

Lesson 2: Pressure-Volume Investigations

In Class Demonstration: In the space below, draw a model for a balloon. On the left, draw your model for when the balloon is not inflated, then to the right, draw the model for the balloon after it is inflated. Be sure that your models include particles.

Not Inflated // Balloon Open	Inflated // Balloon Closed

Air Pressure Experiments

For each experiment, carefully observe what is happening. In each of the boxes below, detail your observations then draw a model of what you think is happening to the experiment.

Compressing Syringe

Experiment: One partner tries to press down the plunger of the syringe while the other puts his or her finger on the opening at the bottom.

Observations (What did you see?)

Draw a model (including air particles) that shows why the syringe can't fully compress.

Balloon in a 2L Bottle

Set up: Using a fresh balloon, wrap the opening of the balloon onto the opening of the 2L bottle. Push the balloon inside of the 2L bottle.

Experiment: Cover the opening with your hand and try to blow up the balloon inside of the 2L bottle.

Observations (What did you see?)

Draw a model (including air particles) that shows why the balloon could not inflate.

Marshmallow in a Syringe

Set Up: Open the syringe by pulling out the plunger. Place a marshmallow inside. Replace plunger

Part 1: Push the plunger in to minimize internal space, while not crushing the marshmallow. One partner puts their finger on the opening at the bottom of the syringe. The other partner tries to pull the plunger

Part 2: Pull plunger to maximize internal space. One partner puts their finger on the opening at the bottom of the syringe. The other partner tries to press down the plunger of the syringe.

Observations (What did you see?)

Original marshmallow:

Part 1 Marshmallow:

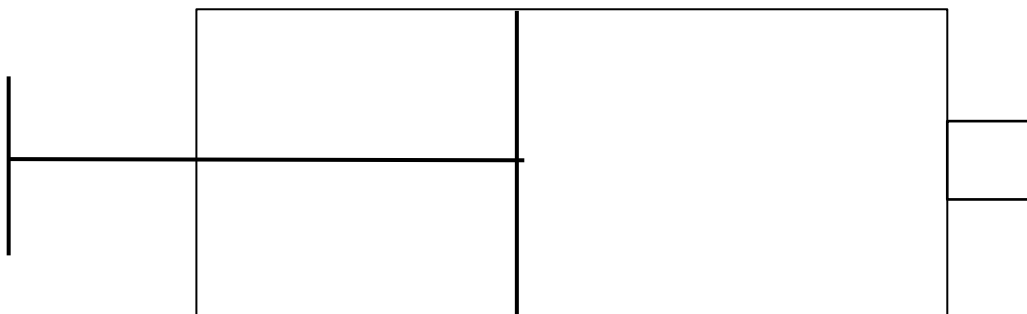
Part 2 Marshmallow:

Explanation: Why do you think the marshmallow changes appearance?

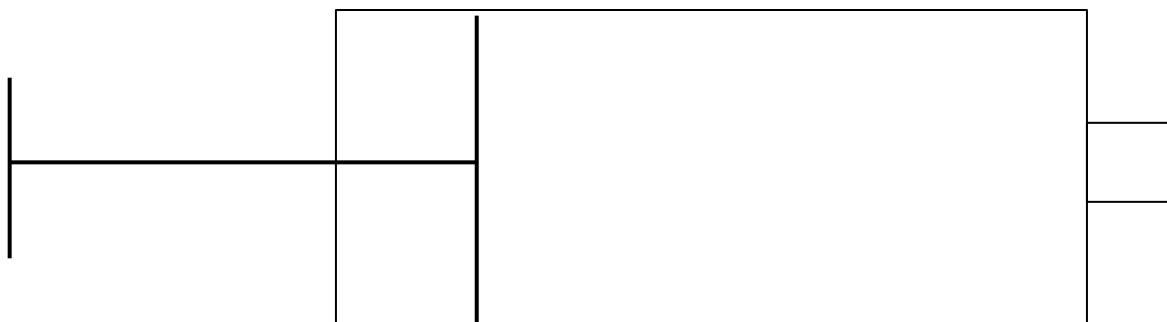
Marshmallow in a Syringe: Particle Model: Sketch the following three conditions.

Include in each sketch: a representation of the appearance of the marshmallow, air particles within the syringe, air particles outside the syringe

syringe open, no force on plunger



syringe closed, plunger pulled out



syringe closed, plunger pushed in

