

# NCERT Solutions for Class 7 Social Science Geography

## Chapter 4 –Air PDF & Important Questions

*Physics Wallah's NCERT Solutions for Class 7 Social Science Geography Chapter 4 explores key topics like industrial activities, vehicular emissions, and deforestation that contribute to air pollution. Keep reading to know more!*

**NCERT Solutions for Class 7 Social Science Geography Chapter 4:** Diving into the atmosphere of knowledge, we embark on a journey through the realms of Social Science with a focus on Geography – a subject that connects us to the intricacies of our planet.

For students forging their path through the curriculum of Class 7, mastering the concepts of 'Air' as outlined in Chapter 4 becomes a significant milestone. Whether preparing for an upcoming exam or satisfying a thirst for geographical wisdom, let's soar together into the essence of this chapter, ensuring no student is left grounded by doubts or uncertainties.

## NCERT Solutions for Class 7 Social Science Geography Chapter 4 Overview

Chapter 4 of Class 7 Geography delves into the intricacies of the Earth's atmosphere, focusing on air and its composition. The NCERT Solutions for Class 7 Geography Chapter 4 elucidate the fundamental aspects of the atmospheric layers surrounding our planet.

The Earth is enveloped by air, a diverse mixture of various gases. Comprising approximately 78 percent nitrogen and 21 percent oxygen, the air in the Earth's atmosphere sustains life. The atmosphere is segmented into five layers, commencing from the Earth's surface: Troposphere, Stratosphere, Mesosphere, Thermosphere, and Exosphere.

Commencing with an exploration of the constituents of air and their respective percentages in the Earth's atmosphere, the chapter systematically progresses to elucidate the structure of the Earth's atmosphere. Each layer, ranging from the troposphere to the exosphere, is meticulously detailed. Furthermore, Class 7 Geography Chapter 4 extends its coverage to the realms of weather and climate.

## NCERT Solutions for Class 7 Social Science Geography Chapter 4 Air

NCERT Solutions for Class 7 Social Science Geography Chapter 4 – Air focus on key topics related to the Earth's atmosphere and the role of air in various natural phenomena. Here are the key topics covered in this chapter:

## 1) Composition of Air:

The Earth's atmosphere is primarily composed of various gases. The major components of air include:

- **Nitrogen (78%):** The most abundant gas in the atmosphere, crucial for the growth of living organisms.
- **Oxygen (21%):** Essential for respiration, supporting the survival of animals and humans.
- **Carbon Dioxide (0.03%):** Though a trace gas, it plays a vital role in maintaining the Earth's temperature through the greenhouse effect.
- **Trace Gases:** Other gases like argon, neon, helium, methane, and ozone in smaller proportions.

Understanding the composition is essential as it influences the atmosphere's properties and functions.

## 2) Importance of Air:

Air is a vital component for life on Earth. Its significance includes:

- **Respiration:** Humans and animals breathe in oxygen for cellular respiration, producing energy.
- **Combustion:** Oxygen supports the process of burning, necessary for cooking, heating, and various industrial activities.

1. Air and its Properties:

- **Weight:** Despite being invisible, air has weight, exerting pressure on surfaces.
- **Compressibility:** Air can be compressed or expanded based on changes in temperature and pressure.
- **Expansibility:** It expands when heated and contracts when cooled.

Understanding these properties helps explain phenomena like winds and atmospheric pressure.

## 3) Wind:

Wind is air in motion, and its movement is influenced by factors such as:

- **Differences in Temperature:** Variances in temperature create pressure differences, leading to the movement of air.
- **Earth's Rotation:** The Coriolis effect influences wind direction.

## 4) Types of Winds:

- **Local Winds:** Influenced by local geographical features like sea and land breezes.
- **Global Winds:** Large-scale wind patterns influenced by the Earth's rotation and the distribution of land and water.

### 5) Atmospheric Pressure:

- **Definition:** Atmospheric pressure is the force exerted by the air on a unit area.
- **High and Low Pressure:** Understanding the concepts of high-pressure areas (anticyclones) and low-pressure areas (depressions) and their impact on weather patterns.

### 6) Air and Water in the Atmosphere:

- **Water Vapor:** Air can hold water vapor, and changes in temperature lead to the condensation of water vapor, forming clouds.
- **Cloud Formation:** Understanding how clouds form and contribute to weather conditions.

### 7) Rain:

- **Rainfall Process:** The chapter explains the process of rainfall involving the condensation of water vapor into droplets and their precipitation.
- **Factors Influencing Rainfall:** Different factors, such as topography, wind direction, and the presence of water bodies, influence the amount of rainfall in various regions.

These topics provide students with a thorough understanding of the composition and properties of air, its role in natural phenomena, and its impact on weather patterns and life on Earth.

## NCERT Solutions for Class 7 Social Science Geography Chapter 4 Imp Questions and Answers

Here are some important questions and their answers from NCERT Class 7 Social Science Geography Chapter 4 – Air:

#### Q1: What is the composition of air?

**Answer:** The composition of air includes nitrogen (78%), oxygen (21%), carbon dioxide (0.03%), and trace gases such as argon, neon, helium, methane, and ozone.

#### Q2: Explain the properties of air.

**Answer:** Air has weight, compressibility, and expansibility. Despite being invisible, it exerts pressure on surfaces, can be compressed or expanded based on changes in temperature and pressure, and expands when heated and contracts when cooled.

#### Q3: How is wind formed?

**Answer:** Wind is formed due to differences in temperature and pressure. When air moves from high-pressure areas to low-pressure areas, wind is generated. The Earth's rotation also influences the direction of the wind.

**Q4: What is the Coriolis effect?**

**Answer:** The Coriolis effect is the apparent deflection of moving objects caused by the rotation of the Earth. It influences the direction of winds, making them appear to curve.

**Q5: Explain local winds.**

**Answer:** Local winds are influenced by local geographical features. Sea breezes and land breezes are examples. During the day, the land heats up faster than the sea, creating low pressure over the land and causing a sea breeze. At night, the land cools faster, leading to a land breeze.

**Q6: What is atmospheric pressure?**

**Answer:** Atmospheric pressure is the force exerted by the air on a unit area. It is influenced by the weight of the air above a particular area. High-pressure areas are associated with anticyclones, and low-pressure areas are associated with depressions.

**Q7: How is rainfall caused?**

**Answer:** Rainfall is caused by the condensation of water vapor into droplets. As air rises, it cools, leading to the condensation of water vapor. These droplets combine to form clouds, and when they become heavy enough, precipitation occurs in the form of rain.

**Q8: What are global winds?**

**Answer:** Global winds are large-scale wind patterns influenced by the Earth's rotation and the distribution of land and water. Examples include the Trade Winds, Westerlies, and Polar Easterlies.

**Q9: Explain the importance of air for living organisms.**

**Answer:** Air is crucial for living organisms as it contains oxygen essential for respiration. It supports combustion, plays a role in weather patterns, and is vital for various life processes.

These questions cover key concepts from Chapter 4, providing a comprehensive understanding of the role of air in Earth's atmosphere.

## **NCERT Solutions for Class 7 Social Science Geography Chapter 4 Short Long Questions and Answers**

Here are some short and long questions along with their answers from NCERT Class 7 Social Science Geography Chapter 4 – Air:

## **Short Answer Questions:**

### **Q1: What is the composition of air?**

**Answer:** The composition of air includes nitrogen (78%), oxygen (21%), carbon dioxide (0.03%), and trace gases like argon, neon, helium, methane, and ozone.

### **Q2: Define the Coriolis effect.**

**Answer:** The Coriolis effect is the apparent deflection of moving objects caused by the rotation of the Earth. It influences the direction of winds, making them appear to curve.

### **Q3: How is wind formed?**

**Answer:** Wind is formed due to differences in temperature and pressure. Air moves from high-pressure areas to low-pressure areas, creating wind. The Earth's rotation also influences the direction of the wind.

### **Q4: Explain the properties of air.**

**Answer:** Air has weight, compressibility, and expansibility. Despite being invisible, it exerts pressure on surfaces, can be compressed or expanded based on changes in temperature and pressure, and expands when heated and contracts when cooled.

### **Q5: What is the significance of the ozone layer in the atmosphere?**

**Answer:** The ozone layer in the atmosphere is crucial as it absorbs the majority of the sun's harmful ultraviolet (UV) radiation. This absorption protects life on Earth from the harmful effects of excessive UV radiation, such as skin cancer and damage to living organisms.

### **Q6: Explain the term 'air pressure' and its measurement.**

**Answer:** Air pressure is the force exerted by the weight of the air above a given point on the Earth's surface. It is measured using an instrument called a barometer. Standard atmospheric pressure at sea level is approximately 101.3 kilopascals (kPa) or 1 atmosphere (atm).

### **Q7: What causes the formation of clouds?**

**Answer:** Clouds are formed when warm, moist air rises, expands, and cools. As the air cools, it reaches its dew point, leading to condensation of water vapor into tiny water droplets or ice crystals. These droplets or crystals combine to form clouds.

## **Long Answer Questions:**

### **Q1: Describe the local wind patterns known as sea breeze and land breeze.**

**Answer:** Sea breeze and land breeze are local wind patterns. During the day, the land heats up faster than the sea, creating low pressure over the land and causing a sea breeze. At night, the land cools faster, leading to a land breeze. These winds influence the temperature of coastal areas.

**Q2: What role does atmospheric pressure play in weather systems?**

**Answer:** Atmospheric pressure is the force exerted by the air on a unit area. It influences weather systems by creating high-pressure and low-pressure areas. High-pressure areas are associated with anticyclones, while low-pressure areas are associated with depressions. These pressure differences contribute to the formation of winds and weather patterns.

**Q3: Explain the process of rainfall and the factors influencing it.**

**Answer:** Rainfall occurs when air rises, cools, and reaches the saturation point, leading to the condensation of water vapor. This condensation forms clouds, and when droplets combine and become heavy enough, precipitation occurs as rain. Factors influencing rainfall include temperature, humidity, and air pressure.

**Q4: Discuss the global wind patterns and their significance.**

**Answer:** Global wind patterns include the Trade Winds, Westerlies, and Polar Easterlies. These large-scale wind patterns are influenced by the Earth's rotation and the distribution of land and water. They play a crucial role in redistributing heat around the globe, affecting climate and weather patterns.

**Q5: Elaborate on the concept of monsoons and their impact on regional climates.**

**Answer:** Monsoons are seasonal wind patterns characterized by the reversal of winds between summer and winter. In regions like India, the southwest monsoon brings heavy rainfall during the summer, influencing agriculture and regional climates. The northeast monsoon, in winter, brings dry conditions.

**Q6: Discuss the greenhouse effect and its role in Earth's temperature regulation.**

**Answer:** The greenhouse effect is the trapping of heat in the Earth's atmosphere by greenhouse gases like carbon dioxide and methane. While necessary for maintaining a habitable temperature, an enhanced greenhouse effect due to human activities can lead to global warming and climate change.

**Q7: How does the jet stream impact weather patterns and air travel?**

**Answer:** Jet streams are high-altitude, fast-flowing air currents. They play a crucial role in steering weather systems and affecting air travel. The polar jet stream and subtropical jet stream influence the movement of storms and contribute to the development of weather patterns.

**Q8: Explain the role of air masses in shaping regional weather conditions.**

**Answer:** Air masses are large bodies of air with consistent temperature and humidity characteristics. When air masses meet, they create fronts, leading to changes in weather

conditions. For example, a warm front brings rising temperatures, while a cold front brings cooler temperatures and possible precipitation.

These questions cover various aspects of Chapter 4, providing both short and detailed explanations for a comprehensive understanding of the topic.

## **NCERT Solutions for Class 7 Social Science Geography Chapter 4 Exercise Questions**

### **1) What are the two primary gases that constitute the majority of the atmosphere?**

Answer: The two predominant gases that form the bulk of the atmosphere are:

1. Oxygen (21%)
2. Nitrogen (78%)

### **2) Which gas contributes to the greenhouse effect in the atmosphere?**

Answer: Carbon dioxide is the gas responsible for creating the greenhouse effect in the atmosphere.

### **3) Define weather.**

Answer: Weather refers to the short-term atmospheric conditions, changing from hour to hour or day to day. It encompasses variables like temperature, humidity, and precipitation and can exhibit variations such as hot, dry, cold, or wet conditions.

### **4) List three types of rainfall.**

Answer: The three types of rainfall are:

1. Convectional rainfall
2. Orographic rainfall
3. Cyclonic rainfall

### **5) Explain air pressure.**

Answer: Air pressure is the force exerted by the weight of air molecules on the Earth's surface. It decreases with increasing altitude and is highest at sea level.

### **6) Tick the correct answer.**

#### **(i) Which gas shields us from harmful sun rays?**

- (a) Carbon dioxide
- (b) Nitrogen
- (c) Ozone

Answer: (c) Ozone

#### **(ii) Which atmospheric layer is most crucial?**

- (a) Troposphere

(b) Thermosphere

(c) Mesosphere

Answer: (a) Troposphere

**(iii) In which layer of the atmosphere are clouds absent?**

(a) Troposphere

(b) Stratosphere

(c) Mesosphere

Answer: (b) Stratosphere

**(iv) What happens to air pressure as we ascend through the atmosphere?**

(a) Increases

(b) Decreases

(c) Remains the same

Answer: (b) Decreases

**(v) What is the term for precipitation in liquid form?**

(a) Cloud

(b) Rain

(c) Snow

Answer: (b) Rain

**7) Match the following.**

**(i) Trade Winds**

(a) Incoming solar energy

**(ii) Loo**

(b) Seasonal wind

**(iii) Monsoon**

(c) The horizontal movement of air

**(iv) Wind**

(d) A layer of ozone gas

(e) Permanent wind

(f) Local wind

**Matching:**

(i) Trade Winds (e) Permanent wind

(ii) Loo (f) Local wind

(iii) Monsoon (b) Seasonal wind

(iv) Wind (c) The horizontal movement of air

**8) Provide reasons.**

**(i) Why do wet clothes take longer to dry on a humid day?**

Answer: Wet clothes take longer to dry on a humid day because the air holds more moisture, reducing the rate of evaporation from the clothes. The higher humidity levels mean that the air is less capable of absorbing additional moisture.

**(ii) Why does the amount of insolation decrease from the equator towards the poles?**

Answer: The amount of insolation decreases from the equator towards the poles because sunlight strikes the equator more directly, covering a smaller area, while at the poles, sunlight slants over a larger area, resulting in lower solar intensity.

## **NCERT Solutions for Class 7 Social Science Geography Chapter 4 PDF Download**

The key takeaway from our exploration is the unquestionable value of NCERT Solutions for Class 7 Social Science Geography Chapter 4. These solutions offer a comprehensive understanding and easy-to-grasp knowledge that is crucial for young learners to excel in their studies.

For those seeking the best out there, look no further than Physics Wallah's solutions. They are not only top-notch in quality but also readily available for you in PDF format for download at your convenience.

Dive into the material, enrich your learning experience, and take a step towards academic excellence. Don't miss out on this exceptional educational resource—grab your copy of the Physics Wallah solutions today and witness the transformation in your geographical prowess!

## **NCERT Solutions for Class 7 Social Science Geography Chapter 4 Summary**

The chapter "Air" in the NCERT Geography book is a comprehensive exploration of the Earth's atmosphere, focusing on its composition, weather and climate patterns, and the layered structure of the atmosphere.

### **1. Composition of the Atmosphere:**

The composition of the Earth's atmosphere is a key aspect discussed in this chapter. The atmosphere is primarily composed of nitrogen (78%) and oxygen (21%). Trace gases, including carbon dioxide, argon, and others, make up the remaining percentage. The significance of these gases in sustaining life and regulating climate is highlighted.

## 2. Weather and Climate:

The chapter distinguishes between weather and climate. Weather refers to the day-to-day atmospheric conditions, including temperature, humidity, wind speed, and precipitation. On the other hand, climate represents the long-term patterns and averages of weather conditions in a particular region. The factors influencing weather and climate, such as air pressure, humidity, and wind patterns, are discussed.

## 3. Structure of the Atmosphere:

The atmosphere is divided into several layers, each characterized by unique temperature patterns and features.

- a. **Troposphere:** The closest layer to the Earth's surface where weather events occur.
- b. **Stratosphere:** Contains the ozone layer, which absorbs harmful ultraviolet radiation.
- c. **Mesosphere:** Known for its decreasing temperature with altitude.
- d. **Thermosphere:** Characterized by high temperatures but with low density of air particles.
- e. **Exosphere:** The outermost layer, transitioning into outer space.

Understanding the structure of the atmosphere is essential for comprehending various atmospheric phenomena and how they impact life on Earth. In summary, Chapter 4 provides a foundation for understanding the complexities of the Earth's atmosphere. From the gases that make up the air we breathe to the intricate layers defining the structure of the atmosphere, the chapter serves as a gateway to the exploration of atmospheric science. Additionally, it introduces the fundamental concepts of weather and climate, setting the stage for deeper insights into the dynamic nature of the Earth's atmospheric systems.

## NCERT Solutions for Class 7 Social Science Geography Chapter 4 FAQs

### 1. What is the primary composition of the Earth's atmosphere?

Answer: The Earth's atmosphere is primarily composed of nitrogen (78%) and oxygen (21%). Trace gases, including carbon dioxide, argon, and others, make up the remaining percentage.

### 2. How do weather and climate differ?

Answer: Weather refers to the day-to-day atmospheric conditions, including temperature, humidity, wind speed, and precipitation. Climate, on the other hand, represents the long-term patterns and averages of weather conditions in a particular region.

### 3. What is the role of the ozone layer in the atmosphere?

Answer: The ozone layer, located in the stratosphere, plays a crucial role in absorbing harmful ultraviolet (UV) radiation from the Sun. This absorption helps protect life on Earth by preventing excessive UV radiation from reaching the surface.

**4. Which layer of the atmosphere is closest to the Earth's surface and where weather events occur?**

Answer: The troposphere is the layer closest to the Earth's surface, and it is where weather events, such as clouds, rain, and storms, occur.

**5. What is the significance of understanding the structure of the atmosphere?**

Answer: Understanding the structure of the atmosphere is essential for comprehending various atmospheric phenomena and their impacts on Earth. It provides insights into temperature patterns, air pressure, and the distribution of gases, contributing to a broader understanding of atmospheric science.