

## Air & Water Compression Experiment Kit - Model D Worksheet

### Introduction: Let's collect some air

- Fill the plastic bag with air and check how it feels when holding it down.

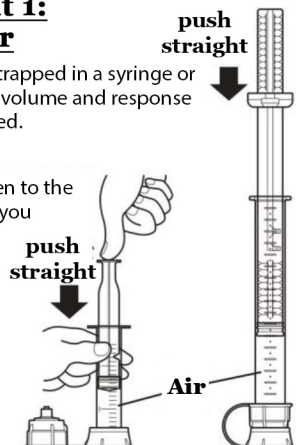
☆ Write down what you have learnt about air



\*Do not get on top of the vinyl bag. It is dangerous if the bag is torn or bag clip is broken.

### Experiment 1: Trapped air

- When the air is trapped in a syringe or tube, check the volume and response when it is pressed.
- What will happen to the push rod when you release your hand?

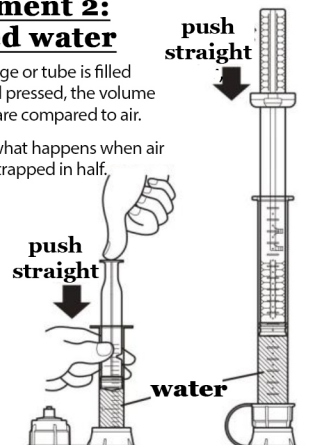


☆ Let's summarize the trapped air in the table below.

pushing force					
position of push rod					
volume of air					
response to touch					
What happens when you release the push rod?					

### Experiment 2: Trapped water

- When a syringe or tube is filled with water and pressed, the volume and response are compared to air.
- Investigate what happens when air and water are trapped in half.

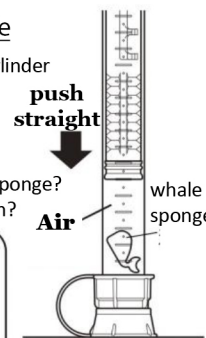


☆ Let's summarize the trapped water in the table below.

pushing force					
position of push rod					
volume of water					
response to touch					
☆ When air and water are both entrapped half and half, what happens when you push down?					

### Let's try! Shrinking whale

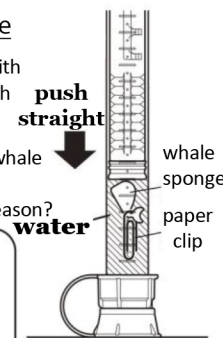
- Put a whale sponge into cylinder and push the compressor.



What happened to the whale sponge?  
What do you think is the reason?

### Let's try! Sinking whale

- Put the whale sponge with paper clip into cylinder with water inside.



☆ What happened to the whale sponge and paper clip?  
What do you think is the reason?

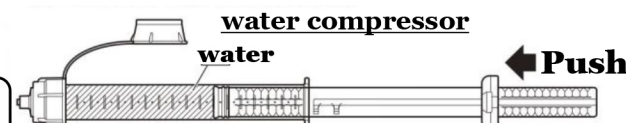
「Trivia」In the world of science, the "Sinking Whale" experiment is called a "Cartesian diver." The cartesian diver is an experiment that uses the pulling force of an object to move (buoyancy) and fall (gravity).

### Let's try! air compressor, water compressor

- Assemble an air compressor as shown in the figure, change the position of the balls in the back, and compare how the ball flies.
- ☆ What was the difference in how the sponge bullets flew?

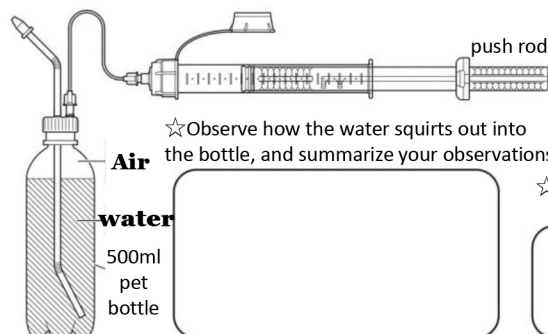


- ☆ What was the difference in the way the water squirted out compared to the air compressor?



### Let's try! make use of the property of air and water fountain

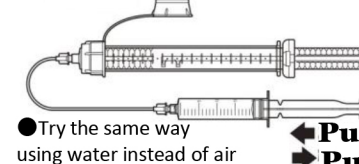
- Assemble a device like the one shown in the figure, push and pull the push rod, and investigate the mechanism of water fountains.



☆ Observe how the water squirts out into the bottle, and summarize your observations

### movement of air and water

- Connect the syringe to the water compressor with a tube and push and pull the syringe.



● Try the same way using water instead of air

☆ What happened to the air and water when you pushed or pulled the syringe, respectively?