Viscosity

When you look up the definition of viscosity, you will find something along the lines of: a measure of a fluids resistance to gradual deformation by shear stress or tensile stress.

This, obviously, will not work for us, so we need to look at what viscosity is. To do that, I would like to start with a demonstration.
Viscosity

In the demonstration we were able to see that the marble sunk at different rates in the different fluids. The property of the fluids that caused this to happen is viscosity. Described in the simplest way, viscosity is the thickness of the fluid. A fluid, like water is very "thin," which meant the marble could easily fall through it. The corn syrup, on the other hand, is very "thick." As a result there was a lot of resistance to the marble dropping.

A "thick" fluid is said to be highly viscous.

A "thin" fluid is said to have low viscosity.

Let's re-arrange these substances to put them in order of increasing viscosity:

Less Viscous  More Viscous

Air  Water  Honey  Peanut Butter

Flow Rate

Another way to understand the idea of viscosity is to look at Flow Rate. To flow means to move in a steady continuous stream, so by measuring the quantity of fluid that moves past a specific area in a specific time, you can determine the Flow Rate.

Example: To determine the flow rate of water out of your garden hose simply turn it on and time how long it takes to fill a 2L pop bottle. You can then divide your volume (2L) by the time it took (in seconds) and you have the flow rate in L/s.

When you are comparing different fluids, you will find that a fluid with a high viscosity will have a slower flow rate. The "thickness" of the fluid makes it more difficult to flow.

Can you think about what part of the particle theory might help explain viscosity?
Next class you will be doing an experiment, measuring the flow rate of a variety of substances. We will use the remaining time today to discuss the experiment, so that when you arrive next class you are ready to start immediately.