Name: _____

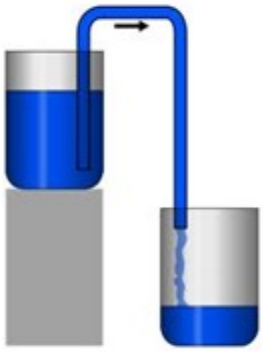
Static Pressure Head Lab Activity

SPH4C

Part 1: The Siphon

Purpose: To construct a working siphon and explain its functioning.

Materials: two beakers, water, flexible tubing



Procedure:

Construct your siphon as shown in the diagram at right. When you have your siphon working, i.e., the water is flowing from the higher beaker to the lower beaker, ask your teacher to initial this space:

_____

What happens if you lift the lower beaker above the other? Explain why.

_____

_____

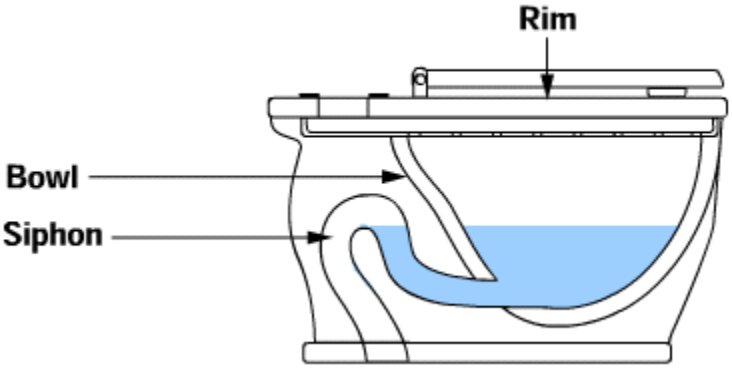
Would the siphon work if you sealed off both beakers? Explain why?

_____

_____

Extend your thinking:

A flush toilet works along the same principle. If you pour 25 cups (6 L) of water into a toilet, one at a time, nothing will happen. The level of the water in the bowl will never rise as the extra water immediately spills over the edge of the siphon tube and drains away.



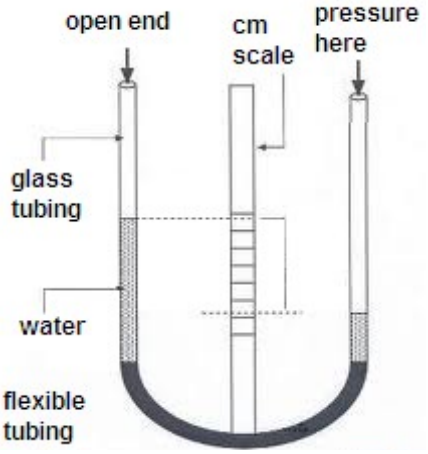
But if you take a bucket of water and dump it into the bowl, the bowl will flush. That is, almost all of the water will be sucked out of the bowl. Borrow a bucket from your teacher and try it.

What happened? You poured enough water into the bowl fast enough to fill the siphon tube. And once the tube was filled, the siphon sucked the water out of the bowl and down the sewer pipe. (As soon as the bowl emptied, air entered the siphon tube, producing that distinctive gurgling sound and stopping the siphoning process.)

Part 2: The Manometer

Purpose: To construct a working manometer and use it to calculate gauge pressure.

Materials: two glass tubes, retort stand with clamp, flexible tubing, crayon for marking glass, ruler



Procedure:

Clamp the glass tubing to the retort stand and construct your manometer as shown in the diagram at right. When you have it constructed, ask your teacher to initial this space:

_____

Note: Never cover the tube with your mouth! There should be no contact between your mouth and the tube.

Blow down into one of the tubes. What happens?

_____

Mark the positions of the water using the crayon. Measure the difference in the heights using the ruler. Calculate the gauge pressure in the tube you are blowing into:

$p = D h g$ =

What is the absolute pressure in the tube?

_____

Blow across the top of one of the tubes. What happens?

_____

Mark the positions of the water using the crayon. Measure the difference in the heights using the ruler. Calculate the gauge pressure in the tube you are blowing across:

$p = D h g$ =

What is the absolute pressure in the tube?