

Laminar and Turbulent Flow

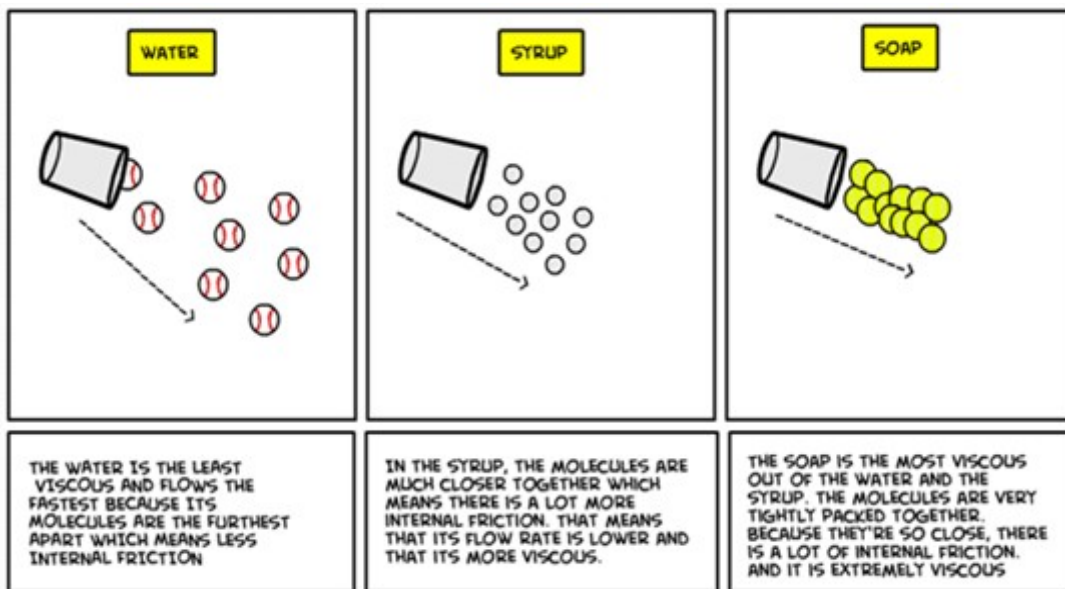
SPH4C

Fluid _____ is the study of the factors that affect fluids in motion.

As a fluid flows, the forces of _____ cause internal _____, or _____ to the flow.

The resistance of a fluid to flow is called its _____.

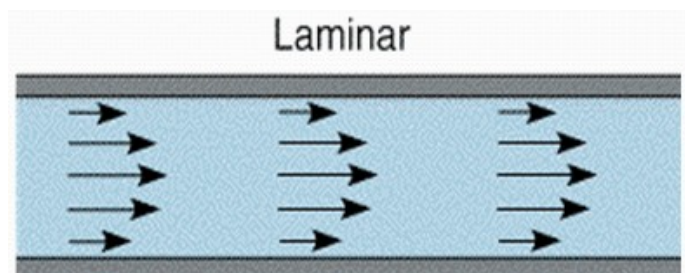
Water has a _____ viscosity. Syrup has a _____ viscosity.



As temperature increases, the viscosity of a liquid generally _____ because the particles of the liquid have more _____ and flow more easily.

However, gases generally _____ in viscosity as the particles _____ more often making it more difficult for them to flow in one direction.

As fluids flow, their particles also interact with their surroundings and experience external friction. In a pipe, the water flowing close to the sides is almost not moving while the water in the middle of the pipe can be moving quickly.



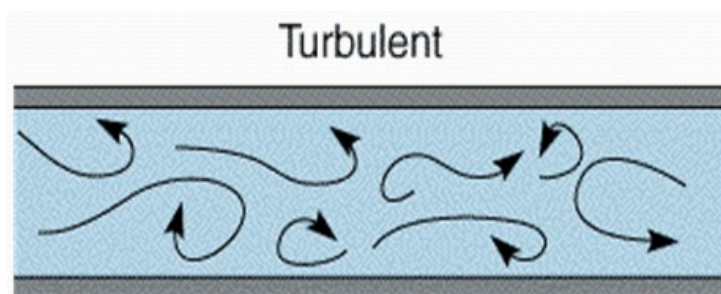
If the speed of a flow is _____ and adjacent regions flow _____ over one another, the flow is called _____ **flow**.

This term can also be applied to air flow _____.

Laminar flow is difficult to achieve because as the fluid flows past the object, the flow becomes irregular, resulting in whirls called _____ or _____.

Eddies are common in _____ **flow**, a fluid flow with a _____ that resists the fluid's motion.

Turbulent flow _____ kinetic energy as some of the energy is converted into _____ and _____ energy.



Turbulence increases with the _____ of the fluid.

One mechanism of reducing turbulence in liquids is introducing small amounts of liquid _____.

Engineers consider the effects of turbulence when _____ structures.

For example, high rise buildings can direct strong _____ of air down to street level.

More Practice

1. Match each of the following terms to its description:

_____ eddy

A. resistance of a fluid to flow

_____ laminar

B. flow in which adjacent regions flow smoothly

_____ turbulent

C. flow in which disturbances resist the fluid flow

_____ viscosity

D. whirls in the flow of fluid

2. Rank the following liquids in order from low to high viscosity:

whipping cream, skim milk, honey.