# Air Mass Evidence

Compare temperature, pressure, and humidity in a weather report.

**6.9.a** "Obtain, evaluate, and communicate data that describes characteristics of air masses, including temperature, pressure, and humidity."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline the two closest temperature readings in the table, then circle the pressure readings for those air masses. Write 1 by their lower relative humidity reading and 2 by their higher one.

### Four Air Masses, One Morning

1 A weather team tracks four large air masses moving across a region. An air mass is a huge body of air with fairly similar temperature and moisture throughout. Weather stations take readings at the same hour. The team adjusts pressure readings to sea level so stations at different heights can be compared fairly.

2 Temperature tells how warm the air is. Relative humidity tells how close air is to holding as much water vapor as it can at that temperature. Warmer air can hold more vapor than cooler air. Pressure measures air's push, in hectopascals (hPa). The table shows one snapshot of each air mass.

**WEATHER STATION READINGS AT THE SAME HOUR**

| Air mass | Temperature (°C) | Pressure (hPa) | Relative humidity (%) |
|---|---|---|---|
| A | 8 | 1022 | 85 |
| B | 29 | 1006 | 25 |
| C | 27 | 1016 | 78 |
| D | 12 | 1009 | 30 |

3 The team uses all three measurements when it reports conditions. Two air masses can have similar temperatures yet differ greatly in humidity. Also, cool air does not always have higher pressure than warm air. These readings may change as the air masses move. A single station reading cannot describe every spot in a huge air mass.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. Which two air masses have the closest temperatures? How do their relative humidity readings compare?

2. A and D are both cool. Which has higher pressure, and by how much?

3. A reporter says, “The warmest air mass also has the highest pressure.” Do the data support this claim? Use two readings.

4. Compare D with C using all three readings. Which has the lower temperature, pressure, and relative humidity?

## 3 YOUR TURN

Your own words

Write a two- or three-sentence weather bulletin comparing air masses A and C. Include both air masses' readings for all three measurements, then explain why their relative humidity percentages alone do not prove which contains more water vapor.

ANSWER KEY

# Air Mass Evidence

GRADE 6 · 6.9.a

## PART 1 · READ AND MARK

Underline the two closest temperature readings in the table, then circle the pressure readings for those air masses. Write 1 by their lower relative humidity reading and 2 by their higher one. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | Which two air masses have the closest temperatures? How do their relative humidity readings compare? | **B and C are 29°C and 27°C. B has 25% relative humidity, while C has 78%.** |
| 2 | A and D are both cool. Which has higher pressure, and by how much? | **A has higher pressure: 1022 hPa compared with D's 1009 hPa, a difference of 13 hPa.** |
| 3 | A reporter says, "The warmest air mass also has the highest pressure." Do the data support this claim? Use two readings. | **No. B is warmest at 29°C, but A has the highest pressure at 1022 hPa.** |
| 4 | Compare D with C using all three readings. Which has the lower temperature, pressure, and relative humidity? | **D is lower in all three: 12°C versus 27°C, 1009 hPa versus 1016 hPa, and 30% versus 78% relative humidity.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

Air mass A is 8°C, 1022 hPa, and 85% relative humidity, while C is 27°C, 1016 hPa, and 78% relative humidity. A is cooler, has higher pressure, and is closer to saturation than C. The percentages alone do not show which contains more water vapor because warmer air can hold more vapor.

For the marking job, accept B and C as the closest temperatures, with their matching pressure readings circled and humidity readings numbered 25% as 1 and 78% as 2. For the bulletin, accept any accurate comparison that includes all six readings and distinguishes relative humidity from the amount of water vapor.