

CLASS: VII

CHAPTER: 2

Understanding the Weather

Competency-Based Questions with Answers

Question types: Case Studies • Application • Reasoning • Analysis • Higher-Order Thinking

Chapter focus: Weather and its elements, the atmosphere and troposphere, natural clues, weather instruments, measurement, weather forecasting and climate.

Exam tip: Identify the weather concept in the situation, explain the reason, and use appropriate geographical/scientific terms.

A. WEATHER AND THE ATMOSPHERE

Q1. Aditi wakes up one morning and finds that the air is cooler, the sky is cloudy and strong winds are blowing. Her teacher asks her what she is observing. What is weather?

Ans.- Weather is the state of the Earth's atmosphere at a particular time and place.

Q2. Rahul reads that most weather phenomena occur in the troposphere. Why is the troposphere important for life on Earth?

Ans.- The troposphere is the lowest layer of the atmosphere where humans, plants and animals live and breathe, and where almost all weather phenomena occur.

Q3. Meera compares a place near the poles with a tropical place and learns that the troposphere is thinner at the poles and thicker in the tropical zone. Why?

Ans.- Cold air contracts, making the troposphere thinner near the poles, while warmer air expands, making it thicker in the tropical zone.

Q4. A weather report gives the temperature, rainfall, air pressure, wind and humidity. Why are several elements needed to describe weather accurately?

Ans.- Weather is not determined by one condition alone. Temperature, precipitation, atmospheric pressure, wind and humidity together describe the state of the atmosphere.

B. MEASURING TEMPERATURE

Q5. Kabir wants to know whether the day will be hot or cold. Which weather element should he check, and which instrument measures it?

Ans.- He should check temperature, which is measured with a thermometer.

Q6. At 6 a.m. the temperature is 18°C and at 2 p.m. it is 32°C. What does the difference tell us about the day's temperature change?

Ans.- The temperature increased by 14°C (32°C – 18°C), showing that the day became considerably warmer.

Q7. Sana notices water droplets forming on the outside of a cold glass on a humid day. Which element of weather is involved?

Ans.- Humidity is involved because humid air contains a relatively large amount of water vapour.

C. PRECIPITATION AND RAINFALL

Q8. A student wants to compare how much rain two towns receive during a month. Which instrument should be used and why?

Ans.- A rain gauge should be used because it measures the amount of precipitation received at a place.

D. WIND

Q9. Arjun observes that the wind direction changes during the day. Which instrument can help identify wind direction?

Ans.- A wind vane shows the direction from which the wind is blowing.

Q10. Priya wants to measure how fast the wind is moving. Which instrument should she use?

Ans.- She should use an anemometer, which measures wind speed.

E. ATMOSPHERIC PRESSURE

Q11. A weather station records a fall in atmospheric pressure before a storm. Why can air pressure be useful in weather monitoring?

Ans.- Changes in atmospheric pressure can indicate changing atmospheric conditions and help meteorologists monitor and forecast weather.

Q12. Vikram climbs a high mountain and notices that air pressure is lower than at sea level. Why does atmospheric pressure generally decrease with altitude?

Ans.- At higher altitudes, there is less air above a given surface, so the weight of the air pressing down is lower.

F. OBSERVING NATURE'S CLUES

Q13. Neha observes ants moving their eggs to higher ground before heavy rain. What kind of weather information can this observation provide?

Ans.- It is a natural clue that may indicate an approaching change in weather, especially heavy rain.

Q14. In a forest, Rohit hears frogs croaking before rainfall. How can such observations be useful, and why should they not replace scientific forecasts?

Ans.- Such observations can provide local natural clues about changing weather. However, scientific forecasts use systematic measurements and broader data and are more reliable for official warnings.

Q15. Pine cones close in humid conditions and open in dry conditions. What does this example show about nature and weather?

Ans.- It shows that living things can respond to environmental conditions such as humidity and may provide clues about changes in the weather.

G. MEASUREMENT AND STANDARD UNITS

Q16. Two students use different thermometers and obtain slightly different readings. Why is a standard unit important when recording temperature?

Ans.- A standard unit provides a common basis for comparison. Temperature is commonly recorded in degrees Celsius (°C) or Fahrenheit (°F).

Q17. A farmer wants to know whether enough rain has fallen for a crop. Which weather element is most directly relevant?

Ans.- Precipitation, especially rainfall, is most directly relevant because it indicates the amount of water received from the atmosphere.

Q18. A pilot needs information about wind speed and direction before a flight. Why are both measurements important?

Ans.- Wind speed and direction describe how air is moving and can affect aircraft operations, so both are important for safe planning.

Q19. A coastal town has high humidity while a dry inland town has much lower humidity. What does humidity measure?

Ans.- Humidity is the amount of water vapour present in the air.

Q20. A weather station combines readings from thermometers, rain gauges, anemometers and other instruments. Why is a weather station more useful than relying on one observation?

Ans.- A weather station systematically records several elements of weather, giving a more complete picture of atmospheric conditions.

H. WEATHER, FORECASTING AND CLIMATE

Q21. Ananya says, “If today's weather is hot, the climate of the place must be hot.” Is this reasoning correct? Explain.

Ans.- No. Weather describes short-term atmospheric conditions at a particular time and place, while climate describes the long-term pattern of weather of a region. One hot day does not determine climate.

Q22. A school plans an outdoor event. The forecast predicts heavy rain. How can the forecast help the school make a better decision?

Ans.- The school can postpone or shift the event indoors, protect equipment and make arrangements for students' safety.

Q23. A district receives an early warning of a severe storm. Give two ways in which weather forecasting can help people prepare.

Ans.- People can secure property and important equipment, avoid unnecessary travel, follow official advisories and move to safer locations if evacuation is advised.

Q24. A village receives very little rain for a long period. Why is monitoring weather important in such a situation?

Ans.- Monitoring helps identify prolonged dry conditions and supports planning for water use, agriculture and possible drought-related measures.

Q25. A heat-wave warning is issued several days in advance. What actions could families take using this information?

Ans.- They can reduce exposure to extreme heat, stay hydrated, adjust outdoor activities, check vulnerable people and follow official safety advice.

Q26. A weather forecast predicts heavy rainfall, but the rain does not occur exactly as expected. Does this mean weather forecasting is useless? Explain.

Ans.- No. Forecasts are predictions based on observations and scientific models, so uncertainty remains. Even when conditions differ from the forecast, warnings and probabilities can help people prepare for possible weather hazards.

I. HIGHER-ORDER COMPETENCY

Q27. A student says, “Nature gives us enough clues, so instruments are unnecessary.” Give a reasoned response.

Ans.- Natural clues can be useful observations, but instruments provide measured, standardised data. Scientific forecasting needs systematic measurements from many locations and sources.

Q28. During a science activity, a group records temperature at the same time each day for a week. What can systematic recording help them understand?

Ans.- It can help them identify patterns and changes in temperature over time and compare conditions from day to day.

Q29. A city and a nearby hill station experience different temperatures on the same day. What does this remind us about weather measurements?

Ans.- Weather is specific to a particular time and place. Conditions can vary between locations because of factors such as altitude and local surroundings.

Q30. A weather report says: “32°C, high humidity, light winds and no rainfall.” What can you infer about the atmospheric conditions?

Ans.- The atmosphere is warm and humid, winds are weak, and no precipitation is being recorded at that time or place.

Q31. A farmer hears a warning of heavy rainfall and checks the forecast before applying fertiliser. Why might this be a sensible decision?

Ans.- Heavy rain could affect the effectiveness of the application and may cause runoff. Checking the forecast helps the farmer plan the activity more appropriately.

Q32. A school installs a rain gauge and records rainfall every day. Why should the gauge be placed and readings recorded consistently?

Ans.- Consistent placement and recording methods make the observations more comparable and useful for identifying rainfall patterns.

Q33. A student confuses humidity with rainfall. Explain the difference using a simple example.

Ans.- Humidity refers to water vapour present in the air. Rainfall is liquid water that falls from the atmosphere to the Earth's surface. A place can be humid even when it is not raining.

Q34. Why is weather forecasting important for people living in areas that may experience storms, heavy rain, drought or heat waves?

Ans.- Forecasts and warnings give people time to prepare, protect property, adjust activities and take safety measures before hazardous conditions occur.

Q35. Suppose weather instruments stopped working for a week in a region. What difficulties could this create for weather monitoring and forecasting?

Ans.- There would be less reliable current data about temperature, rainfall, pressure, wind and humidity. This could make monitoring changes and preparing accurate forecasts more difficult.

Q36. A community combines local observations with information from official weather forecasts. Why can using both be useful?

Ans.- Local observations can provide immediate clues about changing conditions, while official forecasts provide systematic measurements and wider regional information. Together they can support better awareness, while official warnings should guide safety decisions.

Q37. Explain how the five elements of weather are connected to our daily lives.

Ans.- Temperature affects comfort and clothing; precipitation affects water and agriculture; pressure and wind influence atmospheric conditions; and humidity affects how warm or comfortable the air feels. Together they influence daily activities.

Q38. Explain why measuring weather is more useful than simply saying “today feels hot and windy.”

Ans.- Measurements provide objective, standardised information that can be compared across places and times. This makes weather monitoring, communication and forecasting more reliable.

Q39. How does weather forecasting help agriculture, transport and public safety?

Ans.- Farmers can plan activities around expected conditions; transport operators can prepare for hazardous weather; and authorities can issue warnings and organise safety measures for events such as storms, heavy rain and heat waves.

Q40. What is the central idea of the chapter Understanding the Weather?

Ans.- Weather is the changing state of the atmosphere at a particular time and place. By observing nature, measuring weather elements with instruments and using scientific forecasting, people can understand atmospheric conditions and prepare for weather-related events.

QUICK COMPETENCY REVISION

- Weather → state of the atmosphere at a particular time and place.
- Troposphere → lowest atmospheric layer; almost all weather occurs here.
- Five elements → temperature, precipitation, atmospheric pressure, wind and humidity.
- Thermometer → temperature | Rain gauge → precipitation | Wind vane → wind direction | Anemometer → wind speed.
- Weather forecasting → systematic observations and measurements help people prepare for hazardous conditions.
- Natural clues → ants, frogs and pine cones can respond to environmental changes, but scientific measurements provide standardised data.
- Weather ≠ climate → weather is short-term; climate describes long-term patterns.