Students' Learning Activity

Fluid Pressure and Flow

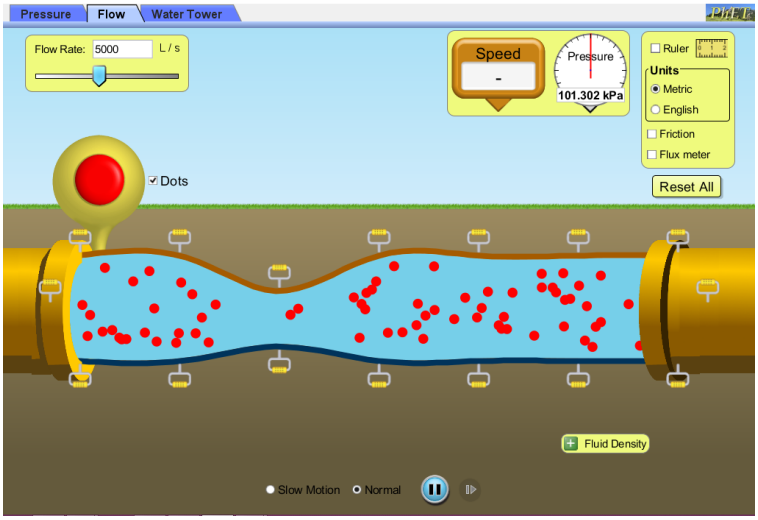
Objectives:

1. To investigate how pressure works.
2. To answer problems about fluid pressure and flow and apply these concepts to the real world.

Directions:

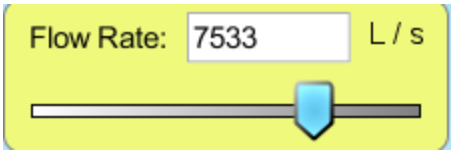
I. Go to the following website, click download, run and install it

https://phet.colorado.edu/en/simulation/fluid-pressure-and-flow

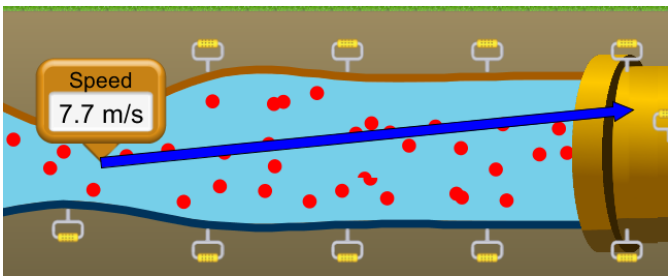


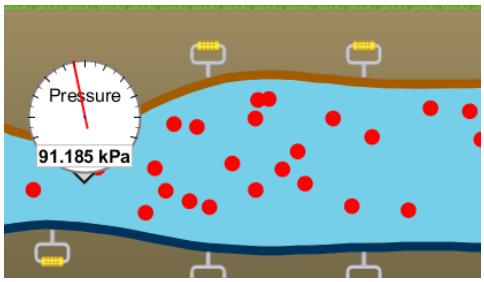
II. After installing, explore the simulation.

1. Flow Rate

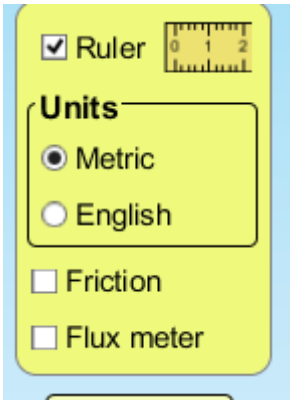


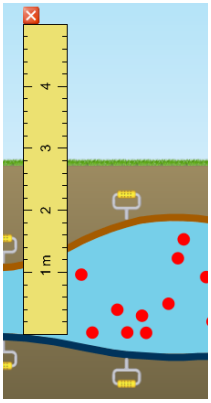
2. Speed and Pressure



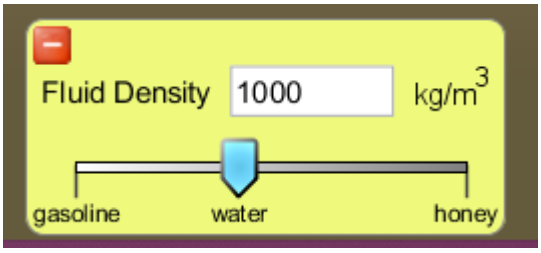


3. Ruler





4. Fluid Density



Notes:

- $P = \frac{F}{A}$

where, P is the pressure

F is the force

A is the area

Unit of pressure: 1 Pascal=1 $\frac{N}{m^2}$

Questions:

1. What happens to the pressure of water when its tube is being contracted? How about when you change the fluid density into gasoline? Honey?

2. What happens to the pressure of water when its tube is being expanded? How about when you change the fluid density into gasoline? Honey?

3. If the flow rate is lower into 2052 L/s, what would be the speed of the water particle inside the tube? How about increasing the rate to 8086 L/s?

4. Based on your observations, explain what happens to the flowing water that would come out on a large opening of a hose, and also when its opening is adjusted into a smaller one.

5. Imagine yourself swimming in the sea. You have observed that as you go down, you can't go deeper because of having a difficulty in breathing. Explain what causes the situation.