

9.1. Blowing of wind

We have air all around us. It blows in our houses, open grounds, fields and every where. But we cannot see air. Wind does many wonders. It brings rain, cold weather and warmth.

Observe the figures given below and identify in which direction the wind is blowing.



Group work







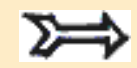




- ◆ In the same way you draw more figures and ask your friend to identify in which way or direction the wind is blowing.

Due to gravitational force, rotation and revolution of the earth, the wind always blows from one place towards another. The intensity of the wind varies from place to place. Air has pressure, weight and it occupies space (volume). These are the properties of air.








9.2. Atmosphere

Earth is covered with a blanket of air. This is called atmosphere. With the help of information on temperature, clouds and humidity, atmospheric conditions can be determined. You can listen to the news to know about the weather. Does weather have stability? Is it the same every day? Do you remember what was the weather one week before? Was it hot or cold? Was it a windy day? or was it cloudy? We observe the weather daily and note them down the details you would become more knowledgeable.

Some symbols are given below to note the atmospheric or weather report

1. When the sky is cloudy 
2. When the sky is sunny 
3. If it rains 
4. If there is a hail storm 
5. If wind blows from east to west 
6. Wind blows from west to east 
7. Wind blows from south to north 
8. Wind blows from north to south 
9. If weather is cold 
10. If sun is it sunny 

Keval, Samhitha, Manogna, Pragna are studying in Vth standard. They noted the weather report for one week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 week							

Think and say

- ◆ Have you seen the weather report table given? How is the weather according to you?
- ◆ On how many days was it cloudy and how many days was it cold in the last week?
- ◆ In which direction does the wind blow most of the time in a week?
- ◆ Is the weather cold on a cloudy day?
- ◆ On which day of the present month there was rainfall and what type of rainfall was it?
- ◆ Can we say that it will definitely rain on a cloudy day?
- ◆ According to the report what could be the season.

Do this



- ◆ You have seen in the above table how to denote weather report with symbols isn't it?
- ◆ Note down the details of the weather from Monday to Sunday with symbols as shown in the table.

Atmospheric table

Divide the class into four groups. Ask the first group to note down the details of the first week, second group of the second week and so on. Note them down in a chart and display.

Week/ days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 st week							
2 nd week							
3 rd week							
4 th week							

Group work



Answer the following using the atmospheric table prepared by you

- ◆ How many days are cloudy in the month?
- ◆ How many days the wind blew strongly and in which direction?
- ◆ How many days were sunny or cold in the month?
- ◆ How many days had rainfall? What was the type of rainfall?
- ◆ According to the details observed what could be the season? Guess?
- ◆ Is your guess right?

9.3. Seasons

According to the climate the year is divided into three seasons. They are winter season, summer season and rainy season. Now, let us know about the seasons.

9.3.1. Observe the picture and say

- What is there in the picture?
- What are the people in the picture doing?
- Why are they doing so?
- What could be the season?



Group work



- ◆ How is the winter season?
- ◆ What do you do to protect yourself from the winter season?
- ◆ What type of clothes do you wear?
- ◆ Animals also feel cold in winter? What will they do to protect themselves from cold? What will you do for them?

Winter season

Weather will be cool in winter season. We find the coconut oil to be frozen, sun rise is delayed and it sun sets sooner in this season. We like to sit in the sun during this season. Everyone wears colourful, sweaters, rugs and shawls. People return home as the sunsets. We find comfort in the sun. Butterflies sit on flowers. Nightingale's sing in winter season. Mango trees start blooming. We find fragrance of flowers all round. Yellow flowers of mustard bloom. Nature looks beautiful with all these things.

9.3.2. Observe the picture and say



- What are the people doing in the picture?
- Why are they doing so?
- What could be the season?
- What will you do in this season?
- Summer season falls in which months?
- How is the weather in summer season?
- What type of clothes should be used in summer season.
- Birds may not find water in summer, what do they do? What should we do?

Summer season

Hot breeze blows. Crops are ready for harvesting. It is the harvesting season for wheat and also the season for mangoes. Mangoes are delicious fruits. Gradually the weather becomes hotter. Severe hot breezes makes the environment uncomfortable weather is more hot in April, may and june months. We like to swim or stay in the shade. We like to drink cold water and wear light cotton clothes. If we go out in sun there is always a danger of sun stroke / fever etc. Still children love the summer season. Do you know why?

9.3.3. Observe the picture and say

- What is the picture about?
- What is the boy doing? Why?
- What could be the season?
- How can we guess that it is going to rain?
- What will you do in the rainy season?
- How do you feel when it rains? What will you do?
- How is the weather in rainy season? In which month does the rainy season start?



Rainy season

Dense clouds, rains, thunder, lightning, rain water, paper boats, umbrellas, earthworms and raincoats are the characteristics of the rainy season. The sky becomes cloudy. There is thunder and lightning before the rainfall starts. It is a joy to play in rains. Ditches get filled with water, children play with paper boats, peacocks dance, frogs croak, wells, lakes, rivers, canals get filled with water and grass grows. Rainy season extends from July to August. Then the rains stop, gradually the temperature decreases and winter season begins. When rains are plenty, crops grow in plenty and everyone is happy.

Group work



- ◆ You have learnt about the three seasons, How is the weather in each season?
- ◆ What type of clothes should be worn in each season?
- ◆ What are the vegetables and fruits available in the respective seasons?
- ◆ In which season do we plant trees? Why?
- ◆ What measures are to be taken in different seasons? Why?

9.4. Layers of the atmosphere

The air around us is called atmosphere. Air consists of many gases, dust particles, water vapour etc. weather is predicted with information based on clouds, humidity, dryness, cold, heat, rainfall etc.

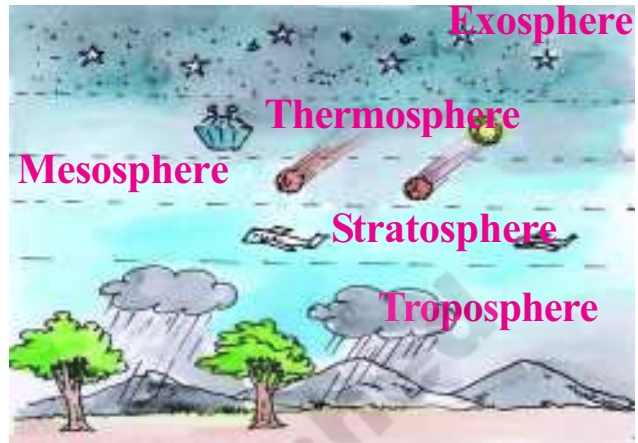
The layers of air around the earth is called atmosphere. Earth's atmosphere is classified into 5 layers based on differences in temperature. They are (1) Troposphere, (2) Stratosphere (3) Mesosphere, (4) Thermosphere and (5) Exosphere

The layer nearest to the earth's surface is Troposphere. We live in troposphere and we breathe in the air of that layer. All aspects of atmosphere are present in this layer. As you go upwards the temperature in the layer decreases.

Weather is never stable. It goes on changing throughout the day. Some times sky is cloudy, water vapour is high in the air, cool breezes blow and some times air is dry and hot breezes blow. On some days it rain and some times the days are hotter.

Atmosphere gets heated due to solar energy. But all parts on the earth surface do not receive the same amount of solar energy. Tropical regions receive more sunlight than the polar regions. Differences in temperatures causes wind flows and changes in atmosphere.

Sunrays, wind, seas, rivers, trees, earth surface, the terrain, altitude etc are the causes of changes in the atmosphere.



Think and say

- ◆ Have you ever witnessed the sun rise and sunset? How did you feel? Write your experiences.

Do this



- ◆ Watch news and from the news papers find the temperature in the morning, afternoon, evening and at night. Collect information, discuss it and display it your classroom.

9.5. Game with wind

Satish came into the room making funny sounds. All the students surrounded him on hearing the sounds. Satish told them that he was making the sound with the help of a paper. You can also do so.

9.5.1. Can air make sound?

Do this



Take a thick paper. Fold it to half and again into half. Now you get three layers. This is paper whistle. Put this between your lips and blow air into it. Did you hear any sound? Think, from where the sound is coming?

Think and say

- ◆ Who made the loudest sound and for a long time in your class?
- ◆ Can you make whistles with coconut leaves? Display them in your classrooms?

Do this



Tup... Tup!?

What will you do with the wrapper after eating biscuits? Take one such wrapper. See whether it is empty. Make it wrinkle free by pressing it against a table.

Blow air fully into the cover and tie its mouth tightly with a thread. Hold it in your hand and ask your friend to burst it by clapping.

Think and say

- ◆ Can you flatten the air filled cover? Why not?
- ◆ When you burst the cover what happened?
- ◆ Did you hear the sound? From where is this sound produced?
- ◆ Did the cover tear? Why?
- ◆ Blow air into the balloon fully and prick it with a pin : What happened? Discuss after observing?

9.6. Musical instruments that work with the help of air

Observe the following figures and say their names.



Think and say

- ◆ How will you play them?
- ◆ What is their relationship with air?
- ◆ Names some more musical instruments?

Do this



Take an empty glass and a coconut shell. Cover the open ends of both with a polythene cover and tie with a thread or rubber band. These are your drums. Now, hit the drums with a broom sticks. Observe the variations in sound.

Think and say

- ◆ Does the sound change if the vessel is large?
- ◆ Does the thickness of the paper have any relation with the sound, produced?

Mouth organ and shehnai are played by blowing air into them. Variations in blowing emits different sound. Coconut shell and the glass is empty inside. Hence, they make sound when beaten with sticks. So, air makes sound and occupies space.

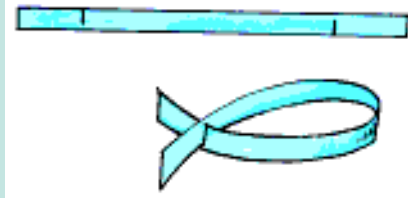
9.7. Air pressure

A moving fish

Do this



Take a 12 cm long and 1 cm wide paper. On both the edges leave a centimetre distance and cut the paper partially. Join both the cut ends as shown in the figure like a fish. Drop the fish from a certain height and observe.



What is the distance?

Children you play with ball isn't it? In the same way shall we play other games.

Do this



Take a piece of newspaper. Draw a line in your classroom. Stand on the line and throw the paper. Measure the distance of the paper from the line. Write down in the table. Now make a paper ball of that loosely, and throw. Note down the distance. Now make a ball tightly and throw and note down the distance.

S.No.	Thrown Object	Distance (cm/m)
1	Paper	
2	Loosely bound paper	
3	Tightly bound paper	

Think and say

- ◆ Which object reached the longest distance?
- ◆ What could be the reason for the paper falling at a shorter distance.
- ◆ What could be the reason for tightly bound paper falling at a greater distance when thrown?

The paper has air around it. So, it could not travel a long distance. It fell nearer. Air did not let the paper travel longer distance. When the paper is bound loose, there is air in the folds of the paper which made the ball reach less distance. When the ball is bound tightly it was able to push the air and reach longer distance.

9.8. Parachute

Do this



Take a polythene cover. Cut it into a square. On four corners tie rope individually. And then tie the four threads collectively to a small stone as shown in the figure. Throw the cover high into the air. Observe the stone falling along with the cover.'



Think and say

- ◆ What happens when the threads are not of the same size.
- ◆ When does the cover open while throwing up or while falling down.
- ◆ What is the reason for the cover opening up?



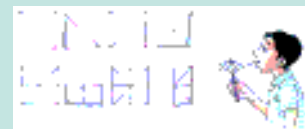
Observe the figure given. This is called a parachute. Parachute will fall slowly to the ground because air will stop them from falling freely. That is why the person holding the parachute will descend slowly to the ground. Airforce planes and helicopters have parachutes. They are used in emergency situations.

9.9. Power of air - wind mill

Do this



Take a square shape paper. Fold the paper into half and fold it further to make it square again. Now fold it vertically and horizontally. Now it looks like a flower. Place this on the tip of the pencil lead and blow air through your mouth. What do you observe.



Group work



- ◆ Your wind mill rotates in which direction?
- ◆ Does it rotate in all directions?
- ◆ How long does it rotate?
- ◆ Why do wind mills and paper flowers rotate?
- ◆ What should you do to make the wind mill rotate continuously?
- ◆ You know how to prepare a paper flower. Observe how it moves.

Flowing air has power. It can move objects, that is why the paper flower and the wind mill rotate. This power of air is utilized in production of electricity with the help of the wind mill.



Do you know?

Air has many gases mainly, nitrogen, oxygen, carbon dioxide, water vapour etc. They don't have any taste or colour. In the same way air also has no taste or colour. These gases are present in air in the form of minute particles. Nitrogen is present in higher quantity, followed by oxygen and carbon dioxide.

9.10. Why do we need air?

Think and say

- ◆ Close your mouth and nose for some time, and see what happens?
- ◆ How long can you stay like this? Why not for a long time.
- ◆ Take a balloon and blow air in to it? Where does that air come from?

Air is necessary for the life of plants and animals

Air is necessary for plants and animals to live. They will die without the air. Oxygen in the air helps organisms to live. Carbon dioxide in the air is used in the preparation of food materials by plants. Plants release oxygen. Plants and animals take in oxygen and release carbon dioxide. There is plenty of oxygen where there are plenty of trees. Oxygen dissolves in water. Water animals breathe oxygen dissolved in water.



Birds, animals, human beings etc need air to live. Air is the elixir of life. Do you know what are the other uses of air? Do you know what is filled in the tyres of cars and buses?

Group work



- ◆ Which vehicles tyres are filled with air?
- ◆ In what other objects do we fill air?

9.11. Air pollution

Observe the picture and say

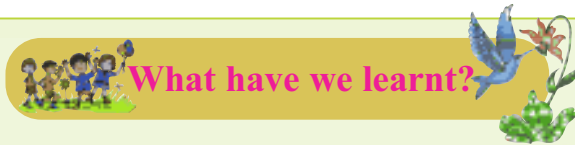


- What did you observe in the above picture?
- What happens due to that? What will happen to the air?
- What is air pollution? What should we do to stop air pollution?
- How do dust particles enter air?
- Let the sunlight fall in a room with the help of the reflection made by a mirror or the surface of a steel plate. Observe the dust particles.

When we sweep the floor at home, when the roads are swept, when the vehicles move, the dust particles rise and mix up with air. Smoke from kitchens, factory chimneys and burning wood pollute the air. Health is affected when we breathe the polluted air. Some people smoke beedi, cigarette and release smoke into the air. By breathing this kind of air also we become ill and get diseases. Not only people who smoke but also people who breathe in that smoke get diseases of lungs, T.B., cancer etc. That is why we should take precautions to prevent air pollution, which is our responsibility. For this we have to plant trees. We should strictly punish the industries which emit dangerous smoke.

Keywords

Atmosphere	Rainy season	Pressure / Force of of air
Wind flowing	Clothes according to the seasons	Air pollution
Atmospheric table	Air makes sound	Parachute
Winter season	Air has weight	Pure air
Summer season	Air occupies space	Wind electricity



What have we learnt?

1. Conceptual understanding

- How can you say that wind is blowing?
- How is the weather in different seasons?
- What measures are to be taken in summer season?
- What type of clothes should be worn in different seasons?
- In which season does the environment look green and beautiful? Why?
- Give examples to prove that air makes sound?
- Why does air become polluted?

2. Questioning and hypothesis



- What is happening in the picture? Why is it happening? What happens next?
- Ask some more questions based on the picture?

3. Experiments - field observations

- Dip an empty bottle into the water? What will happen? Why it happens?
- Pour water on a brick? What did you observe? Why it happens?

4. Information skills, projects

- ◆ Collect information about the things which work with air. Write their names and write their relation with air in two sentences.

5. Communication through mapping skills, drawing pictures and making models

- Write about the making of a parachute? Make a model and draw a picture of it?
- Make a flute out of hay stalk.
- Make a drum using empty tins, polythene covers and rubberbands.

6. Appreciation, values and creating awareness towards bio-diversity

- Which instruments sound you like? How do you feel on hearing it?
- Polluted environment is harmful to health? What will you do to have a healthy environment?
- There are many industries around Sultanpur which are emitting (giving out) harmful smoke. By breathing this smoke people are becoming sick. Write a letter about this to the pollution control board.
- To have fresh air each one should plant a tree. Prepare a poster to denote the necessity of trees and display.

Can I do this?

- | | |
|---|----------|
| 1. I can explain clearly the meaning of the terms atmosphere, seasons, air etc. | Yes / No |
| 2. I can demonstrate experiments related to air. | Yes / No |
| 3. I can collect information on objects that run with air and can explain. | Yes / No |
| 4. I can write a letter to pollution control board to prevent pollution. | Yes / No |
| 5. I can make a poster with a message to plant trees to get fresh air. | Yes / No |
| 6. I can explain about the properties of air. | Yes / No |