Air All Around

Identify the physical characteristics scientists use to describe the atmosphere.

6.7.b "the atmosphere has physical characteristics;"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each physical characteristic of air named in the passage. Circle each tool that measures a characteristic, then number the details that describe how air changes as height increases.

Measuring the Air

1. Earth's atmosphere is a blanket of gases held near the planet by gravity. Although air is invisible, it has measurable physical characteristics. Air has mass, takes up space, and pushes on every surface. This push is called air pressure. At sea level, many air molecules are packed into a small space, so pressure is relatively high. As a weather balloon rises, there are fewer molecules above it. The air becomes less dense, and the pressure decreases. Instruments can measure these changes.

2. Temperature tells how warm or cool the air is. A thermometer measures temperature. Humidity is the amount of water vapor in the air, and a hygrometer measures it. Air can be warm and dry, cool and humid, or have other combinations of these characteristics. Water vapor is a gas in the atmosphere, so humid air still has mass and occupies space. Weather reports give temperature, humidity, and pressure because each measurement describes a different physical characteristic of the air.

3. Air also moves, creating wind. Differences in air pressure help cause this movement. Air tends to move from an area of higher pressure toward an area of lower pressure. Wind speed describes how fast the air is moving, while wind direction identifies where the moving air comes from. Near the ground, changing temperature, humidity, pressure, density, and wind can affect weather conditions. Scientists measure several characteristics because one measurement alone cannot give a complete description of the atmosphere at a place and time.

2 ANSWER WITH EVIDENCE

Use the passage

1. Name three physical characteristics scientists can measure to describe air.

2. Why does air pressure decrease as a weather balloon rises?

3. Which instrument measures humidity, and what does humidity describe?

4. How is wind speed different from wind direction?

3 YOUR TURN

Your own words

Write a three-sentence field note for a weather balloon launch. Include two instruments you would use, a prediction about air pressure as the balloon rises, and one wind measurement you would record.

ANSWER KEY

Air All Around

GRADE 6 · 6.7.b

PART 1 · READ AND MARK

Underline each physical characteristic of air named in the passage. Circle each tool that measures a characteristic, then number the details that describe how air changes as height increases. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Name three physical characteristics scientists can measure to describe air.	**Any three: air pressure, temperature, humidity, density, wind speed, or wind direction.**
2	Why does air pressure decrease as a weather balloon rises?	**There are fewer air molecules above the balloon, so the air is less dense and the pressure decreases.**
3	Which instrument measures humidity, and what does humidity describe?	**A hygrometer measures humidity, which is the amount of water vapor in the air.**
4	How is wind speed different from wind direction?	**Wind speed tells how fast air is moving. Wind direction tells where the moving air comes from.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Before launch, I would measure temperature with a thermometer and humidity with a hygrometer. As the balloon rises, I predict that air pressure will decrease because fewer air molecules are above it. I would record wind speed to describe how fast the air is moving.

Accept accurate physical characteristics and explanations supported by the passage. For the field note, accept any two appropriate instruments named in the passage, the correct pressure prediction, and either wind speed or wind direction.