Lesson 4 Matter

Work it

Observe your surroundings and give three examples of solids, liquids and gases each.

Solids	Liquids	Gases
Fan	Water	Oxygen
Table	Milk	Carbandioxde
Chair	Juice	Nitrogen

A Choose the correct option.

1. Matter has how many states?

   three five seven

2. They have a definite shape and also occupy space.

   liquids gases solids

3. It is an example of a liquid.

   iron water smoke

4. They fill the entire space of a container.

   solids liquids gases

B Write T for a true statement and F for a false statement.

1. Solids do not have a certain shape and occupy a specific space. — F
2. Smoke is a form of solid. — F
3. Matter can change its state. — T
4. Water can change from one state to another by heating or cooling. — T

C Answer these questions.

1. What is matter? Give examples.

Everything that takes up space and has weight is called matter.

Solid | Liquid | Gas

2. Differentiate between solids, liquids and gases. Explain with examples.

1) Solid

Solids have a certain shape and occupy a specific space. Chairs, tables, bricks, trucks and fans are examples of solids. They have a fixed shape and occupy space. They won't change shape by their own.

2) Liquid

Liquids take up space but they do not have a certain shape. They take the shape of the container in which they are transferred. Water, juice, milk and oil are examples of liquids.

3) Gas

Gases do not have a definite shape. They fill the entire space of the container. The best example of gas is air which is present around us. Smoke is also a form of gas. If you happen to observe smoke, you will find out that it does not have a specific shape and it spreads

in different directions.

3. Spray air freshener in one corner of a room. Smell the room after a while. How much space is covered by the fragrance of the air freshener?

Is covered by the fragrance of the air freshener whole room.

D Look at the pictures. Write down the state of matter in each picture.

		
Solid	Liquid	Gass

Lesson 5

Energy and its Sources

The pictures below show a few sources of energy. Write down their names and uses.



Electricity Generation

Burning

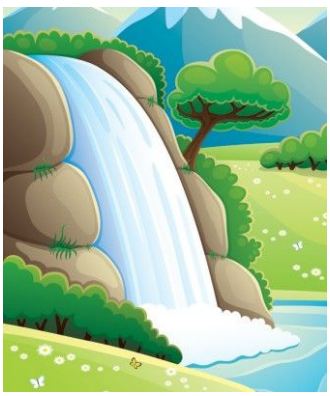
Chemical Production



Fire

Furniture

Paper



Cocking

Drinking

Electricity generation

A Choose the correct option.

1. The energy of flowing water is called:

   solar energy | **hydropower** | wind energy

2. Which of the following is not a source of energy?

   soil | wind | water

3. The biggest source of energy on Earth is:

   wind | coal | **the Sun**

4. Crude oil is converted into many petroleum products such as petrol and:

   diesel | glass | wax

B Write T for a true statement and F for a false statement.

1. We need energy to do work. — **T**
2. Coal is the biggest natural source of heat and light on Earth. — **F**
3. Dams produce wind energy. — **F**
4. Wood is a natural source of energy. — **F**

C Answer these questions.

1. Define energy. Name some natural sources of energy.

The strength and validity required for sustained physical or mental activity is called energy.

(1) The Sun (2) Wood (3) Water (4) Air (5) Coal, oil and gas

2. What is the use of energy from oil, coal and gas?

Coal, oil and gas are also important sources of energy. They produce heat and electricity. Coal is used to run power plants. Crude oil is converted into many petroleum products, such as petrol and diesel. They are used as fuel in vehicles, ships and engines. Natural gas is commonly used in power plants and factories. It is also used in homes for cooking and heating.

3. How does a windmill generate electricity from wind energy?

Do research and write in your own words.

How does a wind turbine work?

Wind turbines can turn the power of wind into the electricity we all use to power our homes and businesses. They can be stand-alone, supplying just one or a very small number of homes or businesses, or they can be clustered to form part of a wind farm. Here we explain how they work and why they are important to the future of energy.

What is a wind turbine?

Wind turbines are the modern version of a windmill. Put simply, they use the power of the wind to create electricity.

Large wind turbines are the most visible, but you can also buy a small wind turbine for individual use, for example to provide power to a caravan or boat.

What is a wind farm?

Wind farms are groups of wind turbines. It's pretty impressive to think that the electricity that powers so much in our lives – from charging our phones, to allowing us to make a cup of coffee and, increasingly, fuelling our cars – might have started out as a simple gust of wind.

How do wind turbines work?

First let's start with the visible parts of the wind farm that we're all used to seeing – those towering white or pale grey turbines. Each of these turbines consists of a set of blades, a box beside them called a nacelle and a shaft. The wind – even just a gentle breeze – makes the blades spin, creating kinetic energy. The blades rotating in this way then also make the shaft in the nacelle turn and a generator in the nacelle converts this kinetic energy into electrical energy.
What happens to the wind-turbine generated electricity next?
To connect to the national grid, the electrical energy is then passed through a transformer on the site that increases the voltage to that used by the national electricity system. It's at this stage that the electricity usually moves onto the National Grid transmission network, ready to then be passed on so that, eventually, it can be used in homes and businesses. Alternatively, a wind farm or a single wind turbine can generate electricity that is used privately by an individual or small set of homes or businesses.

Why are wind turbines usually white or pale grey?

Wind turbines do tend to be either white or very pale grey – the idea being to make them as visually unobtrusive as possible. There is discussion about whether they should be painted other colours, particularly green, in some settings to help them blend in with their environment better.

How strong does the wind need to be for a wind turbine to work?

Wind turbines can operate in anything from very light to very strong wind speeds. They generate around 80% of the time, but not always at full capacity. In really high winds they shut down to prevent damage.

Where are wind farms located?

Wind farms tend to be located in the windiest places possible, to maximise the energy they can create – this is why you'll be more likely to see them on hillsides or at the coast. Wind farms that are in the sea are called offshore wind farms, whereas those on dry land are termed onshore wind farms.

D Match each source of energy with its use.

Oil

Wind

The Sun



Flying kite





Produciton of electicity



Running car

Lesson 6

Resources and their Types

A Fill in the blanks.

1. A teacher provides teaching services.
2. Machinery and tools are Capital resources.
3. A buyer is a person who gets things for money.
4. Goods are things that we can use, touch or hold.

B Answer these questions.

1. Define capital resources.

Capital resources are things made by human beings, such as buildings, machinery, tools and computers. These are also used to produce other goods and services.

2. Differentiate between human and natural resources.

1) Natural resources: Things that are found in nature and have benefits for human beings are called natural resources, such as land, water, trees, animals and minerals. All natural resources are a blessing of Allah (سُبْحَانَهُ وَتَعَالَى) and a gift from Him.

2) Human resources: People who provide goods or services are called human resources, such as carpenters, farmers, teachers, electricians and doctors. These people earn a living from their jobs and services. People work to earn money and buy things they need.

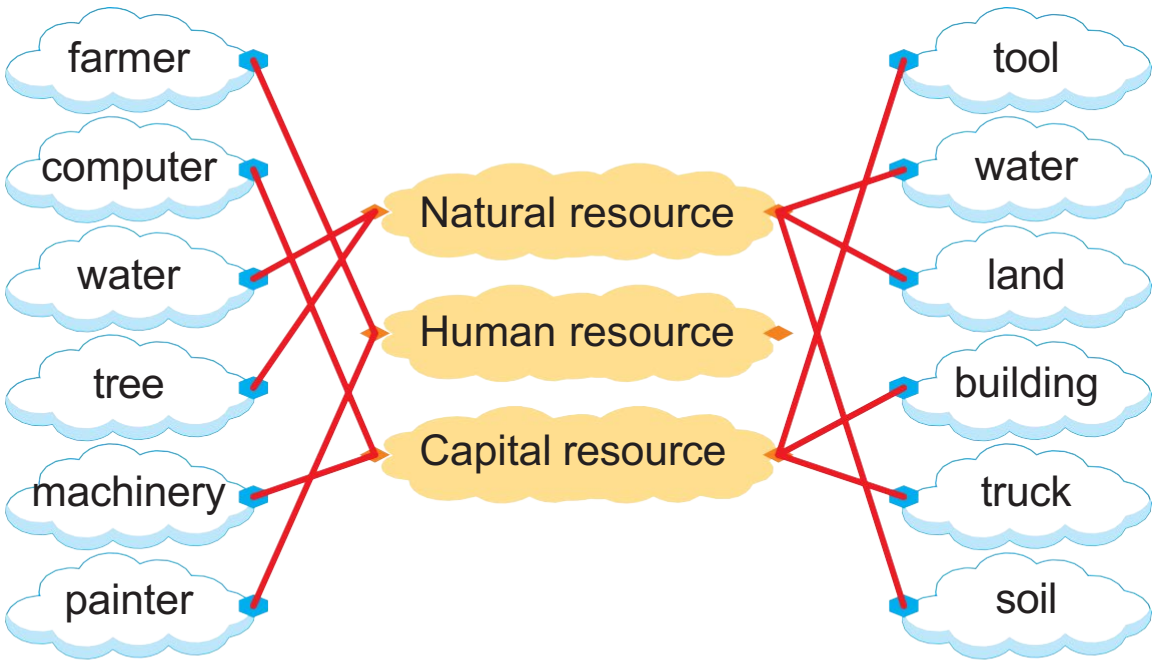
3. What is scarcity? Explain the term with an example.

Scarcity: Think of something that you like to have. What would your life be like if you suddenly couldn't get it anymore?
You may like a fruit, such as mangoes. What if you couldn't get mangoes anymore?
People deal with this kind of problem every day. It's called scarcity. It comes from the word 'scarce', meaning 'there isn't a lot of it' or 'it isn't always available'. Sometimes, fruit and vegetables are scarce in the markets because they grow only at certain times of the year. If mangoes are not available in the market, then you will have to go without them. Scarcity has forced you to do without mangoes.

4. List some goods and services you use and benefit from.

1. Home
2. Car
3. Factories
4. School
5. Hospital

C Match the resources with their types.



D Look at the given picture and explain how resources are connected.

Natural resource, Human resource, Capital resource

Lesson 7

Conservation of Natural Resources

A Write whether the following animals are endangered or extinct.



Endanjered



Eutint



Endanjered



Eutint

A Choose the correct option.

1. The Earth's natural resources are

infinite | limited | plenty

2. Trees are a great source of

heat | oxygen | water

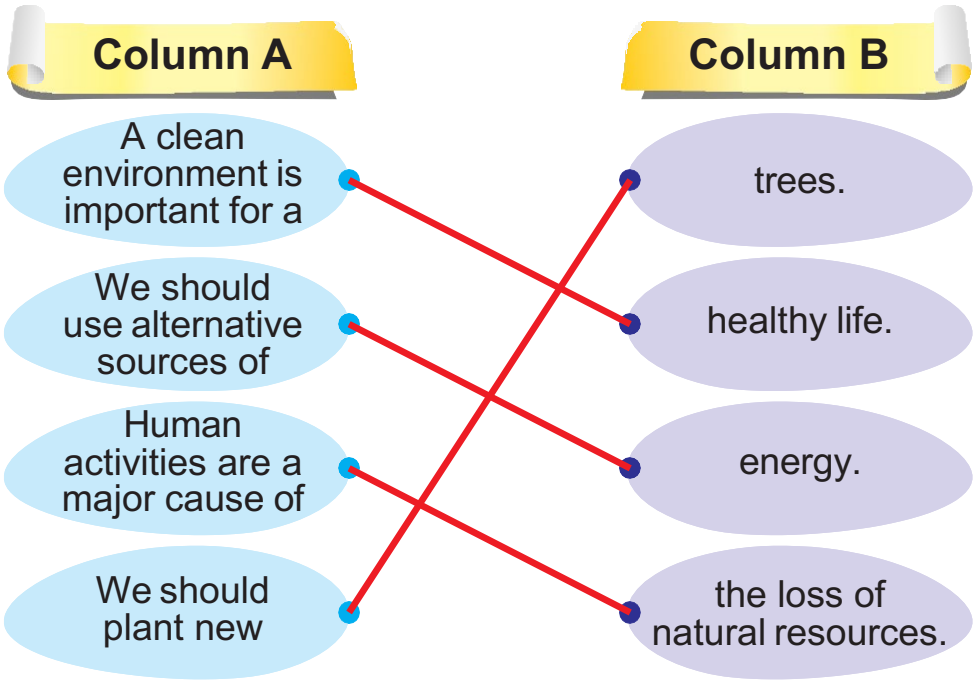
3. Animals that are in danger of disappearing from Earth are called

extinct animals | pet animals | endangered animals

4. It is no longer found on Earth

blackbuck | crocodile | dinosaur

B Match the columns.



C Answer these questions.

1. Write about one activity that affects the natural environment.

Deforestation: We cut thousands of trees every day to build new roads, houses and buildings. Many forests and green areas have been converted to human colonies. Deforestation damages land and causes a loss of animal habitats.

The population of the Earth is increasing day by day. With the increase in population, humans need more land to live, more trees to build houses and make furniture, more water to use, and so on. This is seriously affecting our natural resources.

Due to increasing human demands, more items will be produced. This means more natural resources will be needed.

2. Which natural resources are exhausting fast?

3. Do you save natural resources? How?

Adopt the 3R strategy (reduce, reuse and recycle). Reduce the production of waste. Reuse things that have been used only once and are still usable. Recycle waste instead of dumping it.

4. Name some endangered animals.

Green sea turtle Long-billed vulture Siberian crane

Sand cat Ibex Crocodile

5. Why do animals become extinct?

1. Detorrestation
2. Over enploitation
3. Incasice spenice
4. Climate chang
5. Nitrogen pollution

D List any three ways to save natural resources.

- Ride a bicycle or have a short walk instead of using vehicles.
- Instead of coal and gas, use alternative sources of energy, such as solar energy, for cooking and heating.
- Instead of using a shower, we can use a bucket to have a bath.

Lesson 8 Food

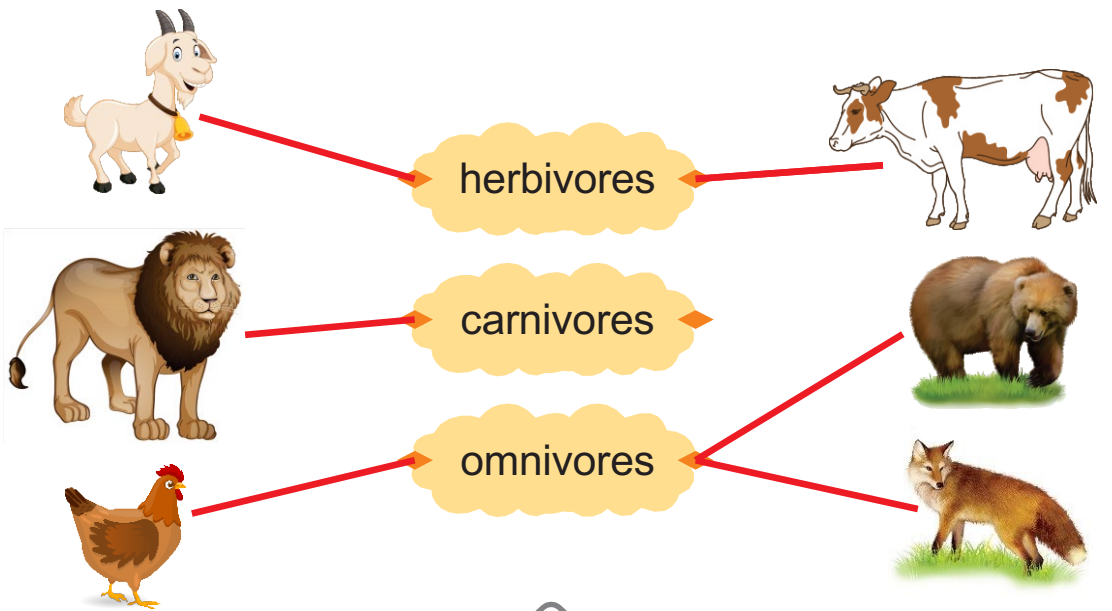
A Fill in the blanks.

1. Chlorophyll absorbs Sunlight.
2. Carnivores have large, sharp and Pointed canine teeth.
3. Milk strengthens our bottles and feeth.
4. Meat helps to build strong musculer in our body.
5. A healthy person should sleep 6 to 8 hours daily.

B Write T for a true statement and F for a false statement.

1. Plants prepare their own food. T
2. Chlorophyll is a green substance. T
3. Herbivores have pointed teeth. F
4 A bear is a herbivore. F
5.A balanced diet is essential for a healthy life. T

C Match these animals with their types.



D Answer the following questions.

1. How are the teeth of herbivores different from carnivores?

Herbivores have strong incisors (front teeth) to help them chew food. They have large, sharp and pointed canine teeth. These canine teeth are used to help them stab, kill and eat their prey.

2. Into how many groups can food be classified? Explain.

Food Groups: The food that we eat can be classified into the following four groups.

1) Fruits and vegetables: Fruits and vegetables are an important part of our diet. Fruits and vegetables help our body to fight against germs.

2) Grain: Wheat, rice, barley, millet and pulses are included in grains. This food group provides us energy.

3) Milk and dairy products: Milk is very important for the growth of our body. Milk is also used to prepare butter, yoghurt and cheese. Milk and its products strengthen our bones and teeth.

4) Meat: We eat the meat of different animals such as chickens, fish, cows, buffaloes, etc. Meat helps to build strong muscles in our body.

3. What is a balanced diet?

Balanced diet: A balanced diet is the diet which contains all the necessary ingredients for human health. It includes enough amounts of vegetables, fruits, grains, milk and meat.

Three meals a day for a balanced diet

1) Breakfast

Breakfast may include bread, eggs, and a glass of milk or fresh juice.

2) Lunch

A healthy lunch may include vegetables or meat, chapatti or rice and salad (vegetable or fruit).

3) Dinner

Similarly, pulses or vegetables with rice or chapatti make a healthy and easily digestible dinner.

4. Analyse yourself and tell how many hours do you sleep in a day and what exercise you do.

Visit a zoo and write the names of the animals you see there. What do they eat? Put a tick (✓) in the correct column. On the basis of their eating habits, mark them as herbivores, carnivores or omnivores.

	Name of animal	Does it eat plants?	Does it eat animals?	Does it eat both?	Is it a herbivore, a carnivore or an omnivore?
1.	Lion	No	Yes	No	Carnivore
2.	Tiger	No	Yes	No	Carnivore
3.	Elephant	Yes	No	No	Herbivore
4.	Gireffe	Yes	No	No	Herbivore
5.	Panda	Yes	No	No	Herbivore

Lesson 9

Quaid-e-Azam Muhammad Ali Jinnah (رحمۃ اللہ علیہ)

Complete the following fact sheet about the Quaid-e-Azam (رحمۃ اللہ علیہ). Also, paste his picture.

Quaid-e-Azam (رحمۃ اللہ علیہ)

Date of birth: 25-Dce-1876

Place of birth: Karachi

Profession: Lawyer

Greatest achievement: Pakistan

Title: Quaid-e-Azam

Date of death: 11-Sep-1948

A Fill in the blanks.

1. Muhammad Ali Jinnah (رحمۃ اللہ علیہ) was given the title of Quaid-e-Azam.
2. Muhammad Ali Jinnah (رحمۃ اللہ علیہ) went to Britain for higher studies.
3. The Quaid-e-Azam (رحمۃ اللہ علیہ) stood up for the rights of Muslims.
4. The Quaid-e-Azam (رحمۃ اللہ علیہ) died in 1948 on **1** September.

B Write T for a true statement and F for a false statement.

1. The Quaid-e-Azam (رحمۃ اللہ علیہ) was very hard-working. **T**
2. The Quaid-e-Azam (رحمۃ اللہ علیہ) did his matriculation at the age of 30. **F**
3. The Quaid-e-Azam (رحمۃ اللہ علیہ) was the president of the Muslim League. **T**
4. The Quaid-e-Azam (رحمۃ اللہ علیہ) was the first governor general of Pakistan. **T**

C Answer these questions.

1. What is the meaning of 'Quaid-e-Azam'?

The meaning of 'Quaid-e-Azam is great leader.

2. List a few good qualities you like in the Quaid-e-Azam (رحمۃ اللہ علیہ).

1. Hard working
2. Honest
3. Man of his words
4. Intelligent
5. Punctual

3. What do you want to do for Pakistan when you grow up?

Lesson 10 Allama Muhammad Iqbal (رحمۃ اللہ علیہ)

A Fill in the blanks.

1. Iqbal's parents were very Pious .
2. Allama Muhammad Iqbal (رحمۃ اللہ علیہ) was born on 9 November 1877.
3. After doing his MA, Allama Muhammad Iqbal (رحمۃ اللہ علیہ) taught at goverment college lahore .
4. Allama Iqbal's (رحمۃ اللہ علیہ) tomb is in lahore.

B Write T for a true statement and F for a false statement.

1. Allama Iqbal (رحمۃ اللہ علیہ) was born in Lahore. F
2. Allama Iqbal (رحمۃ اللہ علیہ) went to America for higher studies. F
3. Allama Iqbal (رحمۃ اللہ علیہ) actively took part in politics. T
4. Allama Iqbal (رحمۃ اللہ علیہ) wrote many poems for children. T

C Answer these questions.

1. Who is our national poet?

Allama Iqbal is our national poet.

2. When did Allama Muhammad Iqbal (رحمۃ اللہ علیہ) give the idea of Pakistan?

In Allahabad, in 1930, he gave the idea of a separate homeland for Muslims.

3. **Say the titles of three poems by Allama Muhammad Iqbal (رحمۃ اللہ علیہ).**
   1) Maa ka khabab
   2) Bache ki dua
   3) Makri our makhi

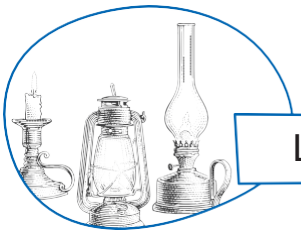
Number 1 to 5 the events in the life of Allama Muhammad Iqbal (رحمۃ اللہ علیہ) in historical sequence.

- 4 In 1930 at a meeting in Allahabad, he gave the idea of a separate homeland for Muslims.
- 5 He died on April 21, 1938.
- 2 He did an MA in philosophy.
- 1 He was born in Sialkot.
- 3 He went to Europe for higher education.

Lesson 1

The Changing World

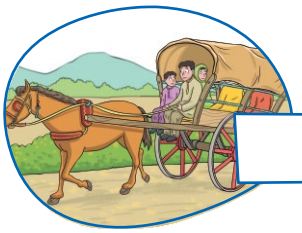
Many things have changed from the past to the present. Look at the pictures from the past, write and draw their alternatives in the present.

Past	Present
 Letter	 Email
 Lantern	Lamp
 Quill	Pen



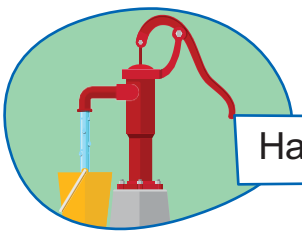
Mud house

Brick House



Tonga

Motor car



Hand pump

Water motor

A Fill in the blanks.

1. Early humans covered their bodies with animal skin .
2. Early human history can be divided into there periods.
3. Today, small towns developed into big cities .
4. A car is a modern means of transport.

B Write T for a true statement and F for a false statement.

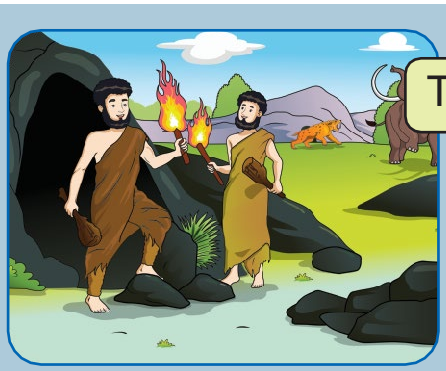
1. Early humans lived in brick houses. F
2. The discovery of fire was not important for human beings. F
3. Today, small settlements have converted into towns, villages and cities. T
4. In the past, schools were well-equipped with computers, F

internet and laboratories.

C Answer these questions.

1. Early human history is divided into how many ages?

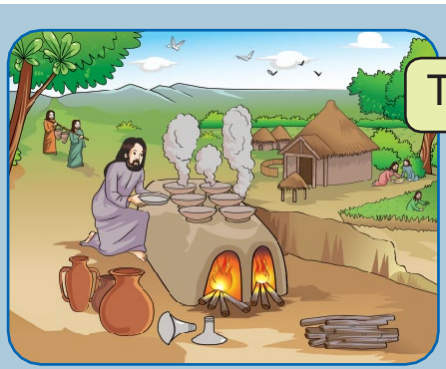
Early human history can be divided into three periods.



The Stone Age

2.5 million years ago–3000 BC

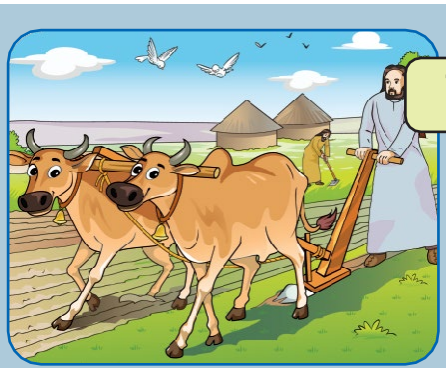
People lived in caves and jungles. They used simple tools and weapons made of stone.



The Bronze Age

3000 BC–1000 BC

People learnt to make bronze weapons and tools. They were farmers and archers.



The Iron Age

1000 BC–Present

Iron replaced bronze as the most useful metal. Most people worked and lived on small farms.

2. How was fire useful to early humans?

The discovery of fire was important for early human beings as it had many uses and benefits, such as:

- They got protection from animals.
- They began to eat cooked food as it was a better form of food.
- They kept themselves warm in severe weather conditions.

3. How different are the old and new means of transport?

The most common means of transport used to travel long distances in the early years were horses, camels, donkeys and bullock carts.

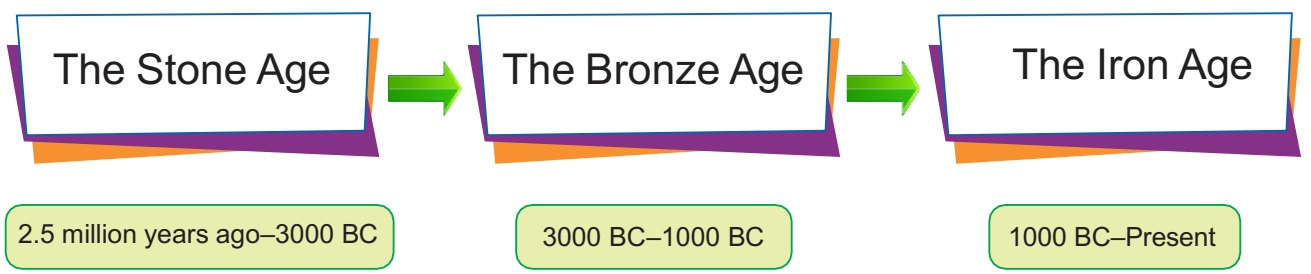
With advances in science, the means of transport gradually gave way to cars, trains, buses and aeroplanes.

4. Fire and agriculture were important discoveries. Can you think of any other important discovery in human history?

- Wheel.
- Nails.
- Compass.
- Printing press.
- Internal combustion engine.
- Telephone.
- Light bulb.
- Penicillin.

2 Put in order the following periods of human history.

The Bronze Age | The Iron Age | The Stone Age



Lesson 12

Inventions

A Choose the correct option.

1. The person who designs or makes a new thing is called

   an inventor | a teacher | a doctor

2. Charles Babbage invented

   the car | the television | the computer

3. The fridge was invented by Jacob Perkins in

   1734 | 1834 | 1934

4. To heat food, we use

   a fridge | a microwave oven | BP apparatus

B Write T for a true statement and F for a false statement.

1. Modern inventions are useless. F
2. Electricity is a great invention of the 19th century. T
3. The internet has few applications. F
4. Medicines and vaccines proved a great blessing for humankind. T

C Answer these questions.

1. What is an invention?

An invention is a new and useful thing that someone has made.

2. List some modern inventions that have improved our lives.

1. Electricity
2. Internet
3. Medicine
4. Computer
5. Television
6. Fridge
7. Microwave oven

3. **In your opinion, which is the most important invention of all time and why?**

INTERNET: -

The internet is a global system of interconnected computer networks that is used by billions of people worldwide. In the 1960s, a team of computer scientists working for the U.S. Defense Department's ARPA (Advanced Research Projects Agency) built a communications network to connect the computers in the agency, called ARPANET, the predecessor of the internet. It used a method of data transmission called "packet switching", developed by computer scientist and team member Lawrence Roberts, based on prior work of other computer scientists.

This technology was progressed in the 1970s by scientists Robert Kahn and Vinton Cerf, who developed the crucial communication protocols for the internet, the Transmission Control Protocol (TCP) and the Internet Protocol (IP), according to computer scientist Harry R. Lewis in his book "Ideas That Created the Future: Classic Papers of Computer Science" (MIT Press, 2021). For this, Kahn and Cerf are often credited as "inventors of the internet".

In 1989, the internet evolved further thanks to the invention of the World Wide Web by computer scientist Tim Berners-Lee while working at CERN (The European Organization for Nuclear Research). According to CERN, "the basic idea of the WWW was to merge the evolving technologies of computers, data networks and hypertext into a powerful and easy to use global information system." The development of the WWW opened up the world of the internet to everybody and connected the world in a way that it had never been before.

D **Write the name of the following invention. Also, write a few lines about it.**



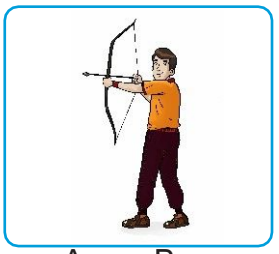
Mobile Phone

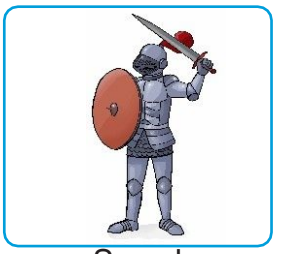
1) Portable

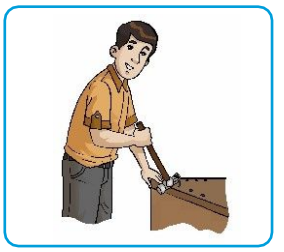
2) Easy to carry

3) Keep your connected with the word on the go.

Lesson 13 Force and Machines


Arrow Bow


Sword




Axe

Uses

1. Hunting
2. Self protection
3.
4. Wood cutting

A Fill in the blanks.

1. A plough was commonly used for loosening soil before growing crops.
2. A sickle is use to cut crops.
3. A simple machine has made our work easy.
4. A lever is a simple machine that is shaped like a rod.
5. We apply a force to stop a moving object.

B Write T for a true statement and F for a false statement.

1. A sword was used for self-protection. **T**
2. Screws are tightened by using a hammer. **F**
3. A pulley is used to move an object upwards. **T**
4. In the early years, machines were powered by engines. **F**
5. A force can change the shape of an object. **F**

C Answer these questions.

1. Write the names of three tools people used in the olden days.

1. Plough 2. Sword 3. Arrows & Bows

2. Write any two uses of an inclined plane.

An inclined plane is also a simple machine used to move objects upwards and downwards. Ramps and slabs that are used to load and unload goods from trucks are examples of inclined planes. Stairs are also an example of inclined planes.

3. Why do we use simple machines?

Simple machines have made our work easier. Levers, Inclined planes, pliers, wheels and axles are examples of simple machines. These machines are used for moving, lifting, assembling and many other purposes.

4. Is it possible to work without machines? Give your opinion with examples.

Think about the following tasks. Which force is being used to pull or push? Arrange the tasks in the correct columns.

tug of war | open the refrigerator | drag the | lift a weight | press a button | close the drawers

Pull	Push
Tug of war	Press a button
Open the refrigerator	Close the drawers
Lift a weight	Drag

Lesson 14 The Role of Government and Citizens

A Choose the correct option.

1. Ali lives in

   a city a village **a town**

2. A government enforces the law through

   the police doctors the army

3. Rubbish is collected by

   policemen postmen **sanitary workers**

4. A good citizen deals with others

   rudely **fairly** disrespectfully

B Write T for a true statement and F for a false statement.

1. We depend on each other for our various needs. **T**
2. We should not play a role to help the government. **F**
3. If you find something on the road, you can keep it. **F**
4. Good citizens keep their promises. **T**

C Answer these questions.

1. What is a community?

A community is a group of people living together and sharing the same environment.

2. How can the government and people work together to meet the needs of the people?

A community requires many things like hospitals, clean drinking water, means of transport and electricity. We are dependent on the government for all of these factilites. All things are managed by the government. The government and people work together to meet their needs. We should play a role to help the government. The following are some ways we can help the government:

- We can keep our streets clean by not throwing rubbish in the street.
- We can donate money to a welfare organization to help the poor.
- We can give our used books to poor students in our community.
- We can keep our environment clean by planting more trees.

3. List some of the qualities of a good citizen.

- Be helpful and considerate
- Be responsible
- Be honest and fair
- Follow rules

4. How does taking responsibility for our actions help us?

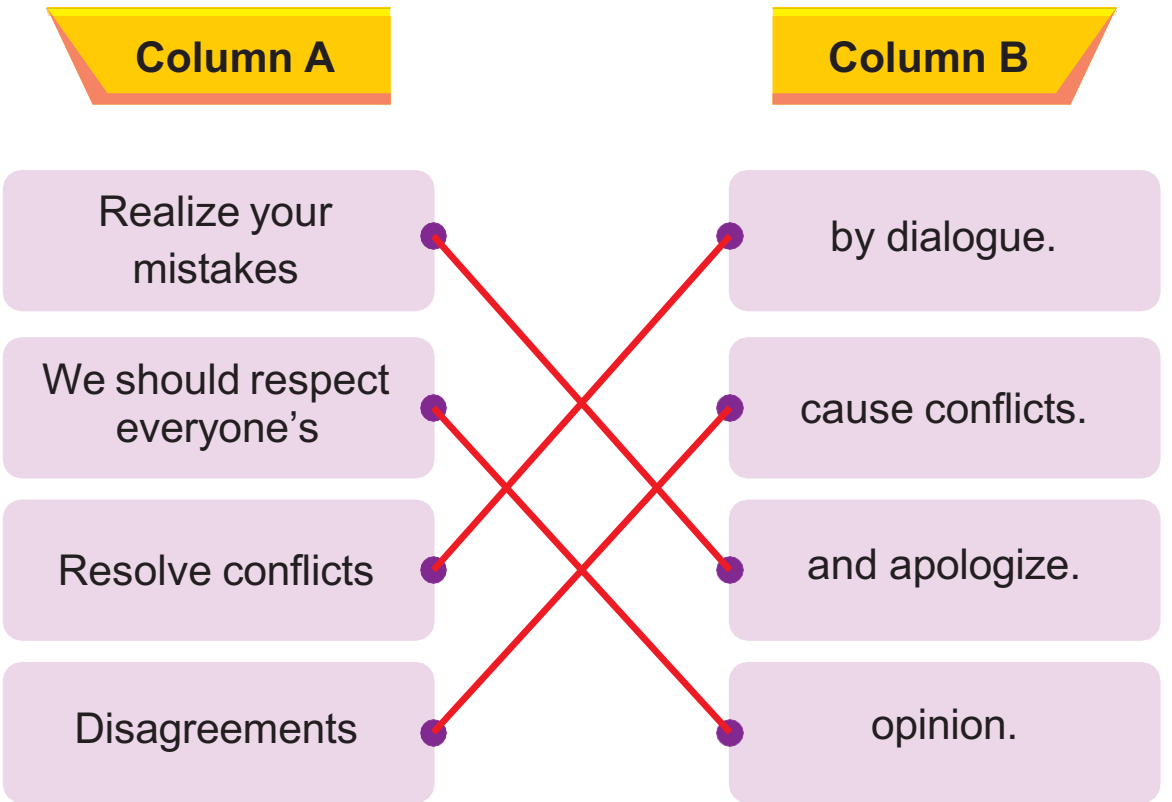
Good citizens always respect others. They are faithful and never cheat anyone. They fulfil their promises so that everyone trusts them. They take care of others.

Lesson 15 Working Out Disagreements

A Fill in the blanks.

1. We need to work out our disagreements to avoid fights.
2. We should learn to forgive.
3. Many misunderstandings can destroy good relationships.
4. Dialogue and discussion are ways to settle disagreements.

B Match the columns to complete the sentences.



C Answer these questions.

1. Give two reasons why children fight in school.

1. Teasing 2. Jealousy

2. How does a conflict affect people?

3. What is the best way of resolving a conflict between two people?

Lesson 16 Safety

A Choose the correct option.

1. It is not a hazard.

   A matchbox A schoolbag Poison

2. If you are using a gas heater in your room, you can face

   an electric shock a fire a fall

3. The best practice while using electrical appliances is

   keeping the switch turned on keeping them near water

   keeping the surroundings dry

4. The warning sign for poison is





B Match the columns to complete the sentences.

Column A	Column B
Take medicines	strangers.
Don't talk to	electric shocks.
Touch electrical appliances	under your parent's supervision.
Loose plugs can cause	cuts and wounds.
Scissors and knives can cause	with dry hands.

C Answer these questions.

1. How can we reduce the risk of cuts and wounds from sharp edges of furniture?

2. Why do we need to keep water away from electrical appliances?

3. What kind of hazards can you face at home? Also list some ways to make your home safe.

1. Cuts and wounds
2. Falls
3. Fires
4. Poisons

- Ask an elder for help whenever you need to use something that runs on electricity.
- Dry your hands properly before touching any machine.
- Keep electrical appliances away from water.
- Turn off the appliances that are not in use.

1 Observe the potential hazards in your classroom and tick (✓) the relevant boxes in the following checklist.

1. Are the windows of your classroom safe in every way? ☑ Yes ☐ No
2. Are the doors and their handles in your classroom safe? ☑ Yes ☐ No
3. Are the desks and chairs in good order? ☑ Yes ☐ No
4. Is there any danger associated with any electric appliance present in your classroom? ☑ Yes ☐ No