

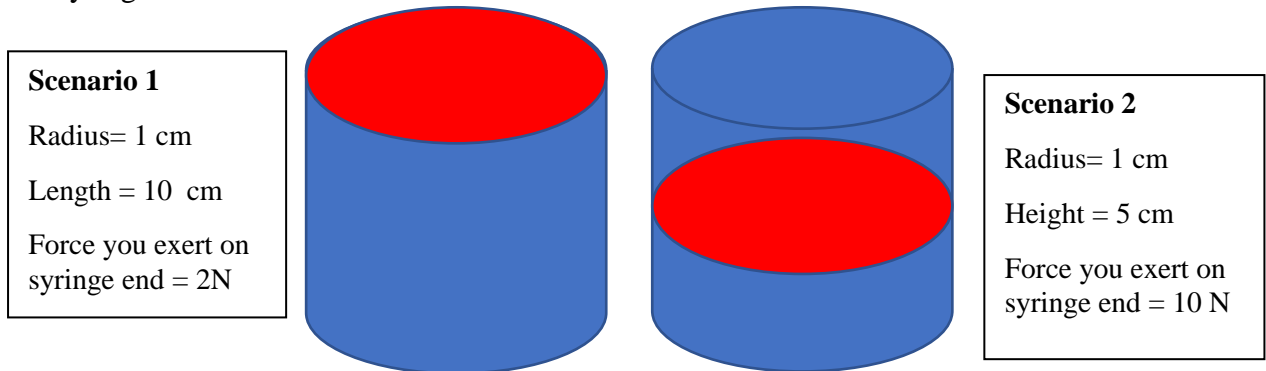
## Lesson Handouts

Investigation 1: What are some observations that you have made with the syringes? What do those relations imply about the relation between volume and pressure?

Investigation 2: Draw a rough sketch of a diagram with pressure on the horizontal axis and volume on the vertical axis.

### Investigation 3:

Part 1. Imagine that the two cylinders below are two different situations with the syringes from earlier in the lesson. In the first scenario it you are applying 2 N for air contained in the syringe to be 10 cm in length. In the second scenario you have to apply 10 N of force to keep the length of air contained in the syringe to be 5 cm. What is the pressure you are exerting on the syringe?



Part 2. The force that is applied by the molecules does not equal the force you apply on the syringe end. Given Newton's third law, to every force there is an equal and opposite force, how could this be?

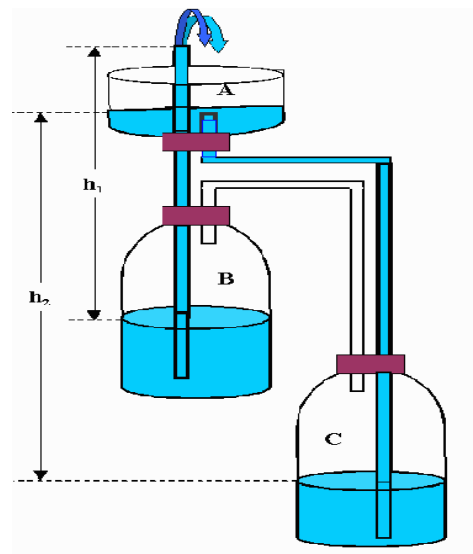
Investigation 4: The cylinder below is full of air, and the force of all the molecules hitting the inside of the cylinder is 8N. Using the equation calculate the pressure inside the cylinder.



Radius = 3 cm  
Height = 10 cm  
Force exerted by molecules onto walls = 8N

How are they different from your answer in Investigation 1?

Investigation 6: What do you predict will happen when water is poured into the top water basin. Using the diagram, explain. (Figure 3 will be included in the worksheet)



Investigation 7: Challenge! How are some ways to increase the speed of the water coming out of the sprout?