Storm Signals

Use changing weather data to make a forecast

ESS.8.b "Analyze and interpret data to develop predictions about the formation of meteorological events."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the sentence that explains how a cold front can form clouds. Then circle two table readings you would use to predict whether a thunderstorm might form.

A Front Near the Field

1. At a school weather station, students watch for an approaching cold front on the afternoon of a soccer tournament. A cold front is the leading edge of a cooler air mass. When it pushes beneath warm, moist air, that air can rise, cool, and form clouds. If the rising air is unstable, thunderstorms may develop.

2. The table records conditions at one weather station. Air temperature and dew point are in degrees Celsius; SW means southwest, and NW means northwest. A dew point closer to air temperature signals moister air. Falling air pressure can signal an approaching low-pressure system. Faster winds may accompany a changing weather system.

WEATHER STATION READINGS

Time	Air (°C)	Dew (°C)	Pressure (hPa)	Wind (km/h)
8 a.m.	24	12	1016	SW 12
10 a.m.	27	18	1012	SW 16
Noon	29	22	1007	SW 20
2 p.m.	22	19	1010	NW 25

3. A storm needs more than warm air. Moisture and rising air also matter, and some fronts pass without producing storms. Meteorologists compare measurements over time to find patterns that fit a physical explanation. A forecast should name a likely event and support it with data. Measurements at one station cannot prove exactly when or where a storm will form.

2 ANSWER WITH EVIDENCE

Use the passage

1. From 8 a.m. to noon, how did pressure and wind speed change? What might those changes suggest?

2. How far apart were air temperature and dew point at 8 a.m. and at noon? What does the change suggest about moisture?

3. Which time interval provides the strongest evidence that the cold front passed the station? Use two changes in the data.

4. At noon, would you predict a greater chance of thunderstorms than at 8 a.m.? Support your prediction with two measurements and explain why it is not certain.

3 YOUR TURN

Your own words

Write a 3- to 4-sentence forecast for after 2 p.m. Predict whether the chance of new thunderstorms at the station will rise or fall, cite two measurements, and name one later observation that could change your forecast.

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PART 1 · READ AND MARK

Underline the sentence that explains how a cold front can form clouds. Then circle two table readings you would use to predict whether a thunderstorm might form. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	From 8 a.m. to noon, how did pressure and wind speed change? What might those changes suggest?	**Pressure fell from 1016 to 1007 hPa, and wind speed rose from 12 to 20 km/h. A changing weather system may be approaching.**
2	How far apart were air temperature and dew point at 8 a.m. and at noon? What does the change suggest about moisture?	**The difference narrowed from 12 °C at 8 a.m. to 7 °C at noon, suggesting moister air.**
3	Which time interval provides the strongest evidence that the cold front passed the station? Use two changes in the data.	**Noon to 2 p.m. The temperature dropped from 29 °C to 22 °C, and the wind shifted from southwest to northwest.**
4	At noon, would you predict a greater chance of thunderstorms than at 8 a.m.? Support your prediction with two measurements and explain why it is not certain.	**Yes. By noon, the dew point was closer to the air temperature and pressure had fallen to 1007 hPa, conditions consistent with a possible storm. Some fronts pass without storms, so the data cannot make the prediction certain.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

After 2 p.m., I predict the chance of new thunderstorms at the station will fall. From noon to 2 p.m., the temperature fell from 29 °C to 22 °C, and the wind shifted from southwest to northwest, suggesting the cold front passed. If pressure begins falling again, I would reconsider my forecast.

Accept forecasts that connect a reasonable prediction to at least two accurate readings and identify a relevant later observation. Students should express storm formation as a possibility, not a certainty.