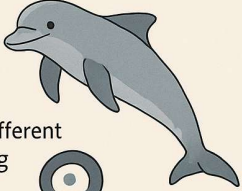
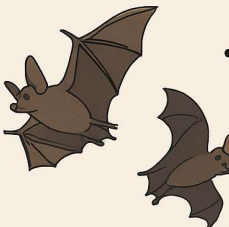
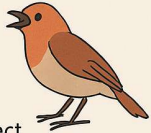


6th Entrance Jamia Millia Islamia**Class 5 EVS**

Chapter 1 Super Senses	Chapter 12 What If It Finishes
Chapter 2 A Snake Charmers Story	Chapter 13 A Shelter So High
Chapter 3 From Tasting to Digesting	Chapter 14 When the Earth Shook
Chapter 4 Mangoes Round the Year	Chapter 15 Blow Hot Blow Cold
Chapter 5 Seeds and Seeds	Chapter 16 Who Will Do This Work
Chapter 6 Every Drop Counts	Chapter 17 Across the Wall
Chapter 7 Experiments with Water	Chapter 18 No Place for Us
Chapter 8 A Treat for Mosquitoes	Chapter 19 A Seed Tells a Farmers Story
Chapter 9 Up You Go	Chapter 20 Whose Forests
Chapter 10 Walls Tell Stories	Chapter 21 Like Father Like Daughter
Chapter 11 Sunita in Space	Chapter 22 On the Move Again

1. Super Senses

- Every animal uses senses to survive, just like humans use sight, hearing, smell, taste, and touch. But many animals have these senses far sharper than ours. These highly developed abilities are called **super senses**.
- **Sense organs** body parts receive information from the environment & send it to brain.
- Humans have five basic senses: **smell, sight, hearing, taste, touch**.
- Some animals have the same senses but in a much sharper form called **super senses**.
- Super senses help animals **find food, protect themselves, locate friends or enemies, and survive**.
- Think of them as “*special tools*” animals use to find food, escape danger, hunt, or communicate.

SENSE OF SMELL (SMELL SUPERPOWERS)		Sense of Hearing (Hearing Superpowers)	
 Dogs • They can smell layers of scents separately. • Used by police to trace criminals, missing people, or explosives. • They mark their territory by urinating; other dogs can identify the dog through smell	 Snakes • Use their tongue to 'taste' smell particles from the air • The Jacobson's organ in their mouth helps them detect prey 	Animals with heightened hearing: • Owls: • Can hear tiny movements of prey even in complete darkness. • Their ears are placed at different heights on the head, giving 3D directional hearing. • Dogs • Hear high-frequency sounds that humans cannot. • This is why dog whistles work for dogs but are inaudible to us. • Dolphins • Use echolocation, meaning they send sound waves and detect objects by the returning echo. • Helps them hunt even in dark or murky waters. • Bats • Also use echolocation.	   
Ants • Identify their territory through scent marks • A tiger's smell also communicates mating readiness  Ants • Use their tongue to 'taste' smell particles from the air • The Jacobson's organ in their mouth helps them detect prey	Communication by sound: • Elephants communicate using low-frequency sounds called infrasound, which travel very far. • Birds call or sing to attract mates, protect territory, or signal danger.		

1.1 Why smell matters?

Animals use smell for locating food, identifying danger, recognizing family, and navigating their surroundings.

1.2 Sense of Hearing (Hearing Superpowers)

1.2.1 Communication by sound:

- Elephants communicate using low-frequency sounds called **infrasound**, which travel very far.
- Birds call or sing to attract mates, protect territory, or signal danger.

Sense of Sight (Seeing Superpowers)

Animals with sharp eyesight:

- **Eagles**
 - One of the best eyes in the animal world
 - Can spot prey from several kilometers in the sky.
- **Owls**
 - Large eyes that can gather more light, helping them see at night.



Other visual abilities:

- **Butterflies**
 - See colours that humans cannot, including ultraviolet patterns on flowers.
- **Cats**
 - Excellent night vision due to a reflective layer behind their retina

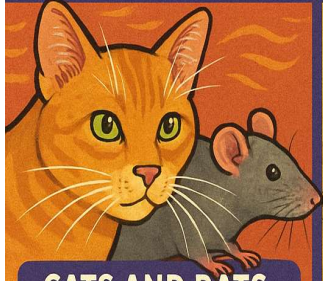


Cows and Horses

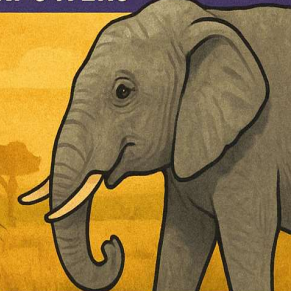
- Their eyes are on the sides of their head, giving a wider view



SENSE OF TOUCH TOUCH SUPERPOWERS



CATS AND RATS
Their whiskers act as sensors, picking up tiny changes in air movement.



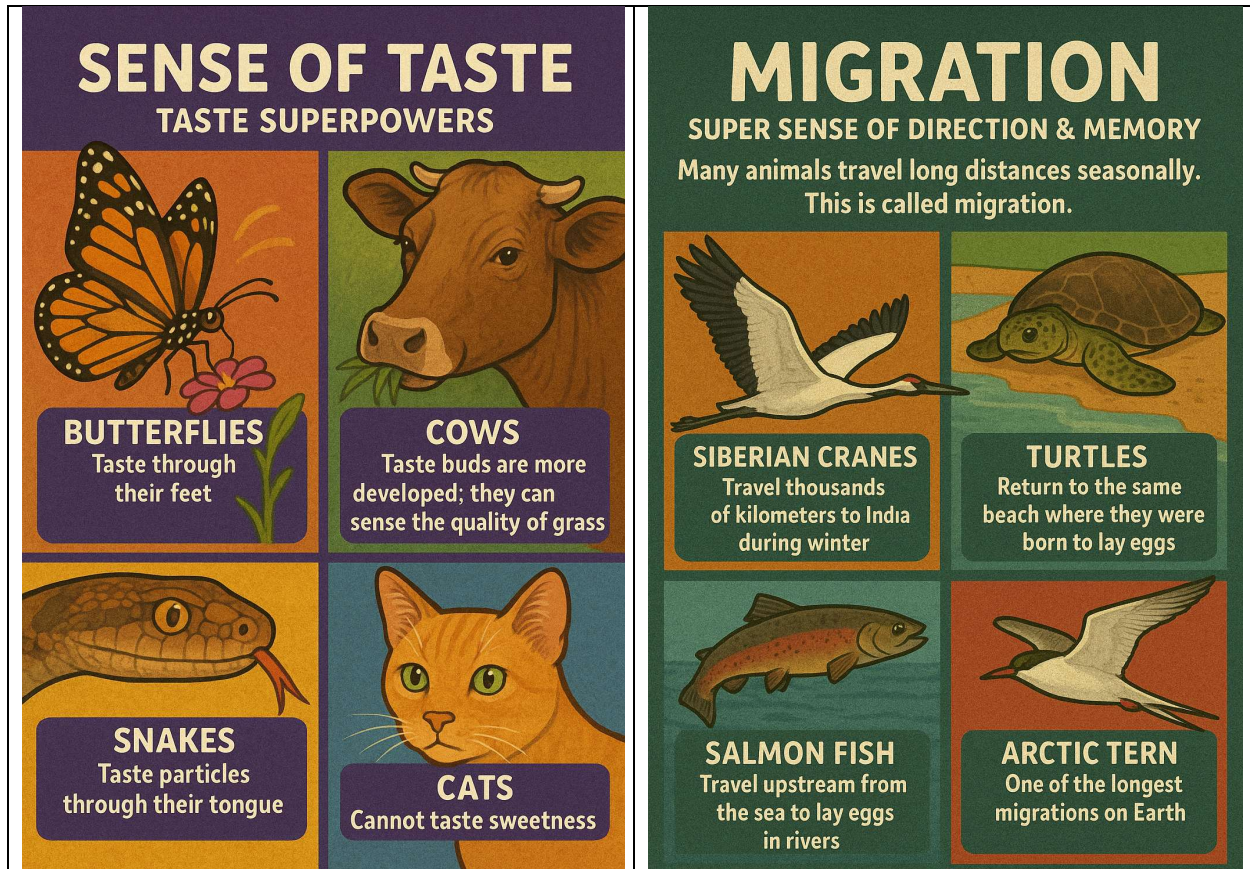
ELEPHANTS
Sensitive skin helps them feel vibrations from long distances.



BUTTERFLIES
Tiny sensors on their legs help them "taste" food when they land on plants.

1.3 Sense of Touch (Touch Superpowers)

- **Cats and Rats:** Their **whiskers** act as sensors, picking up tiny changes in air movement.
- **Elephants:** Sensitive skin helps them feel vibrations from long distances.
- **Butterflies:** Tiny sensors on their legs help them "taste" food when they land on plants.



1.4 Sense of Taste (Taste Superpowers)

- **Butterflies:** Taste through their feet.
- **Cows:** Taste buds are more developed; they can sense the quality of grass.
- **Snakes:** Taste particles through their tongue.
- **Cats:** Cannot taste sweetness.

1.5 Migration (Super Sense of Direction & Memory)

Many animals travel long distances seasonally. This is called **migration**.

Examples:

- **Siberian Cranes:** Travel thousands of kilometers to India during winter.
- **Turtles:** Return to the same beach where they were born to lay eggs.
- **Salmon Fish:** Travel upstream from the sea to lay eggs in rivers.
- **Arctic Tern:** One of the longest migrations on Earth.

1.5.1 How do they find their way?

- Sun and star position
- Earth's magnetic field
- Smell of familiar places
- Memory stored from birth routes

1.6 Animals that Use More Than One Super Sense

- **Dogs:** Smell + hearing
- **Owls:** Sight + hearing
- **Dolphins:** Hearing + echolocation
- **Snakes:** Smell + taste + ground vibration
- **Elephants:** Sound + touch (vibrations)

1.7 Communication Among Animals

Animals use:

- Smell (ants, dogs)
- Sound (birds, elephants)
- Body movements (bees do “waggle dance” to show direction of food)
- Colour signals (chameleons change colour to express mood).

ANIMALS THAT USE MORE THAN ONE SUPER SENSE



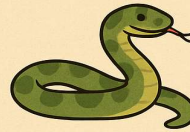
DOGS
Smell + hearing



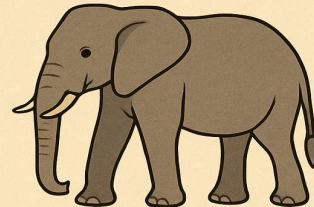
OWLS
Sight + hearing



DOLPHINS
Hearing + echolocation



SNAKES
Smell + taste + ground vibration



ELEPHANTS
Sound + touch (vibrations)

ELEPHANTS
Sound + touch (vibrations)

1.8 Protecting Animals and Their Senses

- Noise pollution harms animals with sharp hearing (e.g., birds, dolphins).
- Cutting forests destroys smell and path cues for animals like elephants or tigers.
- Artificial lights disturb birds' night migration.

1.9 Short, Exam-Ready Points (Quick Revision)

- | | |
|--|---|
| <ul style="list-style-type: none"> • Dogs have strongest smell among common animals. • Owls turn head almost fully; strong night vision and hearing. • Eagles have best eyesight. • Snakes use tongue for smell. • Dolphins and Bats use echolocation. | <ul style="list-style-type: none"> • Elephants use low-frequency infrasound. • Butterflies taste with legs. • Cats can't taste sweet things. • Siberian cranes migrate to India. • Whiskers help cats and rats sense touch. • Ants follow smell trails. |
|--|---|

1.10 Super Sense of Smell

- **Dogs:** nose is 1 million times sharper than humans; used by police for tracking.
- **Ants:** smell with their **antennae**; follow each other's smell trails.
- **Mosquitoes:** can smell human body odour and sweat from far away.
- **Silkworm:** male can smell a female from 6 km away.
- **Turtles:** smell water of their home beach.

- **Tigers & leopards:** mark territory with urine smell.

1.11 Super Sense of Hearing

- **Elephants** hear very low-frequency (infrasonic) sounds; can detect thunderstorms or other elephants far away.
- **Dolphins** hear high-frequency (ultrasonic) sounds; communicate and navigate in water.
- **Bats** use echo-location: send out sound waves and judge distance by returning echo (find food in dark).
- **Tigers & cats** can move each ear separately to know the direction of sound.
- **Owls** have very sharp hearing to catch prey at night.

1.12 Super Sense of Sight

- **Eagles, vultures, kites** – vision is 4–5 times stronger than humans; can see a small prey from hundreds of metres high.
- **Owls** – see clearly in dim light; special eyes for night vision.
- **Snakes** – some have heat-sensing “pits” to see warm prey in darkness.
- **Butterflies & bees** – see ultraviolet patterns on flowers that guide them to nectar.
- **Many insects** have compound eyes → detect quick movements.

1.13 Other Special Senses / Skills

- Whiskers of cats, seals etc. act as touch sensors.
- Fish have a **lateral line** to sense vibrations in water.
- Pigeons, turtles: can detect Earth’s magnetic field → navigate long distances.
- Sharks: sense tiny electric signals from prey.

1.14 Activities that show the importance of senses

- **Blindfold game:** closing eyes makes smell, hearing & touch sharper → shows how senses compensate.
- **Guessing food by smell.**
- **Recognising friends’ voices** with eyes shut.

1.15 Care & Use of Senses

- Keep nose, ears, eyes clean; avoid very loud sounds.
- Do not put sharp things in ear or nose.
- Balanced diet rich in Vitamin A keeps eyes healthy.

Mosquitoes bite?

- Mosquitoes can detect the **smell of the human body**, including the scent from the soles of our feet, as well as the **heat** we emit.

- Only **female mosquitoes bite**; they need blood to develop and nourish their eggs. *Males feed only on plant nectar.*
- They are drawn to the **carbon dioxide** released by humans and animals, and also rely on their sharp **receptors** and **vision** to sense body heat, perspiration, and skin odour.
- **Dark-coloured clothes** make people more attractive to mosquitoes, as these insects seem to prefer dark shades.
- Their highly sensitive **olfactory receptors** can pick up carbon dioxide and other chemicals from warm-blooded animals, helping them find a host.
- Mosquitoes often land on individuals with a **higher body temperature**.
- Mosquitoes seem to be more attracted to dark-colored clothing.
- Mosquitoes hate peppermint much like **wasps** and other common pests.
- **Lavender** is not only an *effective mosquito repellent*, it's also touted as a powerful ointment to relieve itchy mosquito bites.



Ants

- Ants and mosquitoes use antennae to smell.
- Antenna is the long hairy part coming out of the head of insects. These antennae have the smell catching components in their body which help them to sniff food.
- Ants use their sense of smell to find food and communicate with each other. They secrete a chemical called **pheromone**. Other ants smell this chemical using antennae and follow each other.

Write the names of five things whose smell you like and five things whose smell you do not like.

Answer:

I like the smell of

I don't like the smell of

1. flower	1. chemicals
2. perfume	2. garbage
3. tasty food	3. gutter
4. incense sticks	4. decaying things
5. cool breeze	5. fertilizers

Is a smell ‘good’ or ‘bad’ for everyone in the same way? Or does it depend on how each one feels about it?

No, it depends on how a person reacts to the smell. But in some cases, the bad smell is bad for most people.

Bird which has eyes in front of its head	Owl
Birds which have eyes on either side of the head.	Crows, pigeons, eagles, parrots, etc. (The size of their eyes is small compared to the size of their head). Looking with one or both eyes
Animals whose ears can be seen	Elephants, deer, dogs, goats, zebra, lions, cows, cats, buffalo, and sheep.
Animals whose ears are bigger than our ears	Giraffe, cow, zebra, elephant, buffalo etc.

Now can you guess from what distance can an eagle in the sky can see a roti on the ground?

An eagle has a very powerful sight. It can see a roti on the ground from a distance of **two kilometres**.

Is there some link between the size of animals’ ears and their hearing?

Yes, there might be a possibility that animals with bigger ears may have better hearing than a smaller animal’s ears.

Have you seen a dog sniffing here and there? What do you think it is trying to smell?

Yes, we have seen a dog sniffing here and there. The dog is trying to find out if any other dog is nearby by using its smelling senses.

In what ways do human beings make use of this special sense of smell of dogs?

Answer: Human beings make use of this special sense of smell of dogs to catch criminals, in search of explosives, recovery of stolen goods, etc.

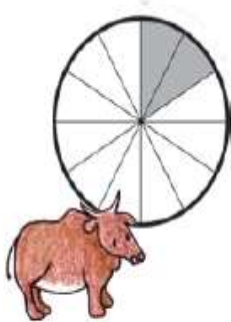
When do you find your sense of smell helpful to you? List some examples. Like – to know by its smell that food has gone bad or that something is burning.

Other than smelling bad or burnt object, we can also sense the smell of perfume, fragrance of a flower, smell of sweat, soaps and detergents, etc.

Name the animals that you would be able to recognize only by their smell, without seeing them.

We can recognize animals like sheep, goats, cows, dogs, cats, etc., by their smell.

Given here is the sleeping time of some animals. Write below each picture for how many hours a day that animal sleeps.



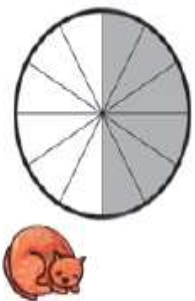
Cow _____



Python _____



Giraffe _____



Cat _____

Cow sleeps for **four hours** a day.

Python sleeps for **eighteen hours** a day.

Giraffe sleeps for **two hours** a day.

Cat sleeps for **twelve hours** a day.

Tigers – Alert but Endangered

Tigers are among the most alert and powerful wild animals. They have sharp eyesight, a keen sense of smell, and can move very quietly while hunting. Yet, despite these strengths, tigers are **in danger of disappearing** from our forests. The main reasons why tigers are endangered:

- **Hunting and poaching:** Some people kill tigers for their beautiful skin, bones, or other body parts, which are sold illegally.
- **Loss of forests:** As the human population grows, forests are cut down for farming, houses, roads, and factories. This destroys the tiger's natural home.
- **Less food:** When forests shrink, the animals that tigers hunt (like deer and wild boar) also become fewer.
- **Other threats:** Forest fires, accidents, and conflict with humans (when tigers enter villages looking for food) also harm them.

How to protect tigers:

- Keep forests safe and plant more trees.
- Stop hunting and trading tiger parts.
- Support wildlife sanctuaries and national parks where tigers can live safely.

Tigers are important for keeping the forest healthy. Saving them means saving many other plants and animals too. Lions are also a threat to tigers since they are more powerful than tigers. They also face dangers from forest fires, destruction of trees, humans, etc.

Humans as a Threat to Animals

- Human beings can sometimes harm animals in many ways:
- As the number of people on Earth increases, we clear more forests to build houses, roads, and farms.
- Cutting down forests destroys the natural homes (**habitats**) of animals. Without safe places to live, many animals find it hard to survive.
- Some people **hunt animals** for their body parts:
 - **Deer** are hunted for their skin.
 - **Elephants** are killed for their tusks (ivory).
 - **Rhinoceroses** are hunted for their horns.

- **Tigers** are hunted for their beautiful skin.
- These actions have made many animals **endangered** (very few left) or even **extinct** (no longer alive anywhere).
- To protect wildlife, we must **stop hunting**, **save forests**, and learn to share the planet with animals.

Give examples of animals that may have a very strong sense of sight, hearing or smell.

Animals that may have a very strong sense of sight, hearing or smell are:

1. **Dogs** can hear the minute sound of footsteps.
2. **Mosquitoes** can find humans by the sense of their heat or smell of the foot.
3. An **eagle** can see its prey from a distance of two kilometers.
4. Some animals can behave differently if they sense some natural calamity may occur.

How Super Senses Help Animals

Sense	Purpose
Smell	Search food, identify friends/enemies, mark area
Hearing	Detect danger, communicate, hunt
Sight	Catch prey, avoid predator, fly safely
Others	Navigation, balance, finding partner

Important Terms to Remember

Smell, Antennae, Echo-location, Infrasonic, Ultrasonic, Territory, Compound eyes, Ultraviolet, Pheromone, Vibrations, Magnetic field.

Quick Revision Table

Animal	Super Sense	Use
Dog	Smell	Track people/things
Ant	Smell with antennae	Follow trail
Tiger	Hearing & smell	Hunt, mark area
Elephant	Hearing (low freq)	Communicate far
Dolphin	Hearing (high freq)	Talk, locate objects
Bat	Echo-location	Catch insects at night
Eagle	Vision	See prey from height
Owl	Vision & hearing	Hunt at night

Butterfly	UV sight	Find nectar
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National Parks

Year of Establishment	Name of National Park	State
1936	Jim Corbett National Park	Uttarakhand
1955	Kanha National Park	Madhya Pradesh
1955	Tadoba National Park	Maharashtra
1959	Madhav National Park	Madhya Pradesh
1968	Bandhavgarh National Park	Madhya Pradesh
1974	Kaziranga National Park	Assam
1974	Bandipur National Park	Karnataka
1974	Bannerghatta National Park	Karnataka
1975	Gir National Park	Gujarat
1975	Gugamal National Park	Maharashtra
1975	Navegaon National Park	Maharashtra
1975	Pench National Park	Madhya Pradesh
1976	Blackbuck National Park	Gujarat
1976	Guindy National Park	Tamil Nadu

1977	Keibul-Lamjao National Park	Manipur
1977	Khangchendzonga National Park	Sikkim
1977	Dudhwa National Park	Uttar Pradesh
1978	Eravikulam National Park	Kerala
1979	Vansda National Park	Gujarat
1979	Van Vihar National Park	Madhya Pradesh
1980	Simlipal National Park	Odisha
1980	Ranthambore National Park	Rajasthan
1980	Gulf of Mannar Marine National Park	Tamil Nadu
1981	Guru Ghasidas (Sanjay) National Park	Chhattisgarh
1981	Dachigam National Park	Jammu & Kashmir
1981	Hemis National Park	Jammu & Kashmir
1981	Kishtwar National Park	Jammu & Kashmir
1981	Panna National Park	Madhya Pradesh
1981	Sanjay National Park	Madhya Pradesh
1981	Satpura National Park	Madhya Pradesh
1981	Keoladeo Ghana National Park	Rajasthan

1982	Indravati National Park	Chhattisgarh
1982	Kanger Valley National Park	Chhattisgarh
1982	Marine National Park	Gujarat
1982	Periyar National Park	Kerala
1982	Nanda Devi National Park	Uttarakhand
1982	Valley of Flowers National Park	Uttarakhand
1983	Mahatma Gandhi Marine National Park	Andaman & Nicobar Islands
1983	Namdapha National Park	Arunachal Pradesh
1983	Fossil National Park	Madhya Pradesh
1983	Sanjay Gandhi National Park	Maharashtra
1983	Rajaji National Park	Uttarakhand
1984	Great Himalayan National Park	Himachal Pradesh
1984	Silent Valley National Park	Kerala
1984	Sunderban National Park	West Bengal
1985	Balpakram National Park	Meghalaya
1986	Mouling National Park	Arunachal Pradesh
1986	Betla National Park	Jharkhand

1986	Nokrek Ridge National Park	Meghalaya
1986	Neora Valley National Park	West Bengal
1986	Singalila National Park	West Bengal
1987	Middle Button Island National Park	Andaman & Nicobar Islands
1987	Mount Harriet National Park	Andaman & Nicobar Islands
1987	North Button Island National Park	Andaman & Nicobar Islands
1987	Saddle Peak National Park	Andaman & Nicobar Islands
1987	South Button Island National Park	Andaman & Nicobar Islands
1987	Pin Valley National Park	Himachal Pradesh
1987	Anshi National Park	Karnataka
1987	Kudremukh National Park	Karnataka
1988	Nagarahole (Rajiv Gandhi) National Park	Karnataka
1988	Bhitarkanika National Park	Odisha
1989	Sri Venkateswara National Park	Andhra Pradesh
1989	Valmiki National Park	Bihar
1989	Sultan National Park	Haryana

1989	Indira Gandhi (Annamalai) National Park	Tamil Nadu
1989	Gangotri National Park	Uttarakhand
1990	Manas National Park	Assam
1990	Mudumalai National Park	Tamil Nadu
1990	Mukurthi National Park	Tamil Nadu
1990	Govind National Park	Uttarakhand
1991	Murlen National Park	Mizoram
1992	Campbell Bay National Park	Andaman & Nicobar Islands
1992	Galathea Bay National Park	Andaman & Nicobar Islands
1992	Mollem National Park	Goa
1992	City Forest (Salim Ali) National Park	Jammu & Kashmir
1992	Phawngpui Blue Mountain National Park	Mizoram
1992	Desert National Park	Rajasthan
1992	Sariska National Park	Rajasthan
1992	Buxa National Park	West Bengal
1992	Gorumara National Park	West Bengal

1993	Intanki National Park	Nagaland
1994	Kasu Brahmananda Reddy National Park	Telangana
1994	Mahaveer Harina Vanasthali National Park	Telangana
1994	Mrugavani National Park	Telangana
1996	Rani Jhansi Marine National Park	Andaman & Nicobar Islands
1998	Nameri National Park	Assam
1999	Dibru-Saikhowa National Park	Assam
1999	Rajiv Gandhi Orang National Park	Assam
2003	Kalesar National Park	Haryana
2003	Anamudi Shola National Park	Kerala
2003	Mathikettan Shola National Park	Kerala
2003	Pampadum Shola National Park	Kerala
2004	Chandoli National Park	Maharashtra
2005	Rajiv Gandhi (Rameswaram) National Park	Andhra Pradesh
2006	Mukundra Hills National Park	Rajasthan
2007	Clouded Leopard National Park	Tripura

2007	Bison National Park	Tripura
2008	Papikonda National Park	Andhra Pradesh
2010	Inderkilla National Park	Himachal Pradesh
2010	Khirganga National Park	Himachal Pradesh
2010	Simbalbara National Park	Himachal Pradesh
2014	Jaldapara National Park	West Bengal

States and Capitals

UTs with Capital

S.NO	Union Territories	Capital
1	Andaman and Nicobar Island	Port Blair
2	Chandigarh	Chandigarh
3	Dadra and Nagar Haveli and Daman and Diu	Daman
4	Delhi	New Delhi
5	Ladakh	Leh
6	Lakshadweep	Kavaratti
7	Jammu and Kashmir	Srinagar/Jammu
8	Puducherry	Pondicherry

States with capitals

S.NO	State	Capital
1	Andhra Pradesh	Amaravati
2	Arunachal Pradesh	Itanagar
3	Assam	Dispur
4	Bihar	Patna
5	Chhattisgarh	Raipur
6	Goa	Panaji
7	Gujarat	Gandhinagar
8	Haryana	Chandigarh
9	Himachal Pradesh	Shimla
10	Jharkhand	Ranchi
11	Karnataka	Bengaluru
12	Kerala	Thiruvananthapuram
13	Madhya Pradesh	Bhopal
14	Maharashtra	Mumbai
15	Manipur	Imphal
16	Meghalaya	Shillong
17	Mizoram	Aizawl
18	Nagaland	Kohima
19	Odisha	Bhubaneswar
20	Punjab	Chandigarh
21	Rajasthan	Jaipur
22	Sikkim	Gangtok
23	Tamil Nadu	Chennai
24	Telangana	Hyderabad
25	Tripura	Agartala

26	Uttar Pradesh	Lucknow
27	Uttarakhand	Dehradun
28	West Bengal	Kolkata



Tribe	About	Image
Bakarwal	They are a nomadic ethnic group who along with Gujjars, have been listed as Scheduled Tribes in the Indian Union Territory of Jammu and Kashmir and Ladakh since 1991	
Gujjars	- It is believed that Gurjars migrated to Jammu and Kashmir from Gujarat (via Rajasthan) and Hazara district of Khyber Pakhtunkhwa. - As of 2011, the Gurjars and the Bakarwals in Jammu and Kashmir were classified as Scheduled Tribes constitute 12% of the total population of Jammu and Kashmir.	
Transhumance	- It is a type of pastoralism or nomadism, a seasonal movement of livestock between fixed summer and winter pastures. - In montane regions (vertical transhumance), it implies movement between higher pastures in summer and lower valleys in winter. - Herders have a permanent home, typically in valleys.	

Changpa or Champa	▪ They are a semi-nomadic Tibetan people found mainly in the Changtang in Ladakh, India. ▪ Changtang Nature Reserve ▪ The Changpas rear the highly pedigreed and prized Changra goats (<i>Capra Hircus</i>) that yield the rare Pashmina (Cashmere) fibre. ▪ The Changra goats are not raised for their meat but for their fibre (pashm).	
Karewa Soil	▪ Karewas are ancient tablelands of the Kashmir Valley. Their soft soils are key to the region's agricultural prowess in saffron, apples and almonds. Rich in fossils, karewas also hold clues to studying past environments. The karewas are imperilled by rapid urbanisation and illegal extractive land uses.	

Himachal Pradesh	Swangal, Gujjars, Lahaulas, Khas, Pangwala, Lamba, Gaddis
Jammu and Kashmir	Balti, Garra, Sippi, Bakarwal, Mon, Gaddi, Purigpa, Beda
Jharkhand	Gonds, Birhors, Savar, Mundas, Santhals, Khairas, Bhumji
Uttarakhand	Bhotias, Buksa, Jannasari, Khas, Raji, Tharu.
Uttar Pradesh	Bhotia, Buksa, Jaunsari, Kol, Raji, Tharu

Scheduled Tribes in India

According to the 2011 Census, the Scheduled Tribes account for 104 million representing 8.6% of the country's population. These Scheduled Tribes are spread throughout the country largely in forest and hilly regions.

- The essential characteristics of these communities are:-
 - Primitive Traits
 - Geographical isolation
 - Distinct culture
 - Shy of contact with community at large
 - Economically backwards
- As in the case of the SCs, the Plan objective of empowering the tribals is being achieved through a three-pronged strategy of **social empowerment, economic empowerment and social justice**.

Particularly Vulnerable Tribal Groups (PVTGs)

PVTGs (Particularly Vulnerable Tribal Groups) are more vulnerable among the tribal groups. Due to this factor, more developed and assertive tribal groups take a major chunk of the tribal development funds, because of which PVTGs need more funds directed for their development.

- In 1975, the Indian Government declared 52 tribal groups as PVTGs

- In 1993, 23 groups were added to the list.
- Hence, there are 75 PVTGs out of 705 Scheduled Tribes
- Odisha has the highest number of PVTGs. In 2020, the Odisha government further identified 888 villages/hamlets inhabited by PVTGs
- The PVTGs are spread over 18 states and one Union Territory (UT), in the country (2011 census).
- Characteristics of PVTGs:
 - Population – stagnant/declining
 - Technology – pre-agricultural
 - Literacy Level – extremely low
 - Economy – Subsistence level

Important Facts about Scheduled Tribes	
In how many states do we find Scheduled Tribes?	The STs are notified in 30 states and UTs
How many numbers of individual ethnic groups are notified as STs?	705
What is the population of Scheduled Tribes in India?	Approximately 10.43 crores
What is the rural and urban population of STs in India?	• The total population of STs in Rural Area is approximately 9.38 crores • The total population of STs in Urban Area is approximately 1.05 crores
What is the sex ratio of STs?	990; Rural – 991 Urban – 980

Which Indian state has the largest population of STs?	Madhya Pradesh has 14.7% of total STs population; followed by Maharashtra (10.1%)
Which Indian states/UTs have no listed STs?	Five states/UTs of India have no listed STs: • Punjab • Chandigarh • Haryana • NCT of Delhi • Puducherry
Source – Census of India 2011	

List the different animals which are a part of your life.

- **Cow** – It produces milk.
- **Ox** – It helps the farmers in farming.
- **Sheep** – Its fur is very useful in making woollen clothes.
- **Dog** – It protects and guards our house.

In India, the cities which drop below 0 degree C are Leh, Ladak, Kashmir, Manali, etc. Abroad, places like Switzerland, Ottawa, Siberia, Antarctica etc., see a drop in temperature below 0 degree C. This usually happens in the month of December and January.

Materials required to build my house is mud, brick, cement, glass, wood, stone, etc.

House	Image

Cave House	
A carriage house:	



Lakes can be classified into various categories:

S.No	Category of Lake in India
1.	Freshwater Lakes
2.	Saltwater Lakes
3.	Natural Lakes
4.	Oxbow Lakes
5.	Artificial Lakes

6.	Crater Lakes
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Lakes in India

Lakes in India	State/UT
Pulicat lake	Andhra Pradesh
Kolleru Lake	Andhra Pradesh
Haflong Lake	Assam
Deepor Beel	Assam
Chandubi Lake	Assam
Kanwar lake	Bihar
Hamirsar Lake	Gujarat
Kankaria Lake	Gujarat
Badkhal Lake	Haryana

Brahma Sarovar	Haryana
Chandra Taal	Himachal Pradesh
MaharanaPratap Sagar	Himachal Pradesh
Dal Lake	Jammu Kashmir
Wular Lake (largest fresh water lake in India)	Jammu Kashmir
Agara Lake	Karnataka
Ulsoor Lake	Karnataka
Kuttanad Lake	Kerala
Sasthamkotta	Kerala
Bhojtal	Madhya Pradesh
Shivsagar	Maharashtra
Loktak lake	Manipur

Umiam Lake	Meghalaya
Tam Dil	Mizoram
Chilika Lake	Odisha
Harike	Punjab
Kanjli	Punjab
Sambhar Lake	Rajasthan
Tsomgo Lake	Sikkim
Chembarambakkam	Tamil Nadu
Hussain Sagar	Telangana
Govind Bhallabh Pant Sagar	Uttar Pradesh
Belasagar	Uttar Pradesh
Bhimtal	Uttarakhand

Kaliveeli

Tamil Nadu

Lakes in India – Application

Apart from being a symbol of natural beauty, lakes can be of many uses for the inhabitants.

Lakes in India are a great source of :

- Irrigation
- Drinking-Water
- Navigation
- Livelihood

Important Lakes

1. **Wular lake** is one of the **biggest freshwater lakes in Asia** and it was formed as a result of tectonic activity.
2. **Chilika Lake** in Odisha is the **largest saline water lake** in India.
3. **Vembanad Lake** in Kerala is the **longest lake** in India.
4. **Cholamu Lake** in Sikkim is the highest lake in India.
5. **Lonar Lake** is a notified National Geo-heritage Monument, saline, soda lake, located at Lonar in Buldhana district, Maharashtra.

Given below are the major river systems in India:

Indian River Systems		
River System	Origin	States/Tributaries

Indus River	Tibet near Lake Mansarovar .	✓ Tributaries: Zaskar, Shyok, Nubra and Hunza. ✓ Jhelum, Ravi, Chenab, Beas, and Sutlej.
Brahmaputra River	Mansarovar Lake Known as the Yarlung Tsangpo in Tibet. Known as the Dihang River In India	✓ It flows parallel to the Himalayas and reaches Namcha Barwa, to enter India in Arunachal Pradesh.
Ganga River	Gangotri glacier. Alaknanda and Bhagirathi meet at Devprayag	✓ Tributaries: Yamuna, Damodar, Sapta Kosi, Ram Ganga, Gomati, Ghaghara, and Son.
Yamuna river	Yamunotri glacier , at the Bandarpoonch peak in Uttarakhand	✓ Tributaries: Son (largest), Hindon, Betwa Ken, and Chambal. ✓ States: Delhi, Himachal Pradesh, UP, Haryana, Rajasthan, and Madhya Pradesh.
Narmada River	Amarkantak Hill in Madhya Pradesh	✓ States: Madhya Pradesh, Gujarat, and Maharashtra. ✓ It drains into the Arabian Sea in the Bharuch district of Gujarat.
Tapi River	Eastern Satpura Range of southern Madhya Pradesh	✓ States: Madhya Pradesh and Gujarat ✓ Tributaries: Waghur River, Aner River, Girna River, Purna River, Panzara River and Bori River.

Godavari River	Trimbakeshwar, near Nasik in Maharashtra.	✓ Second-longest course in India with brownish water. ✓ Known as Dakshin Ganga or Vriddh (Old) Ganga. ✓ States: Madhya Pradesh, Telangana, Andhra Pradesh, and Orissa.
Krishna River	Mahabaleshwar in Maharashtra.	✓ States: Maharashtra, Karnataka, Telangana and Andhra Pradesh. ✓ Tributaries: Tungabhadra River, Dudhganga Rivers, Koyna, Bhima, Mallaprabha, Dindi, Ghataprabha, Warna, Yerla, and Musi
Cauvery River	Talakaveri located in the Western Ghats.	✓ States: Karnataka and Tamil Nadu ✓ Tributaries: Arkavathy, Shimsha, Hemavati, Kapila, Shimsha, Honnuhole, Amaravati, Lakshmana Kabini, Lokapavani, Bhavani, Noyyal, and Tirtha.
Mahanadi	Satpura Range of central India	✓ States: Maharashtra, Chhattisgarh, Jharkhand, and Orissa. ✓ The largest dam, the Hirakud Dam is built on the river.

- Among major rivers of peninsular India. Only the **Narmada, the Tapti, and the Mahi** rivers run from east to west.



Multipurpose river valley projects in India

- Challenges in flood control due to the change in nature of rainfall over catchment areas.
- Issues of shrinking storage capacity in the reservoir during the flood.
- Issues of inter catchment, interstate coordination on the release of water and control of flow, causing a management crisis.
- Capacity to augment the power generation.
- Need to maintain a steady flow and downstream irrigation during dry periods owing to erratic rainfall patterns.

Multipurpose Projects	River/States	About
Bhakra Nangal Project	Sutlej Punjab, Haryana, Rajasthan	India's biggest multipurpose river valley project. It consists of a straight gravity dam, 518 meters long, 226 meters high across the at Bhakra.
Chambal Project	Chambal River Madhya Pradesh and Rajasthan.	Developed in 1954 to maintain the water flow of the Chambal River. The project aims to deal with the prevention of soil erosion.
Koyna Project	Maharashtra	The largest completed hydroelectric power plant in the country.
Damodar Valley Project	Damodar River West Bengal and Jharkhand.	Established in 1948, administered by the Damodar Valley Corporation.
Farakka Barrage	To improve the navigability of the Hooghly river. (Ganga) West Bengal	
Hirakud Dam	River Mahanadi Odisha	With a length of 4801.2 meters, it is the longest dam in the world.
Indira Gandhi Canal	Rajasthan	Biggest irrigation projects in the world. It was started in 1958 as the Rajasthan Canal.

Nagarjuna Sagar Project	Krishna river. Andhra Pradesh	
Rihand Project	Rihand Uttar Pradesh.	It consists of a powerhouse at Pipri and necessary transmission infrastructures.
Ranjit Sagar Dam	River Ravi Punjab	Completed in 2001. Also known as the Thien Dam.
Tungabhadra Hydroelectric Project	Tungabhadra River Karnataka	It is a multipurpose dam for irrigation, electricity generation, and flood control.
Kakrapara Project	River Tapti Gujarat	It is on the 80 km upstream of Surat.

From Tasting to Digesting

Things	Taste
Chocolates	Sweet
Ice-cream	Sweet
Chips	Salty
Pickles	Salty-spicy
Lemon	Sour

Food	Taste
Tomato	Sweet and juicy with little sour
Onion	Pungent
Saunf	Sweet with a good smell
Garlic	Bitter with a pungent smell

Why don't you make sounds that describe some tastes? From your expressions and sounds, ask your friends to guess what you might have eaten.

Expressions and Sounds	Food
The sound made by licking something	Pickle
Yum-yum	Sweet items – chocolates, ice cream, etc.
Slurp	Kheer, noodles

Saliva mixes with food and makes the food soft and digestible.

Migration

- It is a natural process that often happens depending on the socio-economic, demographic, cultural, political and environmental factors related to the migrant people.
- It is an instrument of cultural diffusion and social integration which yields more meaningful redistribution of population.
- **Smith (1960)** has stated about three-fold impacts of migration on
 1. the area of out- migration
 2. the area of in-migration and
 3. the migrants.
- The persons of the areas of out- migration decrease while the population of in- migration increases.
- The migration from rural to urban areas has been increasing slowly with industrialization and modernization in India.
- The main reason for migration is **employment or business** related migration, other factors like after marriage or family transfer.
- Migration data were recorded at the time of first census in 1881 based on the place of birth. In 1961, modification were made to include place of birth and duration of residence.
- Migration is enumerated on the following two bases:
 - 1) **Place of birth:** if the place of birth is different from the place of enumeration (known as life- time migrant)
 - 2) **Place of residence:** if the place of last residence is different from the place of (known as migrant by place of last residence).
- Migration in India is primarily of two types;
 - 1) **Long term migration-** resulting the relocation of an individual or household.
 - 2) **Short term migration-** involving a back and forth movement between a source and destination.
- Migration is rising to 4.5 percent per annum in 2001-11 from 2.4 percent in 1991-2001.
- The north Indian states of Uttar Pradesh and Bihar have highest percentage of rural population with 18.6 and 11.1 percent of people living in villages in 2011. These states are largest migrants sending states. Substantial flow of labour migrants relocates from Uttar Pradesh to Maharashtra, Delhi, West Bengal, Punjab and Haryana.
- Cities of Mumbai, Delhi and Calcutta are largest destination for internal migration in India.
- Causes of Migration
 1. Urbanization

2. Work/employment
3. Business
4. Education
5. Marriage
6. Moved after birth
7. Moved with household
8. Lack of Security

Types of Migration

Migration can be of various types:

- Temporary
- Permanent
- Voluntary
- Permanent

Technically, it is also categorized into the following:

- Counter-urbanization
- Emigration
- Immigration
- Internal migration
- International migration and
- Rural-urban migration

Pull' and 'Push' Factors:

- **Push factors:** which causes people to leave their place of residence or origin. These are poverty, lack of work opportunities, unemployment and underdevelopment, poor economic condition, lack of opportunities, exhaustion of natural resources and natural calamities, scarcity of cultivated land, inequitable land distribution, low agricultural productivity etc.
- **Pull factors:** which causes people to leave their place of residence or origin. These are attract migrant to an area (area of destination), like, employment and higher education opportunities, higher wages facilities, better working condition.
- Millions of people migrated from their far-off villages to the big cities of Kolkata, Mumbai or Delhi. The appalling living conditions like slums, lack of safe water, absence of sanitation, overcrowding with the attendant increase in crime, insecurity for women, sexual abuse and exposure to frequent epidemics and AIDs are the immediate outcome of this population shift.

Policies for Migration

- Due to the increasing trends of shifting people from rural to urban areas, urban areas are suffering from many problems such as slums, high population density, overcrowding and lack of infrastructural facilities. So, government has started some Rural Development Programmes such as:
 1. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA),
 2. Indira Aawas Yojana (IAY),
 3. National Social Assistance Programme (NSAP),
 4. Integrated Watershed Management Programme (IWMP),
 5. National Rural Drinking Water Programme (NRDWP),
 6. Swachha Bharat Mission (SBM)
 7. National Rural Livelihood Mission (NRLM) etc.

Table 1: India: Migration by reason, 2001-11

	2001(%)	2011(%)
Work/employment	14.70	10.22
Business	1.20	0.96
Education	3.00	1.77
Marriage	43.80	49.35
Moved after birth	6.70	10.57
Moved with household	21.00	15.39
Other reason	9.70	11.74

Source: Census of India, 2011.

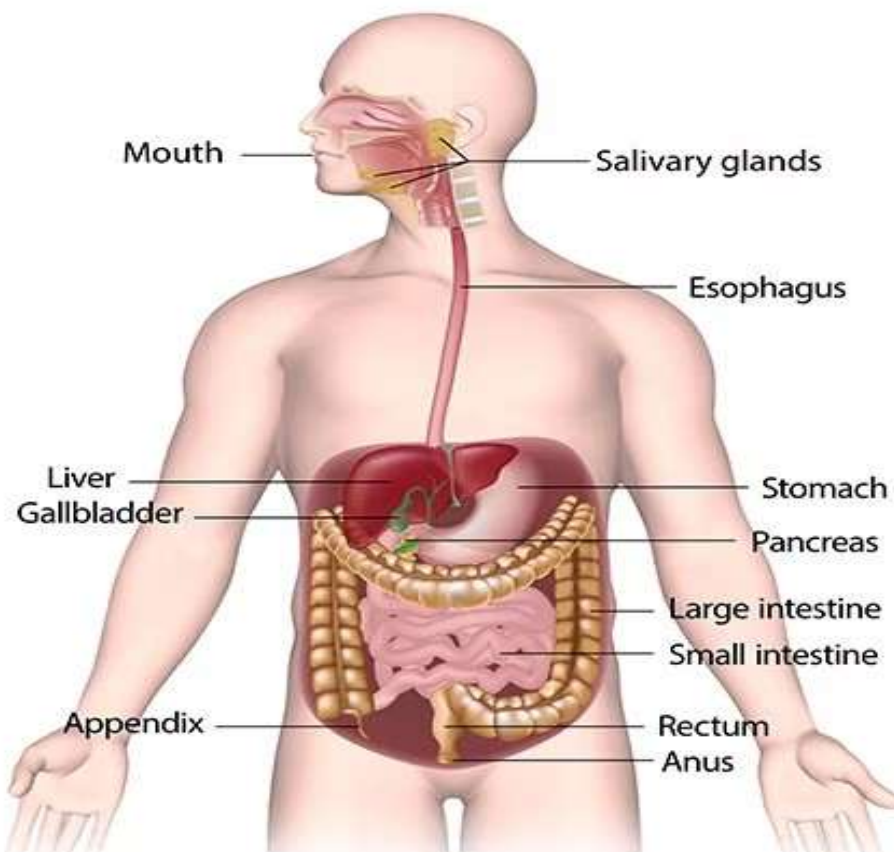
FOOD

Saliva

- Saliva contains a starch digestive enzyme, salivary amylase that digests the starch and converts it into maltose (disaccharide).

- The food then passes into the pharynx and enters the oesophagus in the form of bolus, which is further carried down through the oesophagus by peristalsis into the stomach.
- Saliva mixes with food and makes the food soft and digestible.
- Normal glucose levels in saliva are 0.5–1.00 mg/100 ml and do not considerably have an effect on oral health or support the growth of microorganisms.
- Salivary glands exist in the mouth. Saliva contains digestive enzymes; these enzymes help in breaking complex sugars into simple sugars. Hence, we can say that digestion begins in the mouth.

The Digestive System



Proper food

A good diet includes a good amount of nutritious food and proteins, which is needed for the body to function properly.

Can get spoilt in 2-3 days?	Food items that get spoilt in 2-3 days are milk, boiled rice, curries, bread, etc.
Food can be kept for a week?	Food items that can be kept for a week are onions, potatoes, carrots etc.
Food would not spoil till one month	Food items that will not get spoiled for a month are ghee, raw rice, pickle, grains, etc

Is there any kind of pickle made in your house? What kind of pickle is it? Who makes it? From whom did they learn to make the pickle?

There are many pickles that are made at my home like mango pickle, lemon pickle, amla pickle, etc. My mother makes these pickles, she learnt it from my grandmother.

How are Papad and Chutney made in your house.

Papad is made up of urad, saboodana, potato, etc. To make saboodana papad we have to rinse it in water and grind it. By adding salt and all the spices required, we mix it up. Then we cover it with a moist cloth and leave it to dry in the sun. Finally, we deep fry and the papad is ready.

For chutney, let us take groundnuts and with all the required spices and salt. We grind it up according to one's required taste and thus, chutney can be prepared.

Glass jars and bottles are dried well in the sun before filling them with pickles. Why is this done? Do you remember what happened to the bread in the experiment?

Yes, I remember the bread had got spoilt. Glass jars and bottles are dried well in the sun before filling them with pickles because if any moisture is left in the jars, fungus can be formed very easily and the pickles gets spoiled.

To eat mangoes round the year we make different items like pickle, aam papad, chutney, chikky, etc. List some other food with which we make different things, so that we can enjoy it throughout the year.

Here are a few other food items with which we make different things, so that we can enjoy it throughout the year.

- Murabba is prepared from white gourd and amla.
- Peda is made from milk.
- Banana chips are made so that it lasts longer.
- Vegetables are dried in the sun for later use.

What things are soaked before cooking in your house? Why?

A few items which we soak before cooking are soya beans, pulses, chana, rajma, etc. These are soaked because it softens and makes it easier to grind.

What things do you eat after sprouting? How are they sprouted? How much time does it take?

After sprouting, we can eat items like chana, moong, etc. We can sprout them by soaking them in water and then by wrapping them in wet cloth so that they get proper water and air. Chana takes around 36-48 hours to sprout, and moong takes around 24-36 hours.

Which seeds took the most number of days for the stem to come out of the soil?	Sesame
Which seeds took the least days to come out of the soil?	Mustard
Which seeds did not grow at all? Why?	Seeds require both water and air. If both are not present, then no seed will develop.
Did anyone's plant dry up or turn yellow? Why did this happen?	Yes, a few students' plants dried up or turned yellow since there was no proper water or air.
What would happen if the plants do not get water?	If the plants do not get water, then they will get dried up.

What is inside the seed?	Inside the seeds, there exist cotyledons and embryos.
How does a big plant grow from a tiny seed?	The seeds, by absorbing water and nutrients from the soil, grows to be big plant.
What would happen if plants could walk?	If plants could walk, then the plant would produce nothing for eating, shelter, or even oxygen.
Seeds that are used as spices in your home.	Seeds that are used as spices at home are mustard, cumin, aniseed, etc.
Seeds of vegetables.	Seeds of vegetables are tomato, lady's finger, brinjal, etc.
Has the doctor or someone you know ever told you to eat sprouts? Why?	Yes, the doctor has advised me to eat sprouts, as it is good for my health.
Make more groups. How many groups of seeds did you make?	More groups of seeds are edible seeds, small seeds, big seeds, seeds used as spices, heavy seeds, lightweight seeds, and seeds which produce oil. I could make 7 groups.
Do you know any games that you can play with seeds? Discuss with your friends.	Yes, using seeds, we play games. Children play games using mango seeds to make a flute, cut the tamarind seed into halves, etc.
Have you ever seen any seed that can fly?	Yes, I have seen seeds which fly.
How do seeds spread to far-off places?	There are various means for the seeds to travel. The seeds would go to farther places, carried by the birds, water, animals, and air. Birds, after eating, throw the seeds. Lighter seeds get carried away by air and spread out.
The smallest seed	Cumin (jeera)
The largest seed	Mango

Seeds; there colours and shape

Seed	Colour	Shape (draw)	Texture
Rajma	Reddish brown		Smooth
Papaya	Black		Rough
Apple	Brown		Soft

Musk melon	White		Soft
Mango	Whitish yellow		Rough
Lady's finger	Green		Soft
Chana	Brown		Soft

Moong	Green		Soft
Mustard	Green-black or yellow		Soft
Aniseed (Saunf)	Green		Soft
Cumin (Jeera)	Brown		Soft

Every Drop Counts

Water Scarcity

Adequate access to safe drinking water is a priority for global development. However, given the challenges of population growth, profligate use, growing population, and changes in weather patterns due to global warming, many countries, both wealthy and poor are facing water scarcity in the 21st century.

Water Footprint

Everything that we consume in our daily life, whatever we eat, sell, buy, wear requires water to make them. Water footprint measures the amount of water used to produce each of the goods and services we use.

Availability of Fresh Water across Continents		
Continent	Percentage of World Population	Percentage of Available Freshwater Reserves
Asia	60	36
Africa	13	11
North & Central America	8	15
South America	6	26

Australia & Oceania	1	5
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Measures for Preventing Water Scarcity in India (Central Government)

Ministry of Jal Shakti

The Government of India established the Ministry of Jal Shakti to consolidate interrelated functions pertaining to water management.

Jal Shakti Abhiyan Campaign

- Campaign for water conservation and water security
- 1592 water-stressed blocks
- 256 districts

The major focus areas of Jal Shakti Abhiyan are;

- Water conservation and rainwater harvesting
- Renovation of traditional and other water bodies/tanks
- Borewell recharge structures
- Watershed development
- Intensive afforestation
- Block and District water conservation plans
- Promotion of efficient water use for irrigation
- Better choice of crops for Krishi Vigyan Kendras

The National Institute for Transforming India (NITI) Aayog has developed a comprehensive water management metrics named **Composite Water Management Index (CWMI)**.

The Government of India has announced an ambitious target of providing piped clean drinking water to all villages by 2024.

Atal Bhujal Yojana

- To acknowledge and contain the ever-growing problem of groundwater depletion.

- Launched in December 2019 after getting financial approval from the World Bank in 2018. It was launched under Jal Jeevan Mission. It is related to groundwater usage and conservation in India.

The objective of the program was to lay emphasis on the recharge of groundwater resources and improve the exploitation of the groundwater resources, with the involvement of people at the local level. Further details on Atal Bhujal Yojana can be read on the linked page.

Adoption of Composite Water Management Index (CWMI)

The National Institute for Transforming India (NITI) Aayog has developed the Composite Water Management Index (CWMI) to enable effective water management in Indian states. The first edition was published in 2018 and became a very well-received publication inside and outside the country.

Mandate of CWMI

- Establish a benchmark for state-level performance on key water indicators.
- Identify the high performing states and low performing states thereby inculcating a culture of constructive competition among states
- Identify areas for deeper engagement and investment on the part of the states.

Can we even imagine life without water?	There is no life without water.

Is there a lake, well or step well near your house or school? Visit it and find out more about it.

How old is it? Who got it built?

Answer: Yes, there is a lake near my house. My grandmother says it is more than a hundred years old and was built by the king of Raj.

Q2. What kinds of buildings are around it?

Answer: There are a few recently built buildings and also some old wells around it.

Q3. Is the water clean? Is it cleaned regularly?

Answer: No, the water is not clean in the lake. I have never seen a lake being cleaned regularly.

Q4. Who all use the water?

Answer: People in the village use the water for cleaning purposes.

Q5. Is there any festival celebrated at this place?

Answer: Yes, a boating festival is celebrated every year at this place.

Q6. Is there any water today, or is it dry?

Answer: Yes, there is a little water in the lake.

Discuss

There are two old wells in the area where Punita lives. Her grandmother says that about fifteen – twenty years ago there was water in these wells. The wells could have dried up because:

- Water is being pumped up from under the ground, with the help of electric motors.
- The lakes in which rain water used to collect are no longer there.
- The soil around trees and parks is now covered with cement.

Q1. Is there some other reason for this? Explain.

Answer: Yes, the causes mentioned above are true. However, there are a few other reasons for the cause, which may be the destruction of more trees, no proper maintenance of the wells, and not cleaned regularly.