

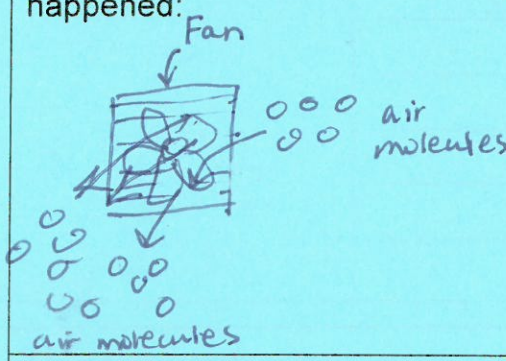
### Activity #3: Properties of Air

Name: Key Date: \_\_\_\_\_ Period: \_\_\_\_\_

LT: I can explore different characteristics of air and connect what I learn to the tanker phenomenon.

Instructions: There are seven (7) total activities that you will be doing or observing in this activity to help you explore different properties of air. The first three activities will be conducted as demonstrations for the entire class. The other four (4) are stations that have been set up around the classroom. As you visit each station, use the instructions provided to complete the activity. Create a diagram to show what happens and write down observations while doing/observing the activity. After completing the activity decide what you have learned about air, write down inferences you are able to make and connect the activity to the tanker phenomenon.

Fill these in

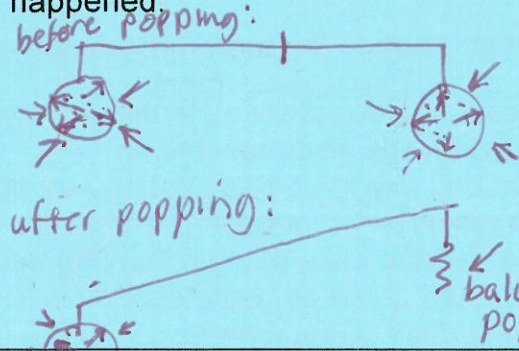
Demonstration 1: Air is it There?		
<p>Diagram: Draw and label what happened:</p> 	<p>Observations:</p> <p>When the fan is off, the air is not moving. When the fan is on, the air is moving in front of the fan.</p>	<p>Information that helps support the tanker phenomenon:</p>
<p>What did you learn about air?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Air has mass</li> <li><input type="checkbox"/> Air has volume</li> <li><input type="checkbox"/> Air exerts pressure</li> <li><input checked="" type="checkbox"/> Air is made of particles that are moving</li> <li><input type="checkbox"/> A change in temperature affects pressure</li> <li><input type="checkbox"/> A change in pressure affects temperature</li> </ul>	<p>Inferences:</p> <p>Air molecules can move and can be moved.</p>	



Fill these in.

### Demonstration 2: Balloon Balance

Diagram: Draw and label what happened:



Observations:

Before one of the balloons was popped, the meter stick was even. After the balloon was popped, the side with the balloon on it was further down than the other side.

Information that helps support the tanker phenomenon:

What did you learn about air?

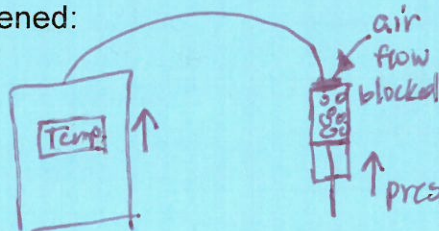
- ☒ Air has mass
- ☐ Air has volume
- ☐ Air exerts pressure
- ☐ Air is made of particles that are moving
- ☐ A change in temperature affects pressure
- ☐ A change in pressure affects temperature

Inferences:

This tells us that air has mass. It also takes up space.  
Air is matter.

### Demonstration 3: Air Plunge

Diagram: Draw and label what happened:



Observations:

The thermocouple was connected to the meter. As the plunger on the the syringe was pushed, the pressure in the syringe increased. The temperature also increased.

Information that helps support the tanker phenomenon:

What did you learn about air?

- ☐ Air has mass
- ☐ Air has volume
- ☐ Air exerts pressure
- ☐ Air is made of particles that are moving
- ☐ A change in temperature affects pressure
- ☒ A change in pressure affects temperature

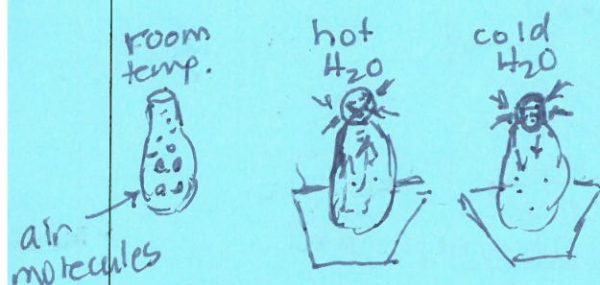
Inferences:

As the pressure increases, the temperature increases.  
There is a direct comparison.



## Station 1: Bubble on a Bottle

Diagram: Draw and label what happened:



Observations:

The bubble on the bottle that was in hot water expanded and came out of the top of the bottle. When the bottle was put in cold water, the bubble compressed into the bottle.

Information that helps support the tanker phenomenon:

What did you learn about air?

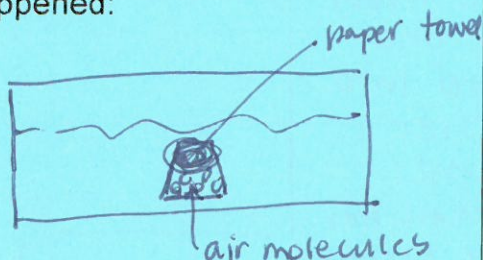
- ☐ Air has mass
- ☐ Air has volume
- ☐ Air exerts pressure
- ☐ Air is made of particles that are moving
- ☒ A change in temperature affects pressure
- ☐ A change in pressure affects temperature

Inferences:

Temperature affects pressure. As temperature increases, the pressure also increases.  
As temperature decreases, pressure decreases.

## Station 2: Paper Towel

Diagram: Draw and label what happened:



Observations:

When the cup was flipped over and placed in the water and taken out. The paper towel was still dry.

Information that helps support the tanker phenomenon:

What did you learn about air?

- ☐ Air has mass
- ☒ Air has volume
- ☐ Air exerts pressure
- ☐ Air is made of particles that are moving
- ☐ A change in temperature affects pressure
- ☐ A change in pressure affects temperature

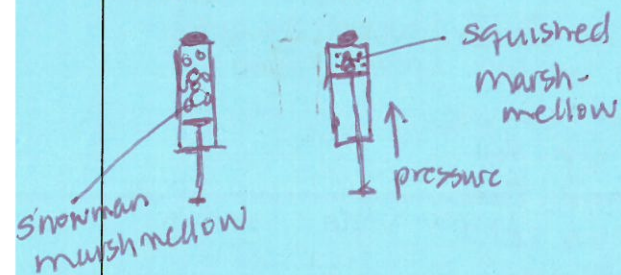
Inferences:

The air in the cup takes up space. When it is put upside down in the water, the air cannot escape.  
The air takes up space.



## Station 3: Marshmallow in a syringe

Diagram: Draw and label what happened:



Observations:

When the thumb was placed over the air hole of the syringe and the plunger was pushed in, the marshmallow was squished (became smaller). When the plunger was pulled out, the marshmallow expanded.

Information that helps support the tanker phenomenon:

What did you learn about air?

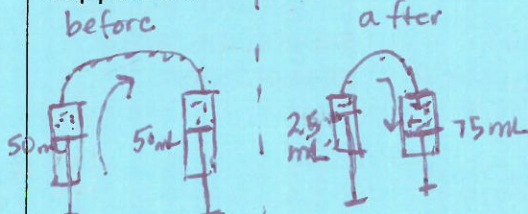
- ☐ Air has mass
- ☐ Air has volume
- ☒ Air exerts pressure
- ☐ Air is made of particles that are moving
- ☐ A change in temperature affects pressure
- ☐ A change in pressure affects temperature

Inferences:

The smaller the space the molecules are pushed into, the higher the pressure.  
The more pressure exerted, the smaller the marshmallow.

## Station 4: Double Syringes

Diagram: Draw and label what happened:



Observations:

The syringes were at 50 mL and 50 mL when connected. After one syringe was pushed into 25 mL, the other one was at 75 mL.

If more than 100 mL was in the two syringes before starting, the syringe →

Information that helps support the tanker phenomenon:

What did you learn about air?

- ☐ Air has mass
- ☒ Air has volume
- ☐ Air exerts pressure
- ☐ Air is made of particles that are moving
- ☐ A change in temperature affects pressure
- ☐ A change in pressure affects temperature

Inferences:

Air has volume and as long as the system is closed, that volume remains constant. If the system is not closed, the volume will change.

that was not pushed in could not hold all of the pressure. The end blew out.