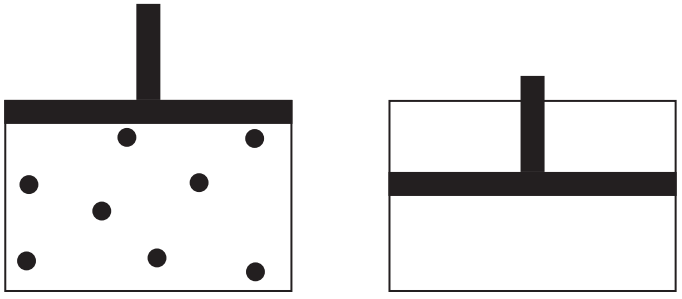
INVESTIGATION 3 I-CHECK
EARTH AND SUN

Name _____

Date _____

1. Below is a model of a closed container with a plunger filled with air. Complete the model of the second container to show what happens to the particles of air when the plunger pushes down and makes the space smaller.



Why did you draw the particles of air the way you did?

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2. The weather report indicated that the relative humidity was going to rise in the next day. This is likely an indication that the amount of _____ in the air is increasing.

(Mark the one best answer.)

❍ **A** oxygen

❍ **B** nitrogen

❍ **C** water vapor

❍ **D** carbon dioxide

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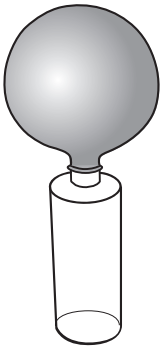
3. Students put a little air into a balloon at room temperature and stretched it over a bottle as shown in the drawing recorded here.

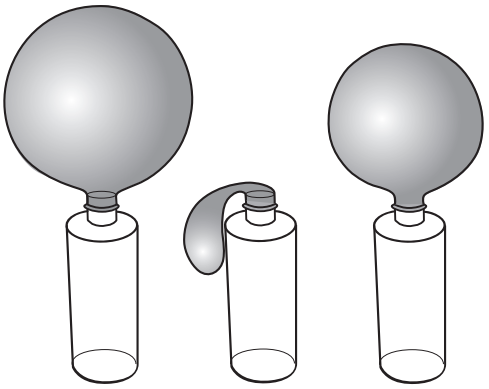


Next the students put the jar in some hot water, let it sit for 5 minutes, and then made another drawing of the balloon.

Then the students took the jar out of the hot water, waited 5 more minutes, and made another drawing.

Finally the students put the jar in the freezer, waited another 5 minutes, and made one last drawing.

a. On the line under the three balloon drawings, write **R** (for room), **H** (for hot), or **F** (for freezing) to show which drawing goes with each temperature in the investigation.



_____ _____ _____

b. The students wondered whether the balloons would weigh the same at different temperatures. They repeated the same investigation and weighed the balloon/bottle system at the end of each 5-minute period. Which sentence indicates what the students most likely observed?

(Mark the one best answer.)

❍ **A** All of the balloon/bottle systems weighed the same.

❍ **B** From least to most, the weight was cold, room, warm.

❍ **C** From least to most, the weight was warm, room, cold.

❍ **D** From least to most, the weight was room, cold, warm.

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4. Write **Y** (yes) next to each example of an interaction between living things (the biosphere) and the atmosphere. Write **N** (no) next to each example that is not that kind of interaction.

_____ Water evaporates from puddles.

_____ Plants take in carbon dioxide and give off oxygen.

_____ You can see your breath when you go outside on a cold day.

_____ When the temperature drops, water condenses into clouds.

5. Write **T** if the sentence is true. Write **F** if the sentence is false.

_____ Air can be compressed (pushed into a smaller space).

_____ Air has no mass.

_____ Air is made of particles too small to see.

_____ Air takes up space.

_____ Air is made of two gases: oxygen and carbon dioxide.

_____ Air is in many places, but not in closed containers such as jars.

6. Describe a demonstration or activity you could do to help a young child understand that air is matter. (Many young children think that "air" means nothing is there.)

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7. Students read that the atmosphere contains different layers of gases. The diagram shows the layers closest to the ground and their elevation in kilometers.

Elevation	Atmosphere particle model	Temperature
85 km 50 km	Mesosphere	
15 km	Stratosphere	
0 km	Troposphere	

a. In the column labeled "Atmosphere particle model," draw dots to represent air particles and show the concentration of gases in each layer.

b. Draw an arrow in the "Temperature" column to indicate where the temperature is lowest and highest.

c. Explain why you drew the dots and the temperature arrow the way that you did.

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