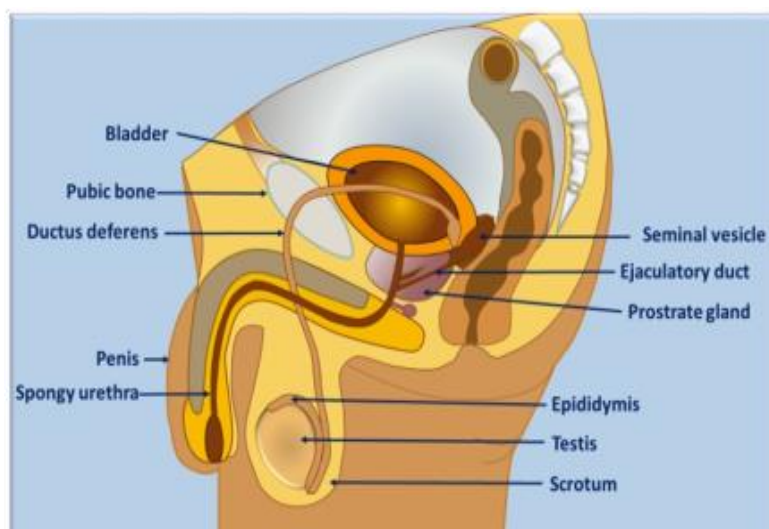
When the frogs reach the water, the males and females call out to one another, which helps the frogs to identify one another. Many different species of frogs may be mating at the same time and in the same place. The way they call each other is very important for some species because the males will try to mate with any object floating in the water, including fish or pieces of wood! The male holds the female round the waist so that as she releases her eggs he will release his sperms close to the min the water.

Image source: <https://pxhere.com/en/photo/1019274>

Time to teach	Asset Type	Theme	Sub Theme
3 Minutes	Interesting Asides	The Animal Kingdom	Sexual reproduction

5. MS_ Male Reproductive system

The male reproductive system is made up of many organs that are involved in the process of human reproduction.



Male Reproductive System

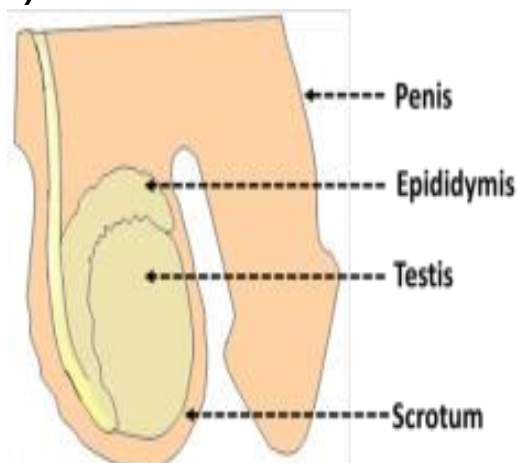


The male reproductive system consists of

- 1.External genital organs
- 2.Internal genital organs (Accessory organs)

External Genital Organs:-

a) Penis:-



Penis is a male external genital organ. It is a muscular organ consisting of three parts. The root, shaft and the glans. The glans is conical in shape and is covered by a skin called the fore skin. Penis is involved in the insertion of sperm into the vagina during mating.

b) Scrotum:-

Scrotum is a pouch like structure. It is present behind the penis. It holds the testicles. The testicles are protected inside this scrotum and it also safeguards the testicles when the temperatures are too high or low. It acts as a climate control system. The scrotum is made up of many blood vessels and nerves.

c) Testicles:-

Testicles are also known as testis. There are 2 testis in the male reproductive system. The testis are present inside the scrotum. The testis are the male gonads. They produce the male sex cells (sperms) and male hormone testosterone.

Internal Genital Organs (also called as Accessory Organs):-**a) Epididymis:-**

Epididymis is a long, coiled tubular structure. It stores sperms. Epididymis is also responsible for the maturity of the sperms and for transporting the matured sperms to vas deferens.

b) Vas deferens:-

The vas deferens is also called the sperm duct. It is a thin tubular structure that runs from the epididymis to the pelvic cavity. It transports spermatozoa from the epididymis to the ejaculatory duct.

c) Ejaculatory ducts:-

Ejaculatory ducts are paired structures. They are formed by the union of the vas deferens and the seminal vesicle. They are responsible for ejaculation of sperms into urethra.

d) Urethra:-

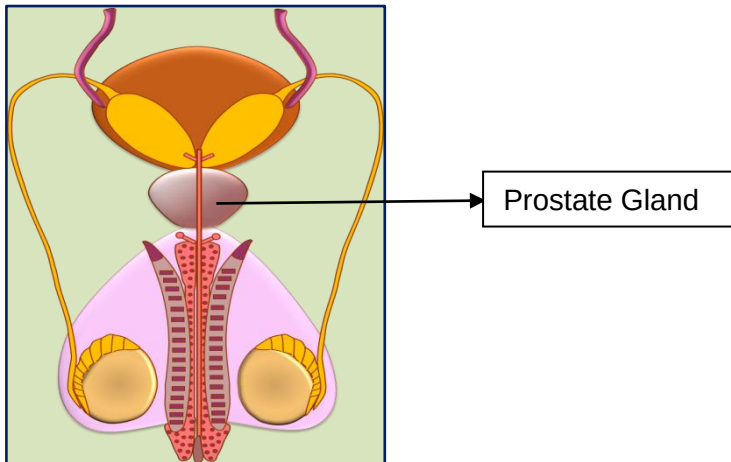
Urethra is a tube like structure, it carries urine and semen outside the body.

e) Seminal vesicles:-

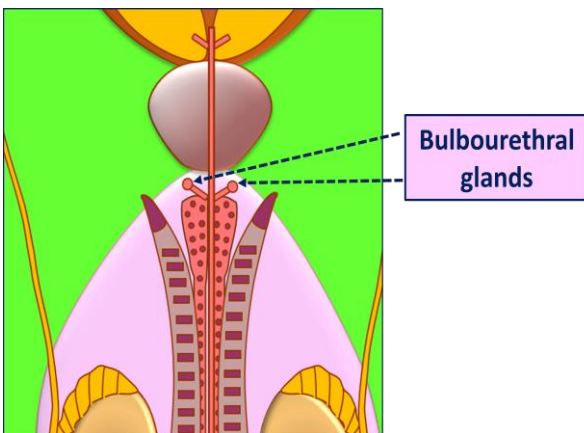
Seminal vesicles are a pair of tubular glands that nourishes the sperm and provides energy (fructose) for the sperm to move. It is responsible for the production of sperms.

f) Prostate glands:-

Prostate gland is an exocrine gland. It secretes a whitish alkaline fluid that helps the sperm to swim. It also nourishes the sperm.

**g) Bulbourethral glands:-**

Bulbourethral glands are also called Cowper's glands. These are small tiny glands located below the prostate glands. They produce a clear fluid that is rich in mucoproteins. The fluid also lubricates and neutralizes the urine in the urethra.

**The important functions of the male reproductive system are:-**

- It is responsible for the production of the male gametes (sperms) and semen.
- It is responsible for the transport and discharge of the sperm into the female reproductive tract.
- It is responsible for the production of male sex hormones.

Image Source:

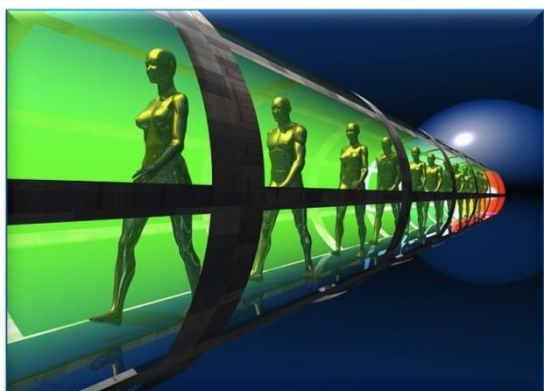
Original contribution @ srideviandkarthik@gmail.com

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Time to teach	Asset Type	Theme	Sub Theme
10 Minutes	Main Script	The Human Body	Male reproductive system

6. IA_ Human clone

Human cloning means creating a genetically identical copy of an existing, or previously existing human.



All round the world many researchers are working on this project. In the year 2014, researchers used this same cloning technique and created human stem cells. This technique was previously used to generate Dolly the sheep.

The human stem cells can be used to treat many diseases, particularly the genetic diseases.

In Japan, a woman was suffering from age-related macular degeneration disease. He was not able to see properly. So the doctors used her own stem cells to treat her disease. By implanting the stem cells in her retina further degeneration of her vision was stopped.

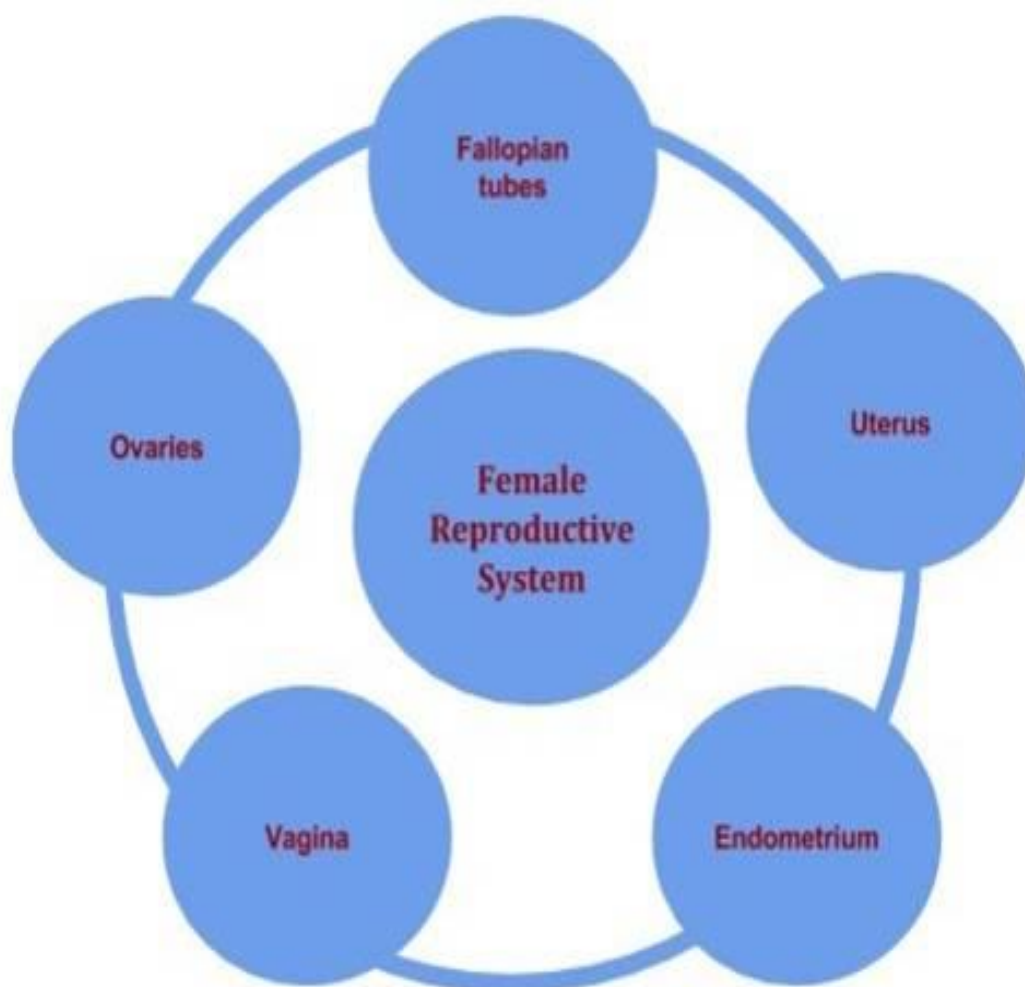
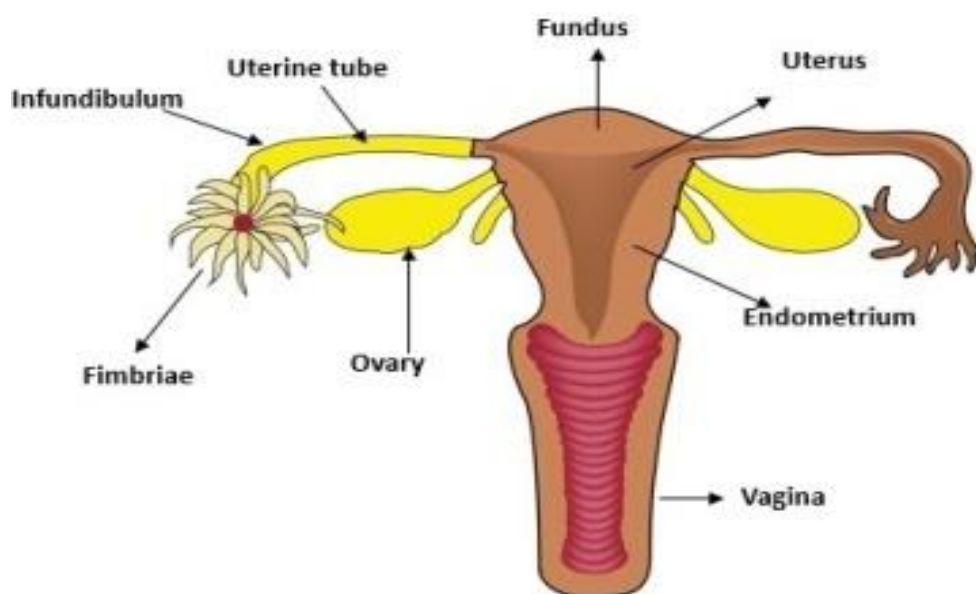
About 30% of the scientists predict that, by 2020 or a few years later, they would be successful in cloning an entire human.

Image source:

<https://pixabay.com/illustrations/dna-clone-equal-group-society-3985234/>

Time to teach	Asset Type	Theme	Sub Theme
3 Minutes	Interesting Asides	The Human Body	Reproductive system

7. MS_ Female Reproductive System



Ovaries:

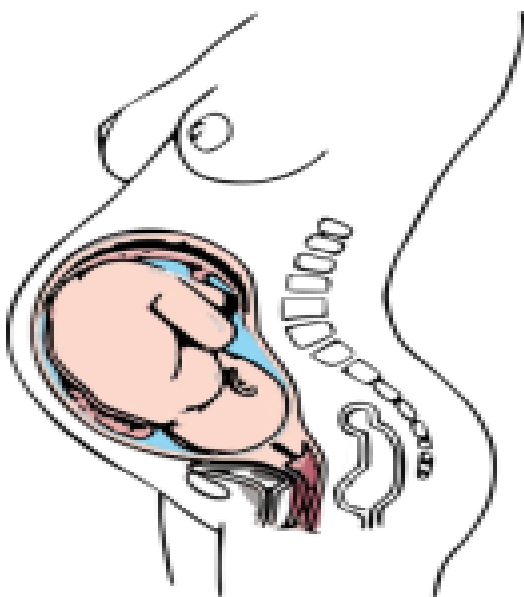
Ovaries are also known as female gonads. Ovaries are a pair of very small oval shaped structures present on both the left and right side of the pelvic region.

They are mainly responsible for the production of the female gametes called ova or eggs. Every girl is born with lots of eggs when she is born, but only about 500 eggs get matured, and one egg is released every month after she attains puberty.

The ovaries produce the female sex hormones; the estrogen and progesterone.

Fallopian tubes:

Fallopian tubes are narrow tubes and are about 8 to 13 cms in length that extend from left to right side of the uterus. The shape of the fallopian tube is in the form of a funnel also called as the infundibulum. The fallopian tubes act as the narrow passage for the egg to travel from the ovaries to the uterus. The fertilization of the egg takes place in the fallopian tubes after which the fertilized egg moves to the uterus.

Uterus:

Uterus is commonly known as womb. It is a pear shaped organ of the female reproductive system. It acts like a home to the developing baby.

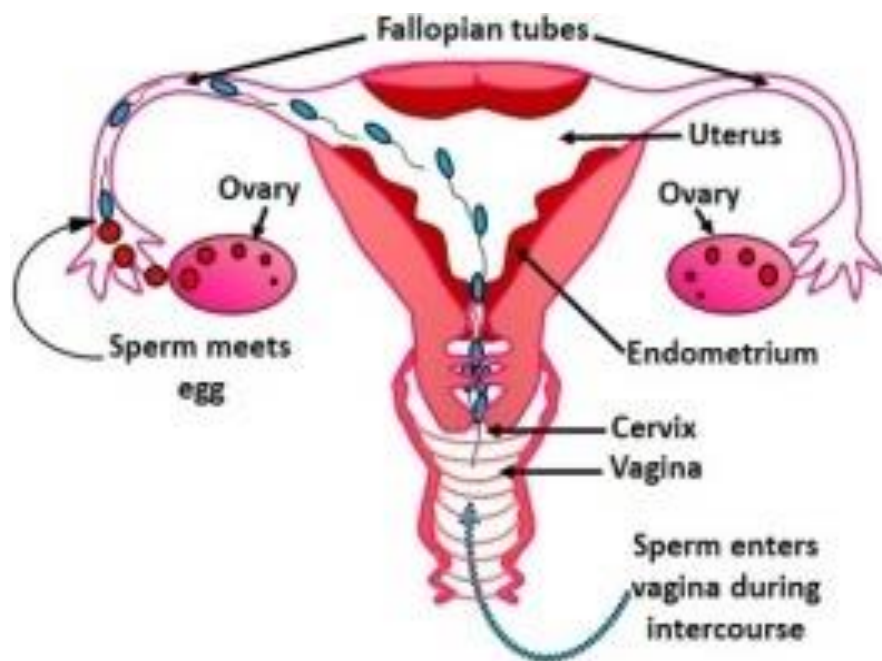
The uterus is divided into two regions:-



- The cervix is the lower most part of the uterus that opens into the vagina. It is lined with mucus. The mucus lubricates the cervix and helps in the transport of sperm.
- The main body also called as the fundus is the region where the pregnancy occurs.

The uterus is capable of extending about 10 to 20 times its normal size at the time of pregnancy in order to hold the baby.

Endometrium:



Endometrium is a membrane that lines the uterus. The endometrium is made up of blood vessels and glands. It changes throughout the menstrual cycle. Sometimes it becomes thick so that it can prepare itself for pregnancy if the egg is fertilised. When the egg is not fertilized the endometrium is shed as menstrual bleeding.

Vagina:

Vagina is a hollow muscular tube. It extends from the uterus. It connects the cervix to the exterior of the body. It is highly muscular in nature. It is because of this property it is able to expand during childbirth. Hence it is also known as birth canal. The important function of vagina during reproduction process is reception of penis and sperms during sexual intercourse. It is also responsible for the shedding of menstrual fluid during monthly periods.

Image source:

https://www.srisathyaivaividyaahini.org/alfresco/d/direct/workspace/SpacesStore/461e4650-f394-4f7f-bcd0-ffd6fe660996/reproductive-system-reproduction-uterus-human-body-5799?ticket=TICKET_0045982b0b2dafc4318c23c4fa135d40b1f8b1ca

<https://pixabay.com/vectors/anatomical-anatomy-birth-child-1295896/>

Endometrium: Original Contribution @srideviandkarthik@gmail.com

Time to teach	Asset Type	Theme	Sub Theme
8 Minutes	Main Script	The Human Body	Female reproductive system

8. DD_ Healthy Reproductive System

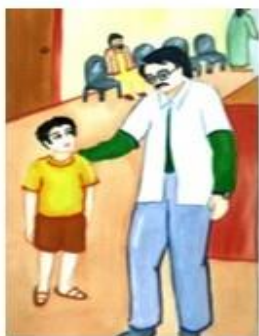
Eat the right kind of food and maintain a balanced diet



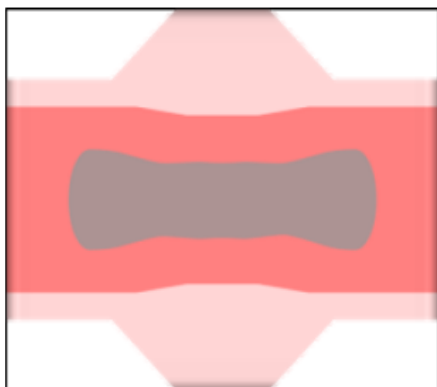
Fruits, vegetables, home made food, plenty of water, etc.



Junk food, soda, etc



Visit the doctor regularly for checkups so that he can detect any irregularity or disease involving your reproductive health and can immediately cure it.



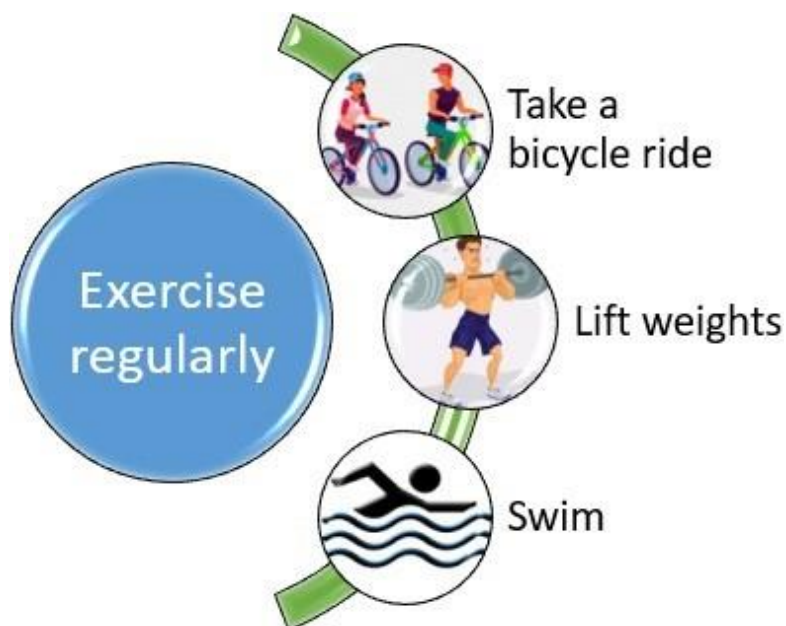
You will be comfortable, relaxed and clean.

Girls have to change their sanitary napkins once in every 4 hours. It may vary according to the quality of the napkin and the amount of flow.

Do not wear too tight jeans



Wearing skin tight jeans can raise the body heat and can cause yeast or bacterial infections in the genital organs.



Say no to alcohol and cigarette



Image Source:

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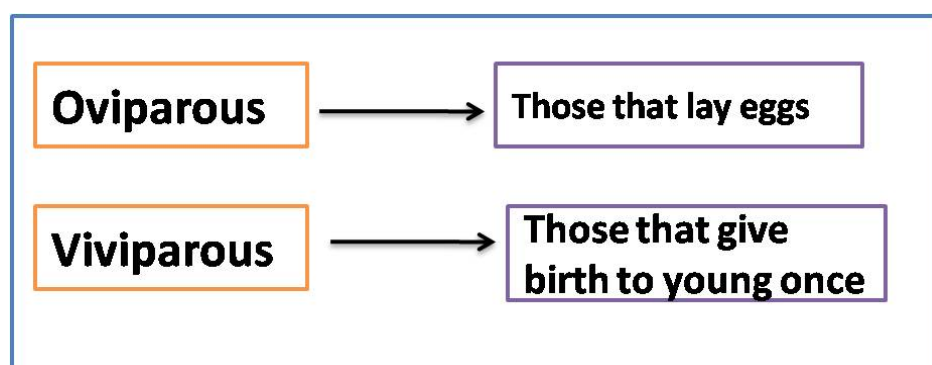
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<https://pixabay.com/vectors/calendar-monthly-office-schedule-23684/>

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Day-to-day Relevance	The Human Body	Reproductive health

9. MS_ Oviparous and Viviparous

Based on how a new organism is born, animals can be divided into two kinds:



1. Viviparous animals:

There are few animals which give birth to young ones, while others lay eggs. Viviparous animals are those animals that give birth to young ones. The development of the embryo in these animals takes place inside the body of the mother[womb].

Mammals as you know are generally viviparous. However, there are two species of mammals that are oviparous. Platypus and Echidna (both found in Australia) are egg-laying mammals.

Eg- Humans, cows, goats etc.



2. Oviparous animals:

Animals that lay eggs are known as oviparous animals. The development of the embryo in these animals takes place in the egg after it is laid. The nutrition required for the zygote is provided by the egg. When the growth of the zygote is complete, the individual breaks the egg and comes out.

Eg- Frog, birds, crocodiles and butterflies.



GROUP	OVIPAROUS (Egg-layers)	VIVIPAROUS (Live-bearers)
MAMMALS	Only a few primitive egg-laying mammals exist. They live in Australia and New Guinea. e.g. spiny anteater, duck-billed platypus. and Echidna	Nearly all mammals e.g. mouse, human, cat, dog, bear, kangaroo and dolphin.
BIRDS	All birds. e.g., robin, penguin, parrot, sparrow and eagle.	None
REPTILES	Most reptiles are egg-layers. e.g. crocodile, turtle and cobra.	Some lizards and snakes are live-bearing. e.g. vipers.
AMPHIBIANS	Nearly all.	A few frogs and toads that live in Africa, Western Nimba region in Guinea and South America are Viviparous
FISH	Most species. e.g. herring, salmon and trout.	Quite a few species are live-bearers. e.g. sharks and guppies.

There are many invertebrates which are oviparous (egg laying) but a few are viviparous (giving birth) such as sea anemones and aphids.

Only one sperm fertilizes one egg. If two sperms fertilise two eggs two offsprings will be produced. If many offsprings develop from a single mother at the same time, it is called a litter. A dog has a litter of six to eight pups.

Image Source:

Father and Son: <https://pixabay.com/photos/father-and-son-baby-father-child-1153919/>

Goat and Kid: <https://pixabay.com/photos/goats-kid-young-goats-domestic-goat-2052735/>

Chicken: <https://pixabay.com/photos/animal-barn-bird-chicken-eggs-1867521/>

Frog: <https://www.pexels.com/photo/amphibian-animal-beautiful-biology-414224/>

Frog Eggs: <https://pixabay.com/photos/frog-spawn-frog-spawn-frog-eggs-2085583/>

Alligator: <https://pixabay.com/photos/baby-alligator-hatched-eggs-nest-1569310/>

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Main Script	The Animal Kingdom	Hormones in animals, Fertilization, Development of embryo

10. SA_ Reproduction in Amoeba

Aim: To demonstrate the different kinds of reproduction in amoeba.

Materials required: [mention quantities]

1. Play dough of 2 colours
2. 30 tamarind seeds or black buttons per group (As per the number of groups)
3. Cookie cutter
4. Rolling pin
5. Cardboard sheet to label the steps

Setting for the activity [Indoor]

Divide the class into teams of 2 students each.

One student from the group conducts the binary fission.

The other student conducts the activity for multiple fission.

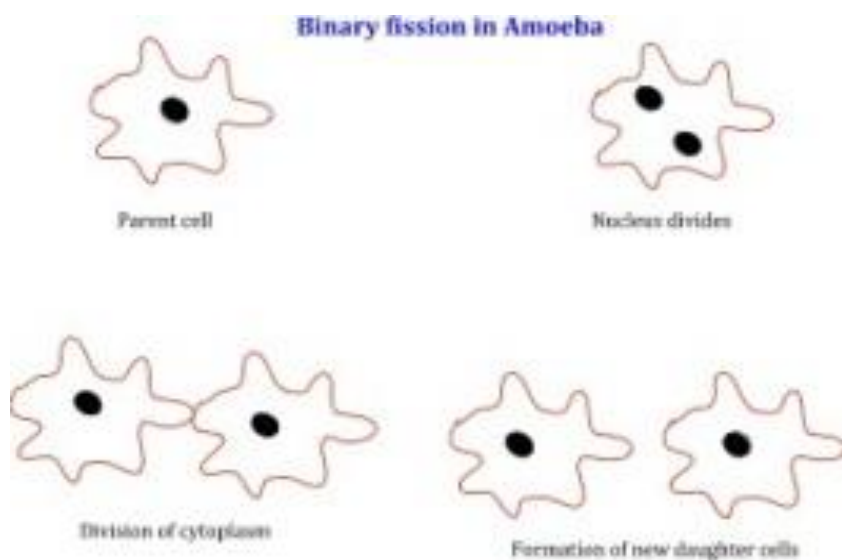
Type of Activity: [Demonstration]

I. Procedure: Activity for binary fission

1. Roll the play dough with the help of the rolling pin. Use only one coloured play dough.
2. Place the cookie cutter on the flattened dough and just give a gentle stroke.
3. Place a tamarind seed in the middle of the dough.



4. Remove the extra dough from the sides of the cookie cutter.
5. Similar steps have to be followed for the rest of the pictures as shown below.
6. Student has to arrange and label each step as shown in the diagram below.
7. When the activity is arranged, the student explains the process of binary fission to the other students.



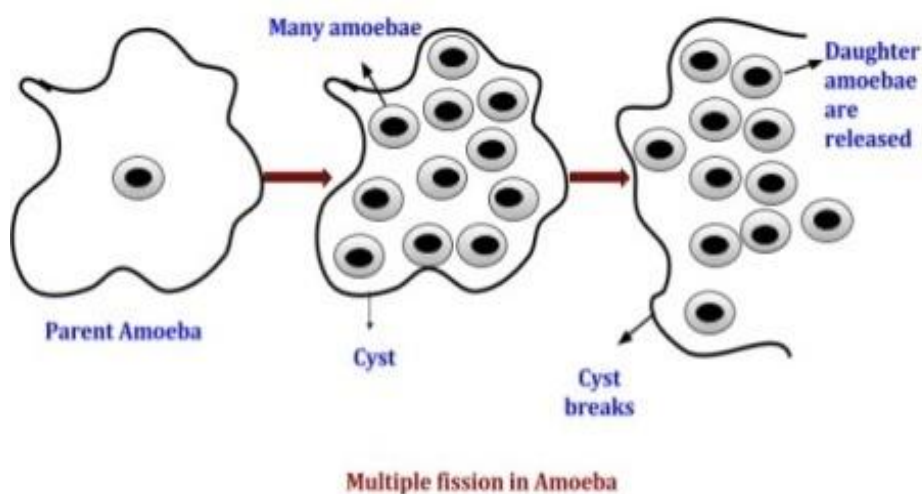
II. Activity for Multiple fission

1. Roll the play dough with the help of a rolling pin.

2. Place the cookie cutter on the flattened dough and just give a gentle stroke.
3. Place a tamarind seed in the middle of the dough.



4. Remove the extra dough from the sides of the cookie cutter.
5. Use other coloured dough to represent the amoebae.
6. Place all the tiny amoebae and tamarind seeds on the bigger dough as shown in the figure.
7. Then cut the interior of the base dough to show breaking of the cyst and release of tiny amoeba in the next picture as shown in the figure.
8. Arrange and label each step as shown in the below diagram.
9. When the activity is arranged the student explains the process of multiple fission to the other students.



Observation: The students are able to explain the process of reproduction in amoeba.

Conclusion: This activity helps the students to understand the different methods of reproduction in amoeba.

Instructions to Teacher: (If any – Optional)

1. The activity is team-based.

2. The play dough has to be equally distributed among the students.
3. One student could bring the rolling pin for himself which could be shared by both of them.
4. The other student could bring the 30 tamarind seeds or buttons.
5. Each group has to conduct the activity on their desks.
6. Teacher should see that discipline is maintained while conducting the experiment.
7. Teacher should check if all the steps are in the right order.
8. Teacher should see that each member explains the activity to the other member in the group.

Troubleshooting: (If any – Optional)

1. If play dough is not available chapati dough could be used
2. Any other material that would resemble the nucleus could be used such as bindi etc.
3. If cookie cutter is not available, students can shape the dough with their hands.

Question to Ponder:

What is the major difference between Binary fission and Multiple Fission?

Binary Fission occurs, when the parent cell divides only once in two equal parts and gives rise to the two daughter cells. On the other hand, when the parent cell divides repeatedly and gives rise to numerous daughter cells, it is Multiple Fission.

Image Source:

<https://pixabay.com/en/baking-cookies-cookie-cutters-dough-487119/>

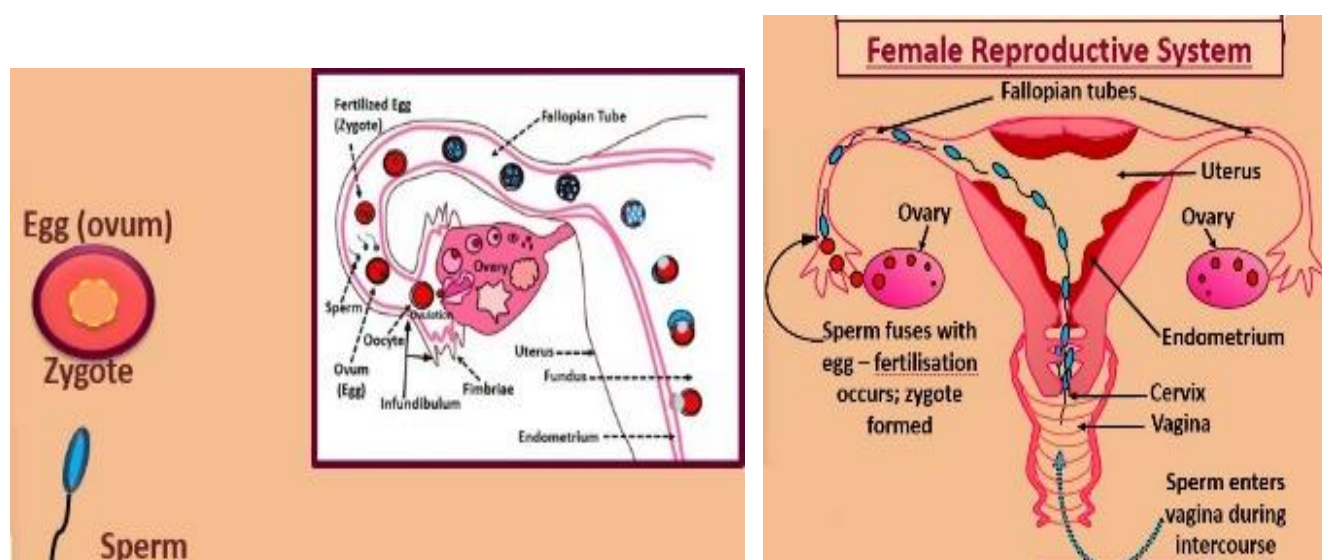
Original contribution Binary and Multiple Fission in Ameoba @ zulu.kartic@gmail.com

Time to teach	Asset Type	Theme	Sub Theme
20 Minutes	Suggested Activity	The Animal Kingdom	Feeding and digestion in amoeba, Binary fission (examples)

11. MS_ Human Fertilisation



"Human fertilisation" is the union of a human egg and sperm, usually occurring in the uterine tube. The result of this union is the production of a zygote, or fertilized egg.



The process of fertilization involves a sperm fusing with an ovum. The most common sequence begins with ejaculation during copulation, followed with ovulation, and finishes with fertilisation. When the sperm meets the egg, the sperm produces enzymes which allow it to burrow through the outer coat of the egg.

The sperm then fuses with the egg and travels down the fallopian tube to reach the uterus.

Fertilisation takes place when the nucleus of both, a sperm and an egg fuse to form a diploid cell, known as zygote. This zygote divides repeatedly to give rise to a ball of cells. The cells then start forming groups that develop into different tissues and organs in the body. This developing structure is termed as an embryo. The embryo gets fixed in the wall of the uterus and develops further. The embryo continues to develop in the uterus. It gradually develops body parts such as hands, legs, head, eyes, ears etc. When the embryo develops fully and all other parts are distinct, it is called a foetus. The period from zygote to fully developed foetus is called "pregnancy" period. Usually, after completion of this period (about 270-280 days) a baby is born. This is called gestation period. The successful fusion of gametes forms a new organism.

Note to the teacher: [Please play the video which is about 2.27 sec.](#)

https://youtu.be/-ekRRuSa_UQ (Attribution - FuseSchool - Global Education)

Image Courtesy

1. Sperm,egg,zygote–Ownwork@srideviandkarthik@gmail.com
2. Foetus in womb -<https://pixabay.com/vectors/embryo-human-infant-pregnancy-159690/>
3. Egg,Sperm,Zygote,Fallopian tube–Ownwork@srideviandkarthik@gmail.com
4. Female Reproductive System (with eggs, sperm, ovary)- Own work @ srideviandkarthik@gmail.com

Time to teach	Asset Type	Theme	Sub Theme
10 Minutes	Main Script	The Animal Kingdom	Sexual reproduction

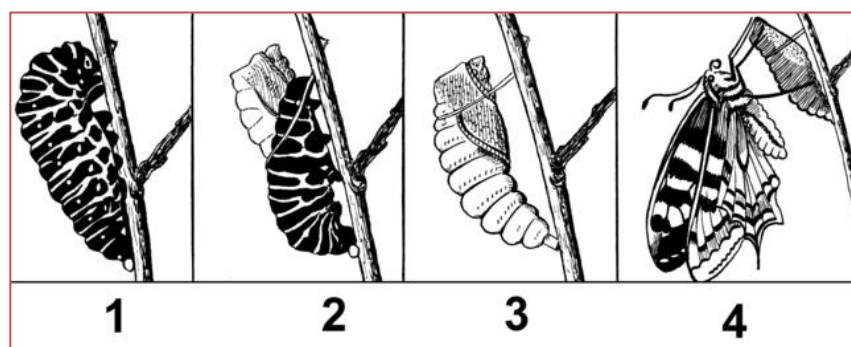
12. VC_ Struggles make us shine

Learning Domain- Classroom

Metamorphosis is a biological process by which an animal physically develops after birth or hatching, involving a conspicuous and relatively abrupt change in the animal's body structure through cell growth and differentiation.



The transformation of the larva into an adult through drastic changes is called metamorphosis.



Quote:

Struggles make us shine.

Let us go through a small story and learn on how we emerge successful with full abilities and strengths

through the process of struggles!!

One day a boy found a cocoon of a butterfly in his garden. Very curiously he wanted to watch the cocoon until the butterfly emerged from it. Every single day he used to watch the cocoon.



One day a small opening appeared. He sat and watched the butterfly for several hours as it struggled to force its body through that little hole. Unfortunately, even after several hours of struggle, the butterfly was stuck half way.



The little boy then decided to help the butterfly. So he took a pair of scissors and snipped off the remaining bit of the cocoon. The butterfly then emerged easily without any struggle. But it had a swollen body and small, shriveled wings.



The boy waited for the butterfly to fly. But neither did the wings expand nor did the body reduce. It was never able to fly.



What the boy in his kindness and haste did not understand was that only by going through this struggle the butterfly could have emerged beautiful and strong.

Our struggles in life develop our strengths. If nature allowed us to go through life without any obstacles, it would cripple us. We would not be as strong as what we could have been.



The struggle you are into day is developing the strength you need for tomorrow, and transform you into a better individual.

Image Source:

<https://www.publicdomainpictures.net/en/view-image.php?image=3549&picture=butterfly-life-cycle>

<https://commons.wikimedia.org/w/index.php?curid=79057446>

Garden, boy, cocoon – Own work @ srideviandkarthik@gmail.com

<https://commons.wikimedia.org/w/index.php?curid=66229800>

<https://commons.wikimedia.org/w/index.php?curid=34936385>

<https://pixnio.com/objects/tools/paper-scissors#>

Butterfly – Own work - NandiniKarthik @ srideviandkarthik@gmail.com

<https://pixabay.com/photos/orange-flowers-butterfly-monarch-189424/>

Time to teach	Value Type	Value Sub Type	Value Attribute
3 Minutes	Peace	Struggle for good	Quotation

13. MS_IVF



A baby is born when a sperm fertilizes an egg and the foetus grows inside the uterus of the mother. But in some cases, if there are any fertility problems with any one of the parents, fertilization cannot happen within the body. One way of helping within fertility problems is through IVF, and has been in use since 1978.

IVF means In Vitro Fertilisation. In IVF, an egg is removed from a woman. Outside of the body, the sperm is introduced to the egg for fertilisation. The fertilized egg develops to form an embryo, and the embryo is then returned to the woman's uterus, where the foetus then develops in the uterus as normal.

In the first step few drugs are given to the woman to suppress the production of FSH (Follicle Stimulating Hormone) and LH (Luteinizing Hormone) hormones.

These two hormones trigger the development of the egg and ovulation during monthly cycle. When these two hormones are suppressed, the woman's menstrual cycle is also suppressed. So this becomes easy during the treatment.

After about two weeks, lots of FSH hormone is injected for about 12 days.

This increases the number of egg production in the ovaries. Once more number of eggs are produced, another hormone called HCG (Human Chorionic Gonadotropin) hormone is injected.

HCG hormone matures the eggs. Once the eggs are matured, they are released by the ovaries. Once the eggs are released, they are removed from the ovaries using a small pipette.

These eggs are then transferred to a petridish in a fluid medium, containing the sperms. The sperms and the eggs are mixed together in the petridish.

Just after the eggs are removed from the uterus, the woman is given progesterone hormones to prepare the lining of the uterus to receive the embryo.

They are left for about 20 hours. If fertilization happens, the embryos are kept in a warm place set at human body temperature to replicate the mother's uterus. They stay here for up to 6 days to ensure they are starting to develop into embryos.

In 1978, Louise Joy Brown, the world's first baby to be conceived via invitro fertilization (IVF) is born at Oldham and District General Hospital in Manchester, England, to parents Lesley and Peter Brown.



Images used in the asset:

Syringe, Female reproductive organs – Own work @ srideviandkarthik@gmail.com

<https://pixabay.com/vectors/embryo-human-infant-pregnancy-159690/>

<https://pixabay.com/vectors/anatomical-anatomy-birth-child-1295896/>

Time to teach	Asset Type	Theme	Sub Theme
8 Minutes	Main Script	The Human Body	Male reproductive system, Female reproductive system

14. QA_ Reproduction in Animals – A questionnaire

I. Multiple choice questions:

1. Dolly, the famous animal, was a _____.

a) Goat b) Sheep c) Donkey

Suggested Answer: b) Sheep



2. Asexual reproduction involves _____ parents.

a) 1 b) 2 c) 3 d) 4

Suggested Answer: a) 1

3. Which one is not an oviparous animal?

a) Human b) crow c) fish d) duck

Suggested Answer: a) Human



4. Fertilisation results in the formation of _____.

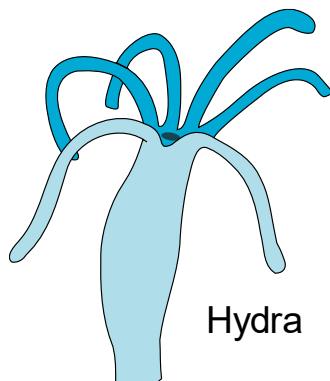
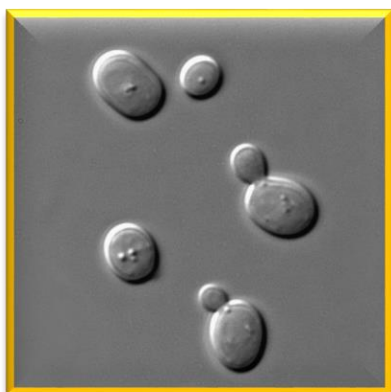
a) Zygote b) Baby c) Sperm d) Egg

Suggested Answer: a) Zygote

5. Budding is found in _____.

a) Yeast b) Hydra c) Yeast and Hydra d) None

Suggested Answer: a) Yeast and b) Hydra



6. The first test tube baby was_____.

- a) Louise Joy Brown b) Dolly c) Durga d) None of these

Suggested Answer: a) Louise Joy Brown

7. Animals that give birth to young alive

- a) Marsupials b) Viviparous c) Oviparous d) Fission or cell division

Suggested Answer: b) Viviparous

8. In the female reproductive system, of the Mammals, the ovarian funnel opens into a tube called_____.

- a) Vas deferens b) fallopian tube c) Cloacal d) Ejaculatory duct

Suggested Answer: b) Fallopian tube

9. What is reproduction?

- a) When parents produce off springs b) when off springs make adults c) when offspring is an exact copy of their parents d) all of the above

Suggested Answer: a) When parents produce off springs

10. Why do animals reproduce?

- a) To increase their number b) obligation to the species c) to get rid of unhealthy animals d) none of the above

Suggested Answer: a) To increase their number

II. Choose the odd one out

1. Uterus, fallopian tube, penis, ovaries
2. Humans, echidna, dog, cat
3. Budding, fragmentation, external fertilisation, parthenogenesis
4. Sperm, ovum, frog egg, tadpole

Suggested Answer: 1. Penis 2. Echidna 3. External fertilisation 4. tadpole

III. Fill in the blanks:

1. Life continues from one generation to another, due to_____.

2. _____organisms are also called as bisexual organisms.

3. In aquatic organisms fertilization takes place_____.

4. _____reproduction is the fusion of male and female gamete.

Suggested Answer: 1. Reproduction 2. Hermaphrodites 3. Internally 4. Sexual

IV. Match the following:

	Column A		Column B
1.	Star fish	A.	External Fertilisation
2.	Frog	B.	Fusion of male and female gamete
3.	Zygote	C.	Asexual reproduction
4.	IVF	D.	Regeneration
5.	Binary fission	E.	In vitro fertilisation

Suggested Answer

	Column A		Column B
1.	Star fish	A.	Regeneration
2.	Frog	B.	External Fertilisation
3.	Zygote	C.	Fusion of male and female gamete
4.	IVF	D.	In vitro fertilisation
5.	Binary fission	E.	Asexual reproduction

V. Say whether True or False

1. Each sperm has one cell.
2. Fertilisation is a must in asexual reproduction.
3. In IVF the whole adult is born inside a test tube.
4. Dolly is the first human clone.
5. In asexual reproduction only one parent is involved.

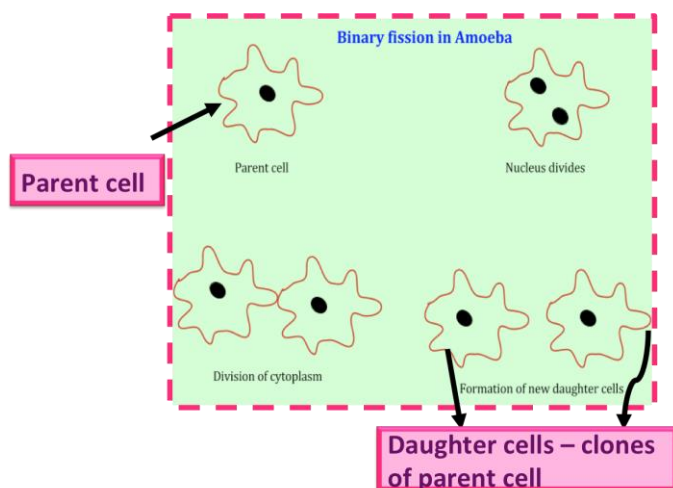
Suggested Answer:

1. True
2. False. Fertilisation is must in sexual reproduction.
3. False. In IVF the whole adult is not born in the test tube.
4. False. Dolly is the first sheep that was cloned.
5. True

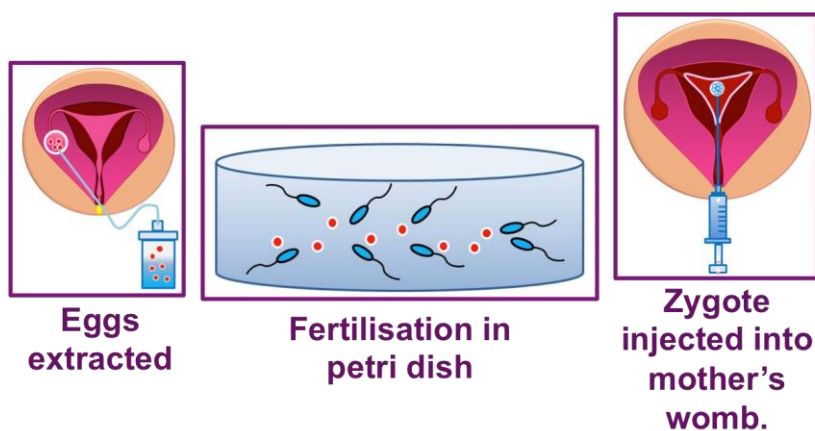
VI. Answer the following questions:**1. Differentiate between clones and test tube babies.****Suggested Answer:**

The production of an exact copy of a cell, any of the body parts, or a complete organism from a single parent is referred to as cloning and the cell or part thus formed is called as a clone.

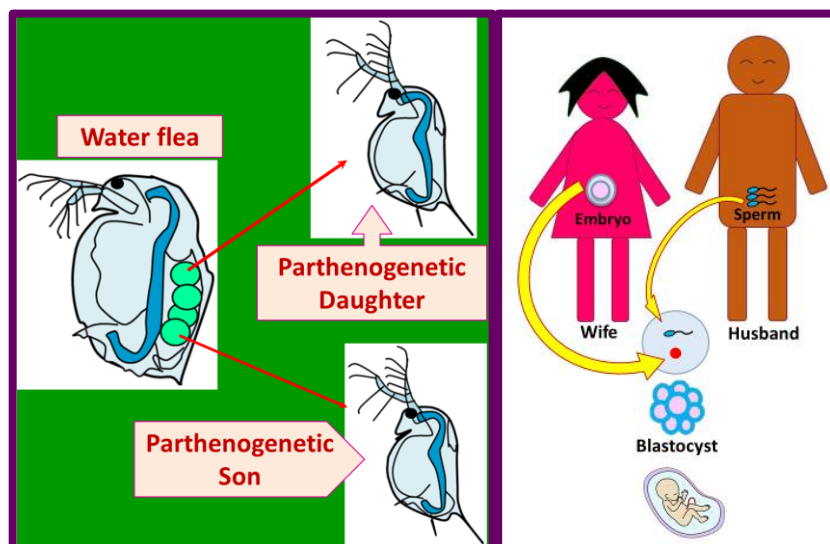
For example: In asexual reproduction, the daughter cells are clones to the parent cells.



If a woman has some fertility problems then she can't bear babies, in such cases babies are born through IVF technique called test tube babies. Fertilisation of sperm and egg takes place under lab conditions and then the zygote is transferred to the mother's uterus.

**2. Compare asexual and sexual reproduction.****Suggested Answer:**

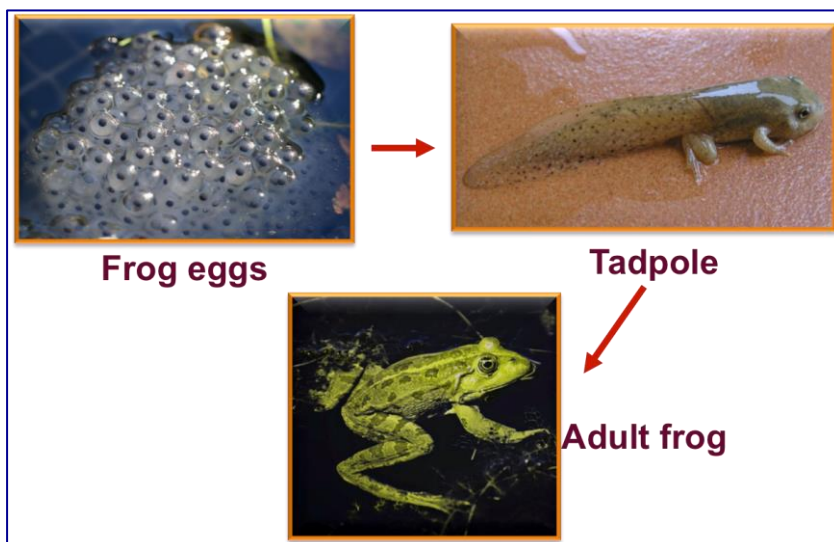
Asexual	Sexual
Mode of reproduction in which a single organism is able to reproduce one or more of its kind as a single parent is called as asexual reproduction. For <u>example</u> : Amoeba, Paramecium, Bacteria	Mode of reproduction which involves two parents in the process of individual formation is called sexual reproduction. Each parent produces gametes



3. What is metamorphosis?

Suggested Answer:

A drastic change that takes place during the development of an animal is called as metamorphosis.
Example: Egg - tadpole-adult



4. What is the type of fission in amoeba?

Suggested Answer:

 Binary fission

Image Source:

<https://www.dpz.eu/en/info-center/knowledge/cloning.html>

Human: SSSVV Gallery

Yeast: <https://commons.wikimedia.org/w/index.php?curid=1069017>

Hydra: <https://commons.wikimedia.org/w/index.php?curid=1577296>

Eggs extraction, Fertilization in petri dish, Zygote injected (IVF) – Original contribution @ srideviandkarthik@gmail.com

Parthenogenesis - Own work @ srideviandkarthik@gmail.com

Sexual reproduction - Own work @ srideviandkarthik@gmail.com

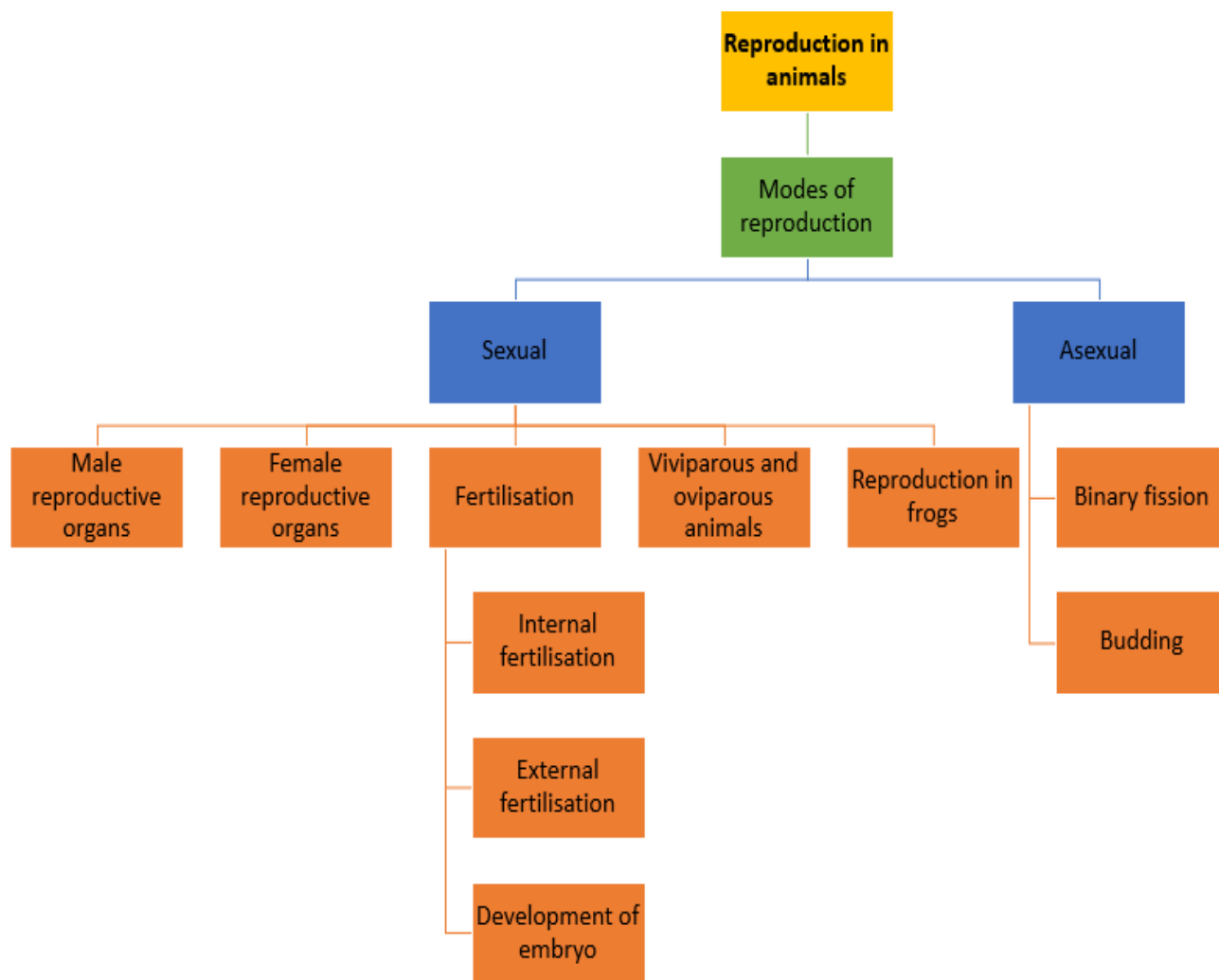
<https://pixabay.com/photos/frog-spawn-eggs-young-common-frog-288938/>

<https://pixabay.com/photos/tadpole-frog-amphibious-2243033/>

<https://pixabay.com/photos/frog-pond-animal-water-frog-3644865/>

Time to teach	Asset Type	Theme	Sub Theme
20 Minutes	Assessments	The Animal Kingdom	Sexual reproduction, Metamorphosis, Fertilization, Development of fission (examples), Asexual

15. MS_Summary_Reproduction in animals



Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Main Script	The Human Body	Reproductive system, Male reproductive system, Female reproductive system, Reproductive health

Master Lesson Plan

Seven Asset Methodology for MLP	
What is the purpose of this Master lesson Plan?	This Master Lesson Plan (MLP) prepared by Sri Sathya Sai Vidya Vahini, covers the entire chapter for the given board. The chapter given in the textbook is broken down into smaller modules known as assets. One of seven teaching methods is applied to each asset. Several different assets together complete the entire chapter. Each asset is supported by a teaching aid such as animated presentation, audio, video, worksheet; that the teacher can use in the class, while teaching that module. The MLP is for the teacher's preparation and the teaching aids are for use in the classroom.
How to use it?	You can prepare for your class with this MLP by following 3 simple steps:1. Read your textbook; 2. Go through the information given in the assets (document & multimedia); 3. Prepare your teaching notes. Great! Now you are ready to transact the chapter.
Duration	Kindly note the duration given for each asset. Due care has been taken in planning the assets, to ensure the chapter is completed within the time specified by the Board. Note: Preparation time is not included in the asset duration. The teaching time depends on the duration of the teaching aids and is not impacted by the length of the MLP.
What is a 'Main Script' (MS) Asset?	The Main Script asset is there for explaining the main concepts of the chapter clearly. The information given in the textbook is simplified, organised and structured to give more clarity. Additionally, you may find a video or mnemonics or a graphic organiser to deepen the understanding of the concept.
How to teach using the MS asset?	Please use the blackboard, slides and interaction to develop the concept.
What is an 'Inquisitive Questions' (IQ) asset?	The Inquisitive Questions asset uses questions to promote higher order thinking like the n^{th} why, what-if, new perspectives, cause-effect, and others, creating curiosity.
How to teach using the IQ asset?	You may use the questions to connect with the students, encourage exploration to engage them in the learning process. You may allow multiple responses and instead of rejecting any of the responses, ask why, before revealing the suggested answer or hints.
What is a 'Day to day Relevance' (DD) Asset?	The Day to Day Relevance asset helps students understand the practical relevance of every topic, making them eager participants in the classroom. If students connect the concepts to their environment, they would learn meaningfully without dislike or simply memorizing for exams.

How to teach using the DD asset?	You may use the asset by asking questions about their experience and use it to establish why they are learning the topic. If necessary you may substitute with a recent or local example.
What is an 'Interesting Aside' (IA) asset?	The Interesting Aside asset uses attention grabbing titbits or anecdotes to bring joy and satisfy the child's hunger to know more. This is a quick/short asset intended to bring attention back to the main concept being taught.
How to teach using the IA asset?	You may use this asset to give a piece of interesting information relevant to the topic, without prolonged explanation/discussion. You may suggest appropriate books for further reading.
What is a 'Suggested Activity' (SA) Asset?	The Suggested Activity asset provides a detailed step by step procedure for the teacher to conduct a hands-on activity. This promotes Activity Based Learning.
How to teach using the SA asset?	You may use this asset to energise your students to learn by doing simple, fun-filled activities based on the topic. The asset includes - preparation, activity, and follow-up. You may engage the students in the preparation and follow-up stages to develop collaboration and responsibility. You could try it once, yourself, before the actual delivery to be more comfortable with it. Note: The duration mentioned in the asset is usually for the activity part only.
What is a 'Value Content' (VC) Asset?	The Value Content asset integrates Universal Human Values (such as empathy, inclusivity, respect for nature that translates into responsible behaviour) seamlessly into the curriculum, as the "End of education is character".
How to teach using the VC asset?	You may use this asset to engage with the students to bring out their innate values and connect with the intrinsic values in the topic/concept. The asset includes pointers on the specific pedagogical technique followed.
What is a 'Questions to Assess' (QA) asset?	The Questions to Assess asset uses an interactive approach to check learning of different types of learners, and provides feedback to the teacher for appropriate action. The questions cater to all the levels of Bloom's Taxonomy. Questions from 'Apply' level and above enable students to reflect on their learning.
How to teach using the QA asset?	You may go through the slides to understand its flow and know when to click for the answer (slides include suggested answers). While presenting in the class, you may display the question and encourage multiple responses, before revealing the answer. In some cases, this asset may include extra questions/worksheet that can be given as homework.