

Air Detective Notes

Trace how air properties connect to changing weather.

6.7 “The student will investigate and understand that air has properties and that Earth’s atmosphere has structure and is dynamic. Key ideas include air is a mixture of gaseous elements and compounds...”

NAME _____

DATE _____

1 READ AND MARK _____

Read it twice

YOUR JOB Underline each sentence that connects a change in the atmosphere to weather, and circle every atmospheric property or measurement named in the passage.

A Changing Layer of Air

- 1 Air around Earth is a mixture, not a single substance. Nitrogen makes up most of dry air, while oxygen is the next largest part. Small amounts of argon, carbon dioxide, water vapor, and other gases are also present. Water vapor can change from place to place and from day to day.
- 2 Earth’s atmosphere is layered. The lowest layer, the troposphere, is where people live and where most weather occurs. As altitude increases through the troposphere, air pressure and temperature usually decrease. Less air is above you at higher altitudes, so the air pushes down with less force. This affects clouds, winds, and living things.

WEATHER STATION READINGS

Time	Temperature (°C)	Air Pressure (hPa)
8 a.m.	18	1018
Noon	23	1015
4 p.m.	25	1007

- 3 Uneven heating starts air moving. Sun-warmed ground heats nearby air, which becomes less dense and rises. Cooler, denser air moves in near the ground. This movement can create wind, clouds, and changing weather. Meteorologists measure temperature, pressure, wind, humidity, and precipitation. Falling pressure can signal an approaching front. Weather maps use symbols to show measurements, fronts, and pressure systems.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Name two gases found in air. Why is air called a mixture?

2 Why is air pressure usually lower at a higher altitude in the troposphere?

3 Describe how uneven heating can lead to wind and changing weather.

4 According to the Weather Station Readings, what happened to air pressure from 8 a.m. to 4 p.m.? What might this trend signal, and what could a weather map show?

3 YOUR TURN _____ Your own words

Write exactly three sentences. Invent two air-pressure readings at different times, make a cautious weather prediction, and explain how the pressure trend or uneven heating supports your prediction.

PART 1 • READ AND MARK

Underline each sentence that connects a change in the atmosphere to weather, and circle every atmospheric property or measurement named in the passage. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Name two gases found in air. Why is air called a mixture?	Answers may name nitrogen, oxygen, argon, carbon dioxide, or water vapor. Air is a mixture because it contains more than one gas.
2	Why is air pressure usually lower at a higher altitude in the troposphere?	There is less air above a person at higher altitudes, so the air pushes down with less force.
3	Describe how uneven heating can lead to wind and changing weather.	Sun-warmed air becomes less dense and rises. Cooler, denser air moves in near the ground, creating air movement that can cause wind, clouds, and changing weather.
4	According to the Weather Station Readings, what happened to air pressure from 8 a.m. to 4 p.m.? What might this trend signal, and what could a weather map show?	Air pressure decreased from 1018 hPa to 1007 hPa, a drop of 11 hPa. Falling pressure can signal an approaching front. A weather map could show a front or a pressure system.

PART 3 • YOUR TURN (SAMPLE ANSWER)

At 8 a.m., air pressure was 1017 hPa, and at 2 p.m., it was 1011 hPa. Clouds and precipitation may arrive because a front could be approaching. The falling pressure suggests changing weather, and uneven heating can move air and create wind.

Accept scientifically reasonable invented pressure readings and cautious predictions such as clouds, wind, precipitation, or a possible approaching front. The explanation should connect falling pressure or uneven heating to moving air and changing weather.