Exploring the Properties of Fluid Pressure

1. What happens when a force acts on an object?

2. What are the two components that describe every force?

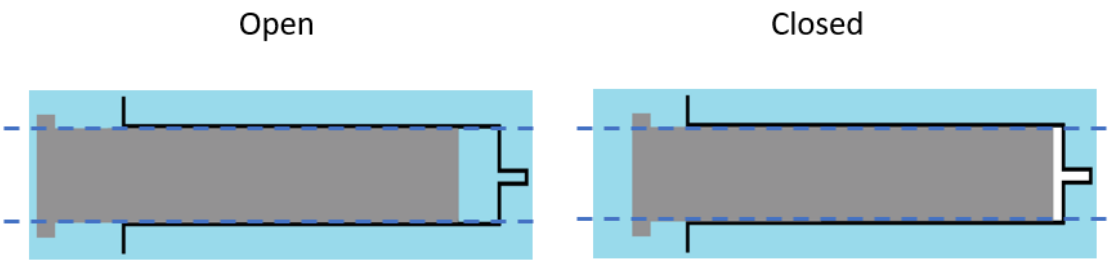
   a.

   b.

3. What does pressure measure? Explain in your own words.

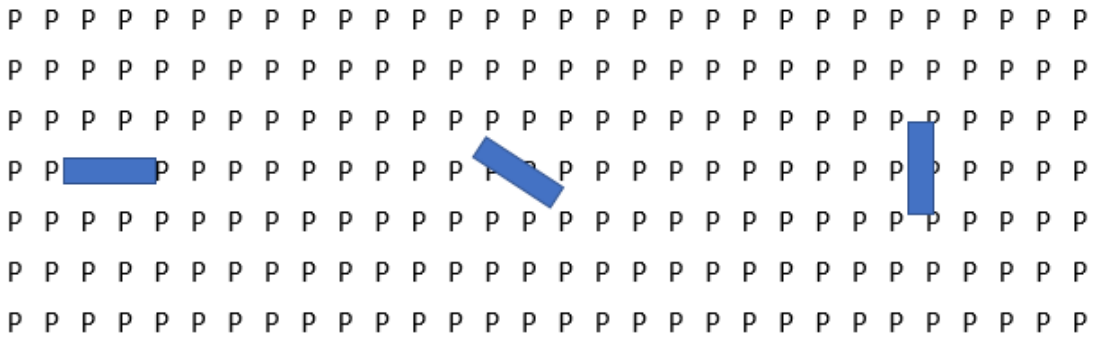
4. Why is it that stepping on a Lego piece will probably hurt but stepping on a needle will result in serious injury?

5. What forces are acting on the syringe? Draw arrows representing them on the diagram below.



6. You are given a balloon, a bottle, and a pair of scissors. Can you think of a way to inflate the balloon by breathing air into your lungs instead of blowing air out of them?
   Draw your design below.

7. Draw arrows representing the forces that are acting on the blue surfaces shown below.



8. What determines the pressure at a point in a body of liquid at rest?

9. A model hydraulic lift has been created by connecting a larger syringe to a smaller syringe with tubing and filling up the setup with water.

   The ratio between the cross-sectional area of the larger syringe to that of the smaller syringe is 9:7.

   If 9 identical weights are placed on the larger syringe, how many of these weights have to be placed on the smaller syringe such that the water level in the two syringes are identical to one another?