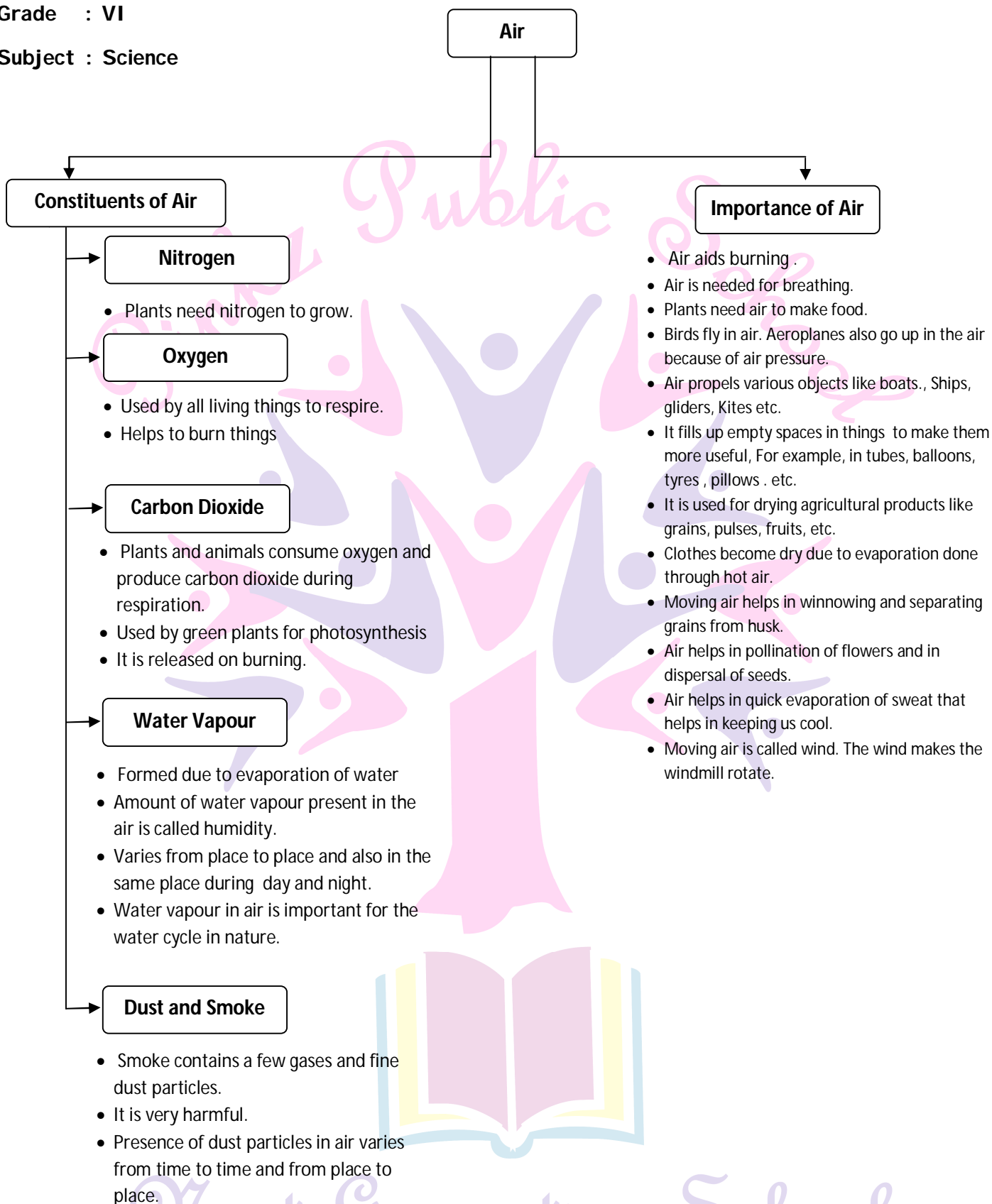


Grade : VI

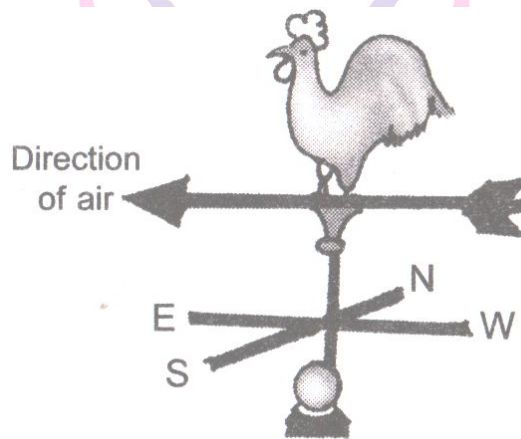
Subject : Science



Next Generation School

I. Know the Terms

- **Atmosphere** : Envelope of air surrounding the surface of the Earth.
- **Humidity** : The amount of water vapours present in air.
- **Pollutants** : The substances that cause pollution.
- **Respiration** : The process in which combustion of food takes place to release energy and carbon dioxide.
- **Windmill** : A device used to produce wind energy.
- **Weather Cock**: It shows the direction in which the air is moving at that place.



- **Smoke** : Composition of gases and dust particles.

Objective Type Questions

(1 mark each)

I. Multiple choice questions

- The presence of which component in air varies from place to place ?
(a) Oxygen (b) Nitrogen (c) Water vapour (d) Carbon dioxide
- Which of these is not true for combustion ?
(a) Oxygen is formed (b) CO_2 is formed
(c) Oxygen is used up (d) Nitrogen does not change
- Which of these is not an organ for taking in oxygen ?
(a) Lungs (b) Gills (c) Stomata (d) Atmosphere
- Which of the following gases protects us from ultraviolet rays ?
(a) Oxygen (b) Ozone (c) Carbon dioxide (d) Nitrogen

5. The amount of water vapour in the air at any place and time is :
(a) Atmosphere (b) Humidity (c) Fog (d) Smoke
6. CNG means :
(a) Common Natural Gas (b) Compressed Natural Gas
(c) Common Natural Gasoline (d) Compressed Natural Gasoline
7. Oxygen and carbon dioxide are replaced in nature through :
(a) Photosynthesis (b) Respiration (c) Both (a) and (b) (d) None of these
8. Air is a type of :
(a) Mixture (b) Compound (c) Gas (d) Element
9. The rate of photosynthesis is very high during :
(a) evening (b) day time (c) night (d) midnight
10. Earthworm takes oxygen from the soil through :
(a) Lungs (b) Gills (c) Moist skin (d) Spiracles
11. Which gas in the atmosphere is essential for respiration ?
(a) Carbon dioxide (b) Oxygen (c) Argon (d) Nitrogen
12. Which of the following statements is incorrect ? **[NCERT Exemplar]**
(a) All living things require air to breathe.
(b) We can feel air but we cannot see it.
(c) Moving air makes it possible to fly a kite.
(d) Air is present everywhere but not in soil.
13. Wind does not help in the movement of which of the following ? **[NCERT Exemplar]**
(a) Firki (b) Weather cock (c) Ceiling fan (d) Sailing yacht
14. What is not true about air ? **[NCERT Exemplar]**
(a) It makes the windmill rotate. (b) It helps in the movements of aeroplanes.
(c) Birds can fly due to presence of air. (d) It has no role in water cycle.
15. Mountaineers carry oxygen cylinders with them because : **[NCERT Exemplar]**
(a) there is no oxygen on high mountains.
(b) there is deficiency of oxygen on mountains at high altitude.
(c) oxygen is used for cooking.
(d) oxygen keeps them warm at low temperature.

16. Boojho took an empty plastic bottle, turned it upside down and dipped its open mouth into a bucket filled with water. He then tilted the bottle slightly and made the following observations :

- (i) Bubbles of air came out from the bottle.
- (ii) Some water entered the bottle.
- (iii) Nitrogen gas came out in the form of bubbles and oxygen got dissolved in water.
- (iv) No bubbles formed, only water entered the bottle. **[NCERT Exemplar]**

Which observation(s) is/are correct ?

- (a) (i) and (ii) (b) (iv) only (c) (iii) and (iv) (d) (i) only

17. Which of the following components of air is present in the largest amount in the atmosphere? **[NCERT Exemplar]**

- (a) Nitrogen (b) Oxygen (c) Water vapour (d) Carbon dioxide

18. The components of air which are harmful to living beings are : **[NCERT Exemplar]**

- (a) nitrogen and carbon dioxide (b) dust and water vapour
- (c) dust and smoke (d) smoke and water vapour

19. Usha took a lump of dry soil in a glass and added water to it till it was completely immersed. She observed bubbles coming out. The bubbles contain :

- (a) water vapour (b) only oxygen gas (c) air (d) none of these

20. Air is a mixture of :

- (a) Oxygen and nitrogen (b) Carbon dioxide and oxygen
- (c) Various gases, dust particles and water vapour (d) Oxygen and dust particles

21. During photosynthesis, plants take in :

- (a) Carbon dioxide (b) Oxygen and nitrogen
- (c) Oxygen and dust particles (d) Only oxygen

22. The layer of air which surrounds the earth is :

- (a) atmosphere (b) air envelope (c) matter (d) none of these

23. Fish derive oxygen from : **[NCERT Exemplar]**

- (a) the soil below water (b) the dissolved air in water
- (c) the atmospheric air (d) none of these.

1. (c)	2. (a)	3. (d)	4. (b)	5. (b)	6. (b)	7. (c)	8. (a)	9. (b)	10. (c)	11. (b)	12. (d)
13. (c)	14. (d)	15. (b)	16. (a)	17. (a)	18. (c)	19. (c)	20. (c)	21. (a)	22. (a)	23. (b)	



II. Multiple choice questions

- The atmosphere is
 - a layer of air
 - a layer of clouds
 - a layer of water
 - none of these
- Air is a / an.
 - element
 - mixture
 - compound
 - none of these
- Air contains _____ oxygen.
 - 100%
 - 50%
 - 25%
 - 21%
- Which gas in the atmosphere is essential for respiration?
 - Oxygen
 - Nitrogen
 - Carbon dioxide
 - Argon
- The gas which is called green house gas is.
 - Oxygen
 - Nitrogen
 - Carbon dioxide
 - Argon
- Mountaineers carry _____ in cylinder.
 - carbon dioxide
 - oxygen
 - air
 - nitrogen
- We often feel suffocation when a gas is present in excess in our room. This gas is
 - smoke
 - oxygen
 - carbon dioxide
 - nitrogen
- We inhale air through
 - ear
 - eye
 - nose
 - none
- Air is
 - transparent
 - opaque
 - both a and b
 - neither a nor b.
- The total percentage of nitrogen and oxygen in air is
 - 99
 - 10
 - 100
 - 78

1. a	2. b	3. d	4. a	5. c	6. b	7. c	8. c	9. a	10. d	11. a
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I. True or False

- Air is mixture of gases.
- Air contains nitrogen and oxygen in the ratio of 5:1 by volume.
- The percentage of oxygen in air is 78.1%.
- All organisms need air for respiration.
- The source of carbon dioxide in air is the respiration of animals.
- The percentage of CO₂ in air is 0.03%.
- Air in motion is called wind.

8. Our earth is surrounded by a thin layer of water.
9. Winnowing is more effective in moving air.
10. Air does not occupy space.
11. Burning can occur only in the presence of nitrogen.

1. True	2. False	3. False	4. True	5. True	6. True
7. True	8. False	9. True	10. False	11. False	

II. True or False

1. Carbon dioxide is the major component of air.
2. Nitrogen is an important constituent of all fertilizers.
3. Plants use oxygen for respiration during day time only.
4. Nitrogen present in air supports burning.

1. False	2. True	3. False	4. False
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I. Match the following.

(I) Column A	Column B
(a) Atmosphere	(i) The block mixture of gases, carbon, dust etc.
(b) Air	(ii) Thin layer of air surrounding earth.
(c) Smoke	(iii) Mixture of O ₂ , CO ₂ , nitrogen gas.
(d) Inert gases	(iv) All living things require oxygen for it.
(e) Respiration	(v) Ne, Ar, He.

a. ii	b. iii	c. i	d. v	e. iv
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(II) Column A	Column B
(a) Major component of Air	(i) Carbon dioxide
(b) During photosynthesis plants intake of	(ii) Nitrogen
(c) Dust particles	(iii) plants and animals
(d) For respiration oxygen require for	(iv) Dissolved air
(e) Aquatic animals respire	(v) Composition air

a. ii	b. i	c. v	d. iii	e. iv
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II. Match the following.

(I) Column A	Column B
a. Weather cock	i. Gases and fine dust particles
b. Mountaineers	ii. Sailing yacht
c. Fine hair inside the nose	iii. Oxygen cylinders
d. Smoke	iv. Direction of air flow
e. Wind	v. Prevent dust particles

a. iv	b. iii	c. v	d. i	e. ii
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III. Match the following.

(I) Column A	Column B
i. Nitrogen	a. Composition of air
ii. Percentage of oxygen	b. Present around us
iii. Carbon dioxide	c. Burning of fuel
iv. Oxygen	d. Air is weight
v. Water	e. 78.1%
vi. Atmosphere	f. Generates electricity
vii. Smoke	g. Supports Burning
viii. Air has	h. 0.03%
ix. Air	i. Universal solvent
x. Windmill	j. 20.9%

i. e	ii. j	iii. h	iv. g	v. i	vi. a	vii. c	viii. b	ix. d	x. f
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I. Fill in the blanks

- Air is _____ and _____.
- The layer of air around the earth upto few km is known as _____.



3. Moving air is known as _____.
4. Nitrogen is _____ and oxygen is _____ in air.
5. _____ is required for burning.
6. _____ and _____ are inert gases.
7. Air and dust particles' mixture with dark coloured gases is known as _____.
8. Soil organisms take air present in _____.
9. _____ is used for aeration of drinks like Coca-cola.
10. Plant produces food and _____ during photosynthesis.
11. Air occupies _____ and has _____.
12. The air we breathe in is rich in _____.

1. colourless, odourless	2. atmosphere	3. wind	4. 78.09%, 20.95%
5. Oxygen	6. Argon, neon	7. smoke	8. pores of soil
9. Carbon dioxide	10. oxygen	11. space, mass	12. oxygen

II. Fill in the blanks

1. All living organisms need _____ for respiration.
2. Air contains all the properties of its _____.
3. The component of air necessary for photosynthesis is _____.
4. The gas formed during cellular respiration is _____.
5. The supporter of combustion in the air is _____.
6. Air is present in _____ and _____.
7. Aquatic animals use the dissolved oxygen in the water is _____.
8. The major part of air is _____.
9. Burning can occur only in the presence of _____.
10. The organisms that live in soil also need _____ to respire.

1. oxygen	2. constituents	3. carbon dioxide	4. carbon dioxide
5. oxygen	6. water, soil	7. respiration	8. nitrogen
9. oxygen	10. oxygen		

Quiz Time

1. Which common instrument would you use to know the direction in which the air is moving at that place?
 2. A large envelope of air extends upto many kilometres above the surface of the earth. What is this known as?
 3. Which is the major part of the air that does not support burning?
 4. Name the component of the air which strongly helps burning but it itself does not burn.
 5. Which gas of the atmosphere is used in the soft drink bottles?
 6. Tiny water droplets appear on the surface of a tumbler containing ice. Why?
 7. Why do mostly traffic policemen wear a mask?
 8. When we boil water, tiny air bubbles come out. Why is it so?
 9. How do plant roots get air for their respiration in the soil?
 10. Why during an incident of fire, one is advised to wrap a woollen blanket over a burning object?
1. A weather cock
 2. Atmosphere
 3. Nitrogen
 4. Oxygen
 5. Carbon dioxide
 6. Water vapour
 7. To prevent inhalation of smoke given out by automobiles.
 8. These are bubbles of air which remain dissolved in water. On heating, this air comes out from the water in the form of air bubbles.
 9. There are small interconnected spaces between the soil particles which contain air. The plant roots respire in this air.
 10. A woollen blanket cuts off supply of air (oxygen) to stop burning.

NCERT Corner

Intext Questions

1. Have you ever seen air ?

We might not have seen air but its presence can be felt.



2. Why does the transparent glass of windows if not wiped regularly appear hazy ?

The dust particles present in air stick to transparent glass of windows. These particles also attract other elements like pollen to collect on glass. That's why, transparent glass of windows if not wiped appears hazy.

3. Why do traffic policemen wear mask with charcoal lining ?

Charcoal has activated carbon which absorbs air pollutants, dust, pollen etc. Due to this reason, traffic policemen wear mask with charcoal lining.

4. Why during an incident of fire, one is advised to wrap a woollen blanket over the burning object?

The supply of air (oxygen) cuts off by using woollen blanket. So, to stop the burning of object, one is advised to wrap a woollen blanket over it.

5. Will the tiny air bubbles seen before the water actually boils also appear if we do this activity by reheating boiled water kept in an air tight bottle ?

Tiny air bubbles are seen in water due to heating. If boiled water kept in airtight container is reboiled, there will be no bubbles due to the absence of air.

Textbook Questions

1. What is the composition of air ?

Air consists of :

Nitrogen	78.09%
Oxygen	20.95%
Carbon dioxide	0.03 - 0.04%
Other gases like	traces He, H ₂ etc.

2. How will you prove that air supports burning ?

Take a burning candle which is fixed in a tumbler containing water. The candle is covered by an inverted glass. After some time, the covered candle gets extinguished and water rises upto 1/5th of the glass. It shows that air supports burning.

3. How will you show that air is dissolved in water ?

When a tumbler containing water is heated, tiny bubbles appear on the inner side. These bubbles come from the air dissolved in water.

4. Why does a lump of cotton wool shrink in water ?

A lump of cotton wool shrinks in water because the air inside cotton wool is driven out by water. The layers stick together and hence the lump shrinks.

5. The layer of air around the earth is known as

Atmosphere.

6. The component of air used by green plants to make their food is

Carbon dioxide

7. List five activities that are possible due to the presence of air.

(i) Photosynthesis

(ii) Transpiration (iii) Respiration (iv) Movement of sailing yachts, parachutes, aeroplanes etc. (v) Burning of fuels.

8. How do plants and animals help each other in the exchange of gases in the atmosphere?

Plants take in carbon dioxide and give out oxygen in the process of photosynthesis. Animals inhale this oxygen and give out carbon dioxide to the atmosphere in the process of respiration, which is again used by the plants for photosynthesis. This is how plants and animals help each other in the exchange of gases in the atmosphere.

I. Very Short Answer Type Questions

1. When we put blanket on fire, it extinguishes fire. Why ?

Blanket stops supply of oxygen, thus fire extinguishes.

2. In which process does a plant take in oxygen ?

Respiration.

3. For which process does a plant require carbon dioxide ?

Photosynthesis.

4. What are the products of photosynthesis ?

Starch and oxygen.

5. What is the frozen form of carbon dioxide ?

Dry ice.

6. What is meant by inert gases ?

Inert gases do not react with other elements.

7. What is the shape of air ?

It acquires the shape of the vessel.

8. What is wind ?

Air in motion is called wind.

9. Which gas in the atmosphere is essential for respiration ?

Oxygen in the atmosphere is essential for respiration.

10. What is atmosphere ?

The layer of air around the earth is known as atmosphere.

11. Which component of air is used by green plants to make their food ?

Carbon dioxide is used by green plants to make their food.

12. Which is the most abundant gas in our atmosphere ?

The most abundant gas in our atmosphere is nitrogen.

13. State whether the following statements are true or false. If false, correct them.

(a) Plants consume oxygen for respiration.

(b) Plants produce oxygen during the process of making their own food.

(c) Air helps in the movement of sailing yachts and glider but plays no role in the flight of birds and aeroplanes.

(d) Air does not occupy any space.

[NCERT Exemplar]

(a) True	(b) True	(c) False. Air also plays an important role in the flight of birds and aeroplanes.	(d) False. Air occupies space.
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14. In a number of musical instruments, air plays an important role. Can you name some such instruments ?

[NCERT Exemplar]

Flute, shahnai etc.

15. In the boxes of Column I the letters of some words got jumbled. Arrange them in proper form in the boxes given in Column II. Column I Column II

(a) D I L L M W I N

(a)

(b) Y N O G X E

(b)

(c) M E S K O

(c)

(d) T U D S

(d)

[NCERT Exemplar]

- (a) WINDMILL
- (b) OXYGEN
- (c) SMOKE
- (d) DUST

16. Make sentences using the given set of words.

- (a) 99%, oxygen, nitrogen, air, together
- (b) Respiration, dissolved, animals, air, aquatic
- (c) Air, wind, motion, called [NCERT Exemplar]

- (a) Oxygen and nitrogen together make up 99% of the air.
- (b) Aquatic animals use dissolved air for respiration.
- (c) Air in motion is called wind.

II. Very Short Answer Type Questions

1. Name the main component of air.

Nitrogen gas.

2. What is the source of oxygen gas in air?

Photosynthesis by green plants is source of oxygen gas in air.

3. What is the percentage of nitrogen in air?

78.1%

4. What is the percentage of oxygen in air?

20.9%

5. What is the source of carbon dioxide in air?

Respiration by animals and plants and burning of fuel.

6. Respiration by animals and plants and burning of fuel.

Mention one necessary condition for the combustion to take place.

7. What is the proportion of nitrogen in the air?

Nitrogen takes up nearly four-fifth of the space that air-fills.

8. What is the percentage of carbon dioxide in air?

0.03%.

9. What are the major components of air?

The major components of air are:

- (a) Nitrogen

- (b) Oxygen
- (c) Carbon dioxide
- (d) Other gases, dust particles and water vapour by volume.

10. Write the name of two objects which are inflated by air.

- (i) Balloons
- (ii) Bus tyre

11. Write the two properties of air.

- (i) It is colourless and transparent.
- (ii) It has mass.

I. Short Answer Type Questions.

1. Name the major gas present in the (a) inhaled air (b) exhaled air.

- (a) Oxygen
- (b) Carbon dioxide.

2. Write the necessary conditions for rusting of iron to take place.

Rusting of iron takes place in the presence of moisture and air. So, the presence of air and water vapour in air are two necessary conditions for rusting of iron.

3. Name a device which uses wind energy to generate electricity.

Windmills use the wind energy to convert wind energy into electrical energy.

4. What is wind energy? Mention its two advantages.

Blowing air is called wind. Wind possesses kinetic energy. The kinetic energy possessed by wind is called wind energy.

Uses of Wind Energy are:

- (i) Wind energy is used to pump the ground water.
- (ii) Wind energy is used to generate electricity with the help of windmills.

5. Mention two uses of air.

The two uses of air are as below:

- (a) For respiration all organisms need air.
- (b) For burning of any substance air is needed.

6. Describe balance of oxygen in the air.

The oxygen in air is used by the organisms present in air, water or soil or on earth for their respiration. During respiration carbon dioxide gas is released in air. But green plants

during photosynthesis use carbon dioxide of air for preparing food and they release oxygen gas in the air. Thus the balance of oxygen in air is maintained.

7. What happens if the percentage of oxygen in the air reaches to 70%?

If any substance catches fire it will become difficult to extinguish the fire, as oxygen supports combustion.

8. What happens if the percentage of carbon-dioxide increases in the air?

The increased percentage of carbon-dioxide will cause green house effect, i.e. it will not allow the hot rays of sun to escape from the atmosphere after reflection once they enter the earth's atmosphere, thereby increasing the temperature of earth, ice on mountains will melt and water level will rise.

9. You must have seen during rainy season, when it rains the animals like earthworm, snakes, snails etc. are commonly seen. Explain why?

All these animals live in underground burrows or remain buried in the soil. They get oxygen from air that enters into the burrow through entrance of burrow or through pores in the soil. But when it rains, the water gets filled in their dwelling places and pores of the soil. So, they come out in search of air.

10. Why is carbon-dioxide gas used to extinguish fire?

It is because carbon-dioxide does not support combustion. When sprayed on burning object it stops the supply of oxygen and extinguishes fire.

11. How will you prove that soil contains air in it?

Take a glass tumbler add some soil in it, then pour some water on the soil slowly, the air-bubbles comes out of the soil. This proves that soil holds air in it.

12. Why do we see the sky and air clear and clean after rainfall?

The dust particles which remain suspended in air get loaded and come down on the ground due to rainfall, this is the reason that the sky and the air look clean and clear after rainfall.

13. Explain why mountaineers carry oxygen cylinders with them?

As you go up, above the sea-level the atmospheric pressure goes on decreasing and the amount of oxygen also decreases at higher altitude.

14. How is oxygen removed from the atmosphere?

- (i) By combustion.
- (ii) Through respiration by living beings.
- (iii) By iron rusting.

15. Write the uses of nitrogen.

Nitrogen is used in protein synthesis. It is an important constituent of amino acid which manufactures proteins. Proteins are required by living organisms to grow and repair the body parts.

16. Write the two ways in which carbon dioxide is received by the atmosphere?

Carbon dioxide is received by the atmosphere when: (i) We burn things. (ii) Animals and plants consume oxygen for respiration and produce carbon dioxide.

17. What is the reason that we inhale air through our nostrils while breathing?

The hair and mucus are present inside the nose to prevent dust particles from getting into the respiratory system. That is why we inhale air through nostrils.

II. Short Answer Type Questions.

1. How do aquatic animals take oxygen for respiration ?

Aquatic animals take the dissolved oxygen/air in water for respiration.

2. List four activities that are possible due to the presence of air.

The activities that are possible due to the presence of air are as follows :

- (i) Respiration and water cycle
- (ii) Flying of birds and aeroplanes
- (iii) Dispersal of seeds.
- (iv) Rotation of the windmill.

3. Explain why air is considered a mixture.

The air is considered a mixture because of the following reasons :

- (a) Air consists of many gases like oxygen, nitrogen, carbon dioxide, etc.
- (b) The composition of air varies from place to place.

4. Is winnowing possible in a closed room ? Give reason.

No, winnowing is not possible in a closed room. The reason is that winnowing needs wind, which occurs only when air moves. Since, there is no wind in a closed room, no winnowing can take place.

5. How can you say that both animals and plants are dependent on each other for their survival?

Both plants and animals are interdependent on each other for their survival. Plants cannot survive for long without animals, as they need CO₂ for photosynthesis, which is exhaled

by animals. Similarly, in absence of plants, there will be no oxygen for animals to breathe in. Hence we can say that both need each other and the balance of oxygen and carbon dioxide in the atmosphere is maintained by their presence.

6. What is windmill ? Write two uses of windmill.

(a) A windmill is a machine that harnesses wind energy to grind grain, pump water, or generate electricity.

(b) The windmill is used to draw water from tube wells and to run flour mills. They are also used to generate electricity.

7. A list of words is given below. Use appropriate words to fill up the blanks in the following statements.

Air, oxygen, wind, water vapour, mixture, combination, direction, road, bottles, cylinders.

(a) The _____ makes the windmill rotate.

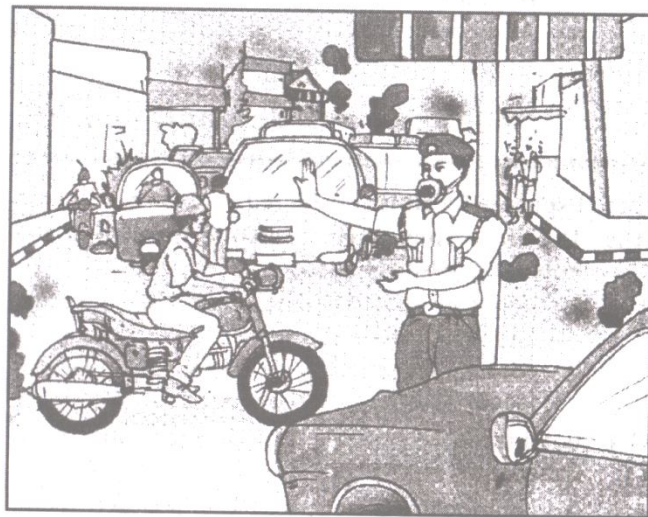
(b) Air is a _____ of some gases.

(c) A weather cock shows the _____ in which the air is moving at that place.

(d) Mountaineers carry oxygen _____ with them, while climbing high mountains.

(a) wind	(b) mixture	(c) direction	(d) cylinders
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8. Observe the picture given in Fig. carefully and answer the following questions.



(a) What is used to cover the nose and mouth of the policeman ?

(b) Why is he putting a cover on his nose ?

(c) Can you comment on air quality of the place shown in the Fig. ?

[NCERT Exemplar]

(a) Mask.

(b) To save himself from polluted air and dust particles.

(c) Air quality of the place is not good because of automobile emissions, i.e., smoke, harmful gases along with dust particles present in air.

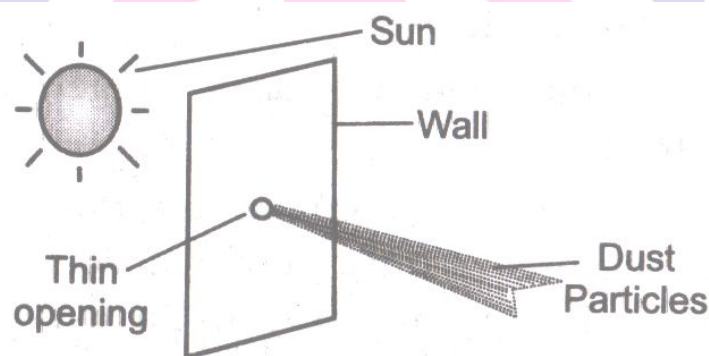
9. Garima observed that when she left her tightly capped bottle full of water in the open in sunlight, tiny bubbles were formed all around inside the bottle. Help Garima to know why it so happened. [NCERT Exemplar]

It happened because air is dissolved in water in the form of oxygen. Air dissolved in water started escaping in the form of tiny bubbles due to heat of sun when she left tightly capped bottle full of water in the open in sunlight.

I. Long Answer Type Questions.

1. How can you say that air contains dust particles ?

On a sunny day, go to a room which is a little bit dark. In this room, choose a thin opening through which light can enter the room. If there is no opening in the room, then make one. From this opening we will see that a sharp beam of sunlight enters the room.

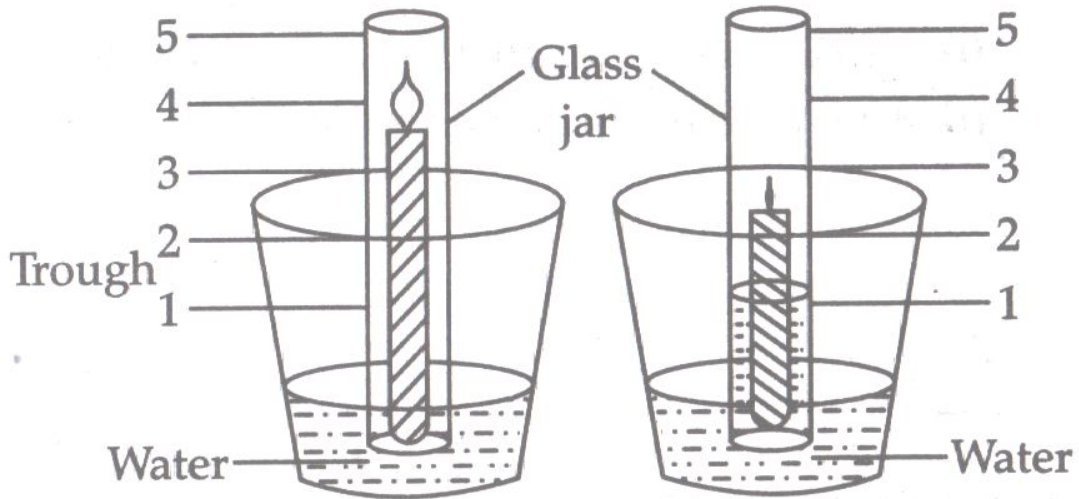


In this beam, we will observe that there are some tiny solid-like particles moving freely. These particles are the dust particles, and this shows the presence of dust particles in air.

2. Give an experiment to show that one-fifth of air is oxygen.

Take a candle and fix it at the centre of a glass vessel. Add some quantity of water in the vessel. Now place an empty dry glass jar over it. Mark five lines at an equal distance above the water surface. Now, carefully light the candle and cover the glass jar. Wait for a few seconds and how the flame will be extinguished due to absence of oxygen to burn. Now, we can observe that the water level raised in the glass jar is $\frac{1}{5}$ of the volume of air present in the glass jar.

This experiment shows that one-fifth of air is oxygen.



3. Explain the following observations very briefly.

(a) A firki does not rotate in a closed area.

(b) The arrow of weather cock points towards a particular direction at a particular moment.

(c) An empty glass in fact is not empty.

(d) Breathing through mouth may harm you. [NCERT Exemplar]

(a) A firki does not rotate in a closed area due to no air movement.

(b) The arrow of weather cock points towards a particular direction at a particular moment as it shows the direction of movement of air.

(c) An empty glass in fact is not empty because it is filled with air.

(d) Breathing through mouth may harm us because dust particles present in air may also get inhaled which are harmful.

4. Write just a few sentences for an imaginary situation if any of the following gases disappears from the atmosphere

(a) oxygen

(b) nitrogen

(c) carbon dioxide

[NCERT Exemplar]

(a) If oxygen disappears from the atmosphere, then there will be no life on earth because oxygen is vital for life and is the basic requirement of all living beings.

(b) If nitrogen disappears from the atmosphere, then the objects will burn rapidly, as we know that nitrogen does not support burning.

(c) If carbon dioxide disappears from the atmosphere, then green plants can not prepare their own food by photosynthesis so there will be no life on earth. It is because, plants consume carbon dioxide during photosynthesis.

5. Paheli kept some water in a beaker for heating. She observed that tiny bubbles appeared before the water started to boil. She boiled the water for about 5 minutes and filled it in a bottle up to the brim and kept the bottle airtight till it cooled down to room temperature.

(a) Why did the tiny bubbles appear ?

(b) Do you think tiny bubbles will appear on heating the water taken out from the bottle? Justify your answer. [NCERT Exemplar]

(a) Air is dissolved in water in the form of oxygen. This is called dissolved oxygen. Tiny bubbles appear in the beaker due to evolution of air dissolved in water.

(b) No, tiny bubbles will not appear as there is no dissolved air in this water.

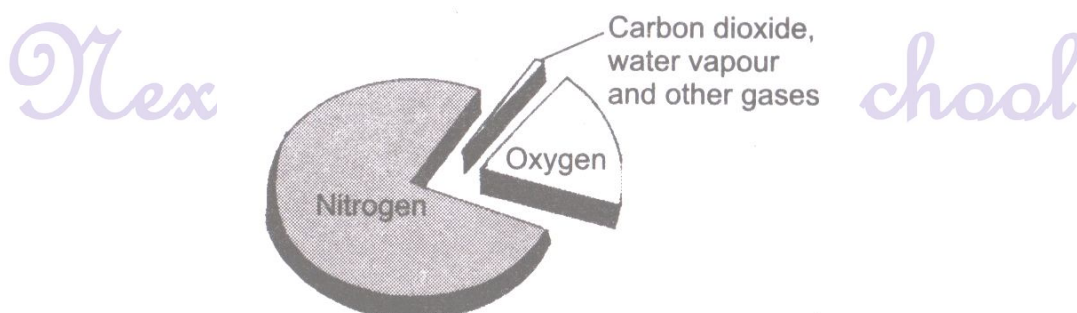
6. On a Sunday morning Paheli's friend visited her home. She wanted to see some flowering plants in the nearby garden. Both of them went to the garden. While returning from the garden they also observed some flowering plants on the road side. But to their surprise they found that the leaves and flowers of these roadside plants were comparatively very dull. Can you help them to know why ? [NCERT Exemplar]

The leaves and flowers of the roadside plants were comparatively very dull due to the presence of air pollutants in this region emitted from vehicles, industries etc. The air pollutants include dust particles, harmful gases, soot etc, which made the leaves and flowers appear dull.

II. Long Answer Type Questions.

1. What is air? Name the major constituents of air. Also give their volume proportions in air.

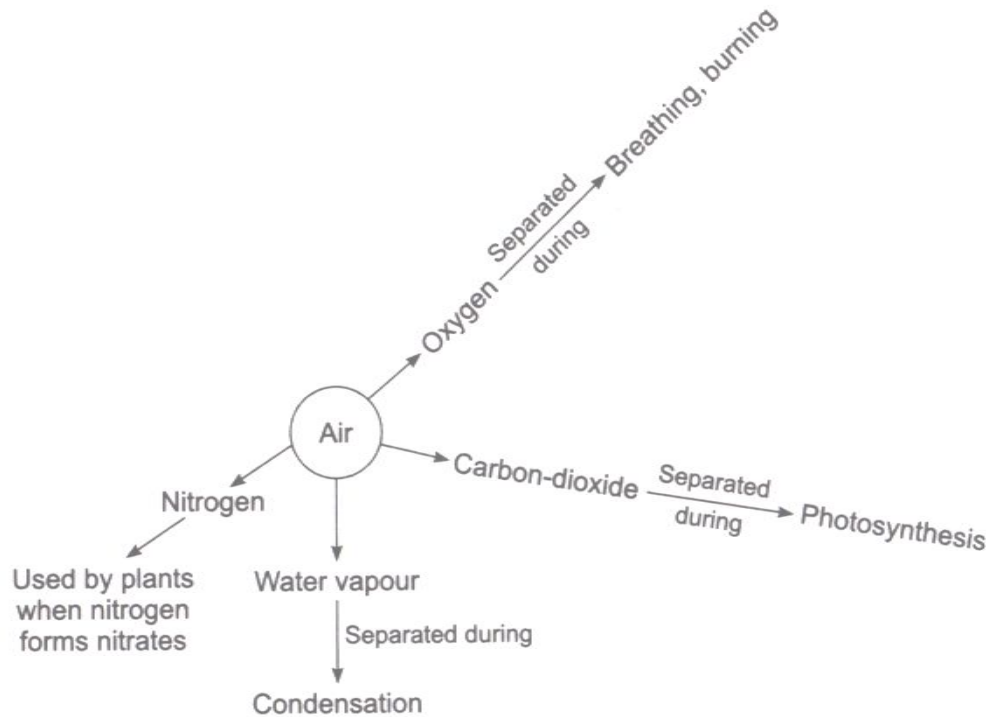
Air is a mixture of gases. The major constituents of air are nitrogen, oxygen, carbon dioxide and argon. The percentage composition of constituents of air are as given below:



Name of constituents	% Composition
Nitrogen gas	78.1%
Oxygen gas	20.9%
Carbon dioxide gas	0.03%
Argon	0.9%

2. Air is a mixture. Prove this statement.

The components of mixture can be easily separated and they retain their properties.



The components of air are: Oxygen, nitrogen, water vapour and carbon-dioxide, all these gases can be easily separated and they retain their properties.

I. High Order Thinking Skill (HOTS)

1. What will happen if we keep a fish in a closed container without any aquatic plants ?

Give reasons for your answer.

If we keep a fish in a closed container without any aquatic plant, it is more likely to be dead after some time. The reason is that the aquatic plants absorb carbon dioxide and give out oxygen. This oxygen is inhaled by the fishes for their survival. So, the fish would not get oxygen for respiration in the absence of aquatic plants.

2. Why should you not sleep under the trees during the night?

We should not sleep under the trees during the night because during night, trees release carbon dioxide and excess of carbon dioxide can cause suffocation.

II. High Order Thinking Skill (HOTS)

1. Will the tiny air bubbles seen before the water actually boils, also appear if we do this activity by reheating boiled water kept in an airtight bottle?"

No. The bubbles are because of the air present in water. In an airtight bottle, no air is present.

Value Based Questions.

1. Mohan was sleeping in a closed room which had a burning angithi inside, during winter. His father saw him and he closed the angithi and kept it outside the room immediately.

i. What might have happened if mohan had slept with the burning angithi inside ?

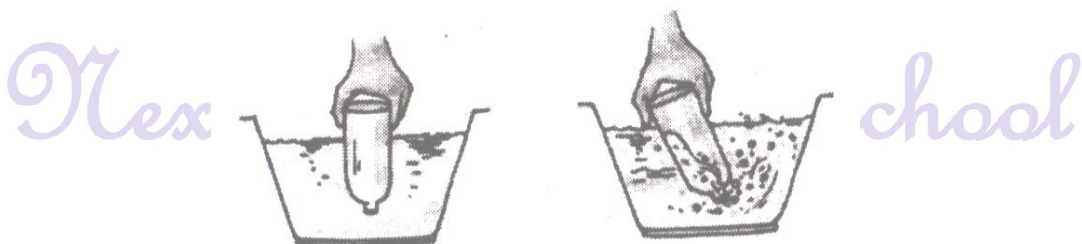
(ii) What values are shown by his father ?

(i) If Mohan had slept in a closed room with the burning angithi inside then he might have suffered from suffocation, because, the incomplete combustion of coal produces carbon monoxide which reduces oxygen carrying capacity of haemoglobin in blood. Due to this, he might have died due to suffocation.

(ii) Caring, love, awareness and application of knowledge.

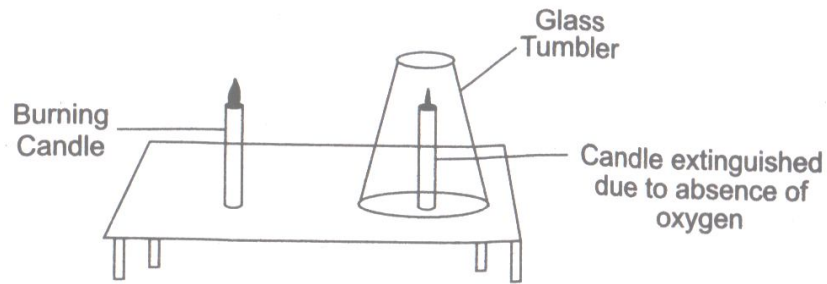
Skill Based Question

1. Observe Fig and tell what does it show.



This figure shows that empty glass / bottle is not actually empty but it contains air in it.

2. Observe the following figure and answer following questions.



i. What does this figure show?

ii. Can burning take place in absence of oxygen?

iii. Write another use of oxygen.

i. This figure shows that air contains oxygen.

ii. Burning cannot take place in the absence of oxygen.

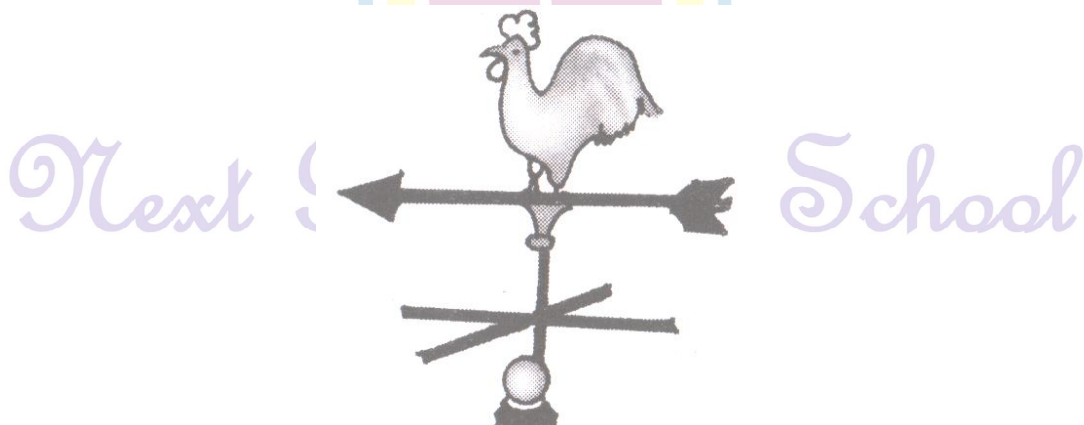
iii. Oxygen is also required for respiration.

3. Draw a picture to show a windmill.



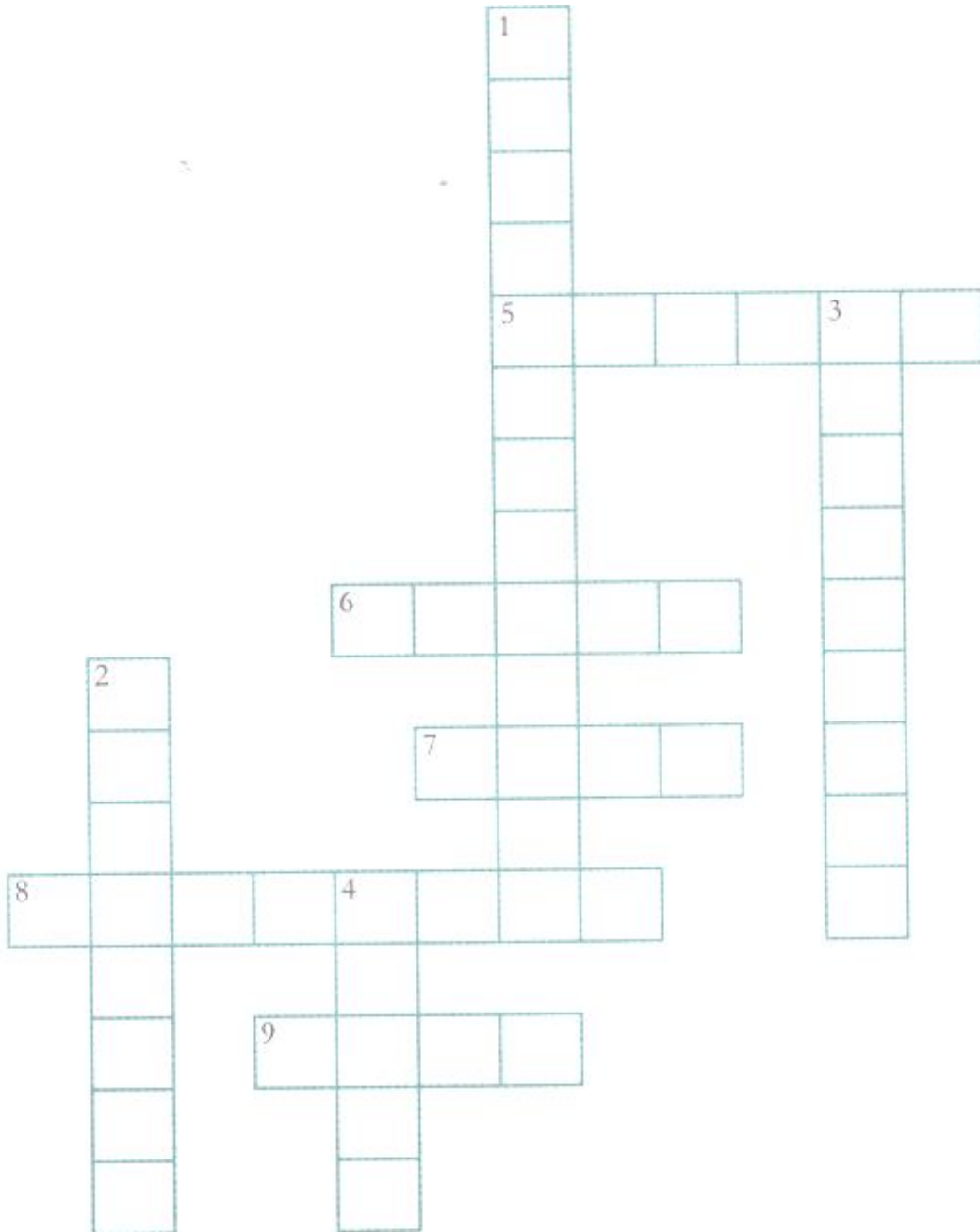
4. Draw a picture to show a weather cock and write its function.

A weather cock shows in which direction air blows.



Crossword Puzzle

1.



Across

5. A gas that supports burning
6. Burning of leaves produces this along with fine dust particles that pollute the air
7. This flies in the sky with help of the air.
8. A gas that does not support burning
9. Always breathe in air through this part of your body.

Down

1. A gas used by green plants to make their food
2. The amount of water vapour present in the air
3. An animal that is called a farmer's friend
4. The layer of the atmosphere that protects us from the harmful ultraviolet rays of the sun.

Across

5. oxygen
6. smoke
7. kite
8. nitrogen
9. nose

Down

1. carbon dioxide
2. humidity
3. earthworm
4. ozone

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