



Class 9 Social Science – Chapter 3

Free Worksheets – Atmosphere and Climate

Book: *Understanding Society: India and Beyond – Grade 9, Part 1*
Chapter 3: Atmosphere and Climate

This worksheet pack is based on the official textbook chapter, including the **composition and layers of the atmosphere, weather and climate, elements of weather and climate, the Indian monsoon, climatic diversity and carbon footprint**. The chapter's four Big Questions are also built around these themes.



WORKSHEET 1 – Atmosphere

Name: _____

Class: _____ Date: _____

A. Fill in the Blanks

1. The blanket of air surrounding the Earth is called the _____.
 2. The atmosphere is held around the Earth by _____.
 3. The atmosphere is a mixture of different _____.
 4. The lowest layer of the atmosphere is called the _____.
 5. The layer above the troposphere is the _____.
 6. The uppermost layer of the atmosphere is the _____.
 7. The ozone layer protects Earth from harmful _____ radiation.
 8. The atmosphere helps regulate the Earth's _____.
-

B. Choose the Correct Answer

1. The atmosphere is important because it:

- A. Only produces rainfall
- B. Supports life and influences weather and climate
- C. Only provides oxygen
- D. Only protects mountains

2. Which is the lowest layer of the atmosphere?

- A. Exosphere
- B. Mesosphere
- C. Troposphere
- D. Thermosphere

3. Which layer contains the ozone layer?

- A. Troposphere
- B. Stratosphere
- C. Exosphere
- D. Mesosphere

4. The uppermost atmospheric layer is the:

- A. Troposphere
- B. Stratosphere
- C. Thermosphere
- D. Exosphere

The textbook explains that the atmosphere protects Earth from harmful solar radiation, helps regulate temperature and influences weather and climate.

C. Match the Following

Column A

Column B

- | | |
|-----------------|-------------------------------|
| 1. Troposphere | a. Uppermost layer |
| 2. Stratosphere | b. Layer where weather occurs |
| 3. Mesosphere | c. Contains ozone layer |
| 4. Exosphere | d. Layer above stratosphere |

Answers:

1. _____ 2. _____ 3. _____ 4. _____
-



WORKSHEET 2 – Weather & Climate

A. True or False

1. Weather refers to short-term atmospheric conditions. _____
 2. Climate refers only to the weather on a particular day. _____
 3. Climate is based on weather conditions over a long period. _____
 4. Temperature is an element of weather and climate. _____
 5. Precipitation is an element of weather and climate. _____
 6. Humidity is an element of weather and climate. _____
 7. Wind has no influence on weather. _____
 8. Atmospheric pressure is an element of weather and climate. _____
-

B. Complete the Table

Element	Meaning / Example
 Temperature	_____ —
 Precipitation	_____ —
 Humidity	_____ —
 Wind	_____ —
 Atmospheric Pressure	_____ —

The textbook identifies **temperature**, **precipitation**, **humidity**, **wind** and **atmospheric pressure** as major elements affecting weather and climate.

C. Weather or Climate?

Write **Weather** or **Climate**.

1. "It is raining heavily today." _____
 2. "This region receives heavy rainfall during the monsoon." _____
 3. "Tomorrow will be hotter than today." _____
 4. "The region generally has hot summers and cool winters." _____
 5. "There is strong wind this afternoon." _____
-

D. Short Answer Questions

1. What is weather?

2. What is climate?

3. What is the difference between weather and climate?

The textbook defines weather as hour-to-hour and day-to-day atmospheric conditions, while climate refers to average weather conditions over a long period, usually **30 years or more**.



WORKSHEET 3 – Indian Monsoon

A. Fill in the Blanks

1. The seasonal reversal of winds is an important feature of the Indian _____.
2. The south-west monsoon brings a large amount of _____ to India.
3. The monsoon season is important for India's _____.
4. The withdrawal of monsoon winds is called the _____ monsoon.

5. Different parts of India receive different amounts of _____.

B. Choose the Correct Answer

1. Which phenomenon is central to India's climate?

- A. Monsoon
- B. Earthquake
- C. Ocean currents only
- D. Volcanism

2. The south-west monsoon is associated mainly with:

- A. Winter rainfall throughout India
- B. The main rainy season
- C. Snowfall everywhere
- D. Dry conditions everywhere

3. The retreating monsoon refers to:

- A. Arrival of winter
 - B. Withdrawal of monsoon winds
 - C. Beginning of summer
 - D. Formation of clouds
-

C. Short Answer Questions

1. What is the Indian monsoon?

2. Why is the monsoon important for India?

3. What is meant by the retreating monsoon?

4. Why do different parts of India receive different amounts of rainfall?



WORKSHEET 4 – Climate of India

A. Think & Answer

1. Why does India experience different climatic conditions?

Mention at least **four factors**.

1. _____
2. _____
3. _____
4. _____

2. Complete the sentences.

- a. Coastal regions are influenced by their proximity to the _____.
- b. Mountains can influence the distribution of _____.
- c. Latitude influences the amount of _____ received by a place.
- d. Monsoon winds influence India's temperature and _____ patterns.

B. Data-Based Questions

The textbook provides monthly temperature and rainfall data for **10 representative Indian stations** and asks students to analyse India's climatic diversity.

Answer the following:

1. Which station receives the highest rainfall?

2. Which station experiences very high temperatures?

3. Why might two places in India receive different amounts of rainfall?

4. What does temperature-rainfall data tell us about India's climate?

5. Why is rainfall important for understanding India's climatic regions?



WORKSHEET 5 – HOTS & Application

1. Think About It

Imagine that the Earth had **no atmosphere**.

What changes would you expect?

- ☐ No protection from harmful solar radiation
- ☐ No regulation of temperature
- ☐ No weather system as we know it
- ☐ No atmosphere-related climate system

Explain your answer:

The textbook itself asks students to imagine what would happen if there were no atmosphere.

2. A city experiences very hot days followed by cooler nights.

a. Is this an example of weather or climate?

b. Why?

3. Two cities receive very different amounts of rainfall even though they are in the same country.

Why might this happen?

4. Why is the monsoon important not only for farmers but also for the wider economy?

WORKSHEET 6 – Climate Change & Carbon Footprint

A. Fill in the Blanks

1. A _____ footprint measures the amount of greenhouse gases associated with our activities.
 2. Burning _____ contributes to climate change.
 3. Planting and protecting _____ can help reduce carbon dioxide in the atmosphere.
 4. Using _____ sources of energy can help reduce dependence on fossil fuels.
 5. Saving _____ can reduce unnecessary energy consumption.
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B. Choose the Correct Answer

1. Which action can help reduce our carbon footprint?

- A. Wasting electricity
- B. Planting trees
- C. Increasing unnecessary fuel use
- D. Wasting resources

2. Which is a cleaner source of energy?

- A. Solar energy
- B. Coal
- C. Petrol
- D. Diesel

3. Which activity can contribute to climate change?

- A. Burning fossil fuels
 - B. Planting trees
 - C. Saving electricity
 - D. Using renewable energy
-

C. Short Answer Questions

1. What is climate change?

2. What is a carbon footprint?

3. How can individuals reduce their carbon footprint?

Write **four ways**.

- 1.

- 2.

- 3.

- 4.

4. Why is protecting trees important for the climate?



WORKSHEET 7 – Quick Revision Quiz

Circle the correct answer.

1. The atmosphere is:

- A. A layer of rocks
- B. A blanket of gases surrounding Earth
- C. A layer of water
- D. A type of soil

2. Which atmospheric layer is closest to Earth's surface?

- A. Troposphere
- B. Exosphere
- C. Mesosphere
- D. Thermosphere

3. Weather refers to:

- A. Long-term average conditions
- B. Short-term atmospheric conditions
- C. Only rainfall
- D. Only temperature

4. Climate generally refers to conditions over:

- A. A few hours
- B. One day
- C. A long period
- D. One week

5. Which is an element of weather and climate?

- A. Temperature
- B. Humidity
- C. Wind
- D. All of these

6. The main rainy season in India is associated with the:

- A. South-west monsoon
- B. Winter season only
- C. North-east winds only
- D. Local winds only

7. Withdrawal of monsoon winds is called:

- A. Advancing monsoon
- B. Retreating monsoon
- C. Summer monsoon
- D. Winter storm

8. Which can help reduce our carbon footprint?

- A. Wasting energy
 - B. Planting trees
 - C. Increasing fossil-fuel consumption
 - D. Wasting water
-



BONUS – Assertion & Reason

1. Assertion:

The atmosphere is essential for life on Earth.

Reason: It provides a protective layer and influences temperature, weather and climate.

2. Assertion:

Weather and climate are different concepts.

Reason: Weather describes short-term conditions, while climate describes long-term patterns.

3. Assertion:

India experiences climatic diversity.

Reason: Different regions are influenced by factors such as location, relief and monsoon patterns.

4. Assertion:

Individuals can help reduce climate change.

Reason: Saving energy, using renewable energy and planting trees can reduce our environmental impact.



ANSWER KEY

Worksheet 1

A.

1. **atmosphere**
2. **gravity**
3. **gases**
4. **troposphere**
5. **stratosphere**
6. **exosphere**
7. **ultraviolet (UV)**
8. **temperature**

B.

1. **B**
2. **C**
3. **B**
4. **D**

C.

- 1 – **b**
- 2 – **c**
- 3 – **d**
- 4 – **a**

Worksheet 2

A.

1. True
2. False
3. True
4. True
5. True
6. True
7. False
8. True

C.

1. **Weather**
 2. **Climate**
 3. **Weather**
 4. **Climate**
 5. **Weather**
-

Worksheet 3

A.

1. **monsoon**
2. **rainfall**
3. **agriculture**
4. **retreating**
5. **rainfall**

B.

1. **A**
 2. **B**
 3. **B**
-

Worksheet 6

A.

1. carbon
2. fossil fuels
3. trees
4. renewable
5. energy

B.

1. B
 2. A
 3. A
-

Worksheet 7 – Answers

1. B
2. A
3. B
4. C
5. D
6. A
7. B
8. B