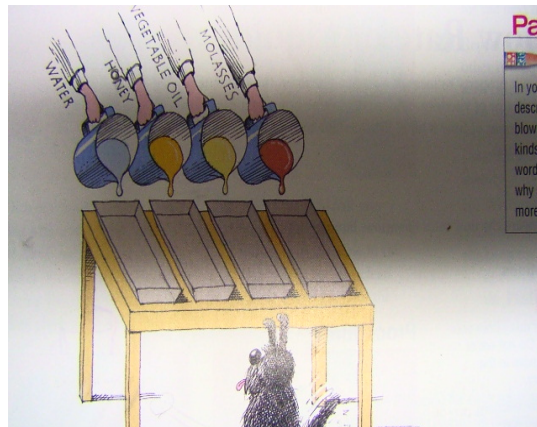


## How fast do fluids flow?

Some liquids flow faster than others (Water flows faster than maple syrup)



**Flow Rate** is the speed at which a fluid flows from one point to another  
 -done by measuring the time it takes for the fluid to flow from  
 one point to another (its distance),

Slow	Medium	Fast
Corn syrup	Dishwashing liquid	Water

Just like certain variables can slow you down in a race, certain variables can cause a fluid to slow down.

## Viscosity

- A measure of a liquid's resistance to flow.
- The thickness or thinness of a fluid.
- A fluid that is viscous is the one that is NOT "runny" (flows slowly, is thick).



Which is more viscous?

Think about cough syrup...

Needs to be thick to coat the throat but needs to thin enough to swallow.

Think about the chocolate covering on chocolate bars..

Needs to be melted and able to pour over the nugget

The higher the viscosity of a substance, the lower its flow rate.  
In other words:

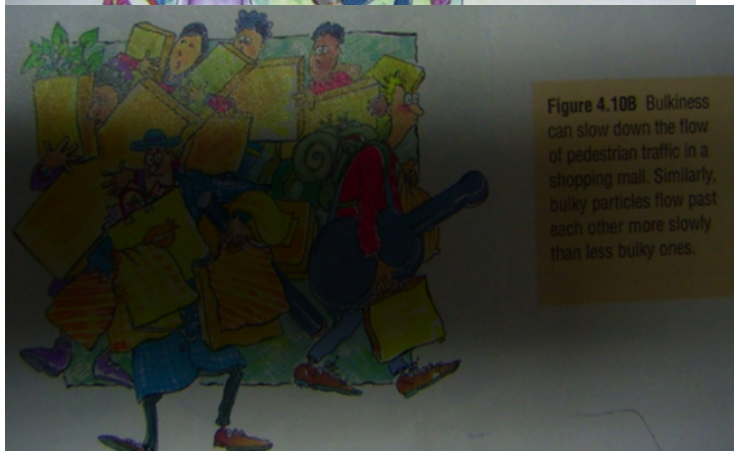
High Viscosity = low flow rate → Slow → thicker  
Low Viscosity = high flow rate → Fast → thinner

Ex) Water & Alcohol have low viscosity but a high flow rate.

Molasses & honey have a high viscosity and low flow rate.

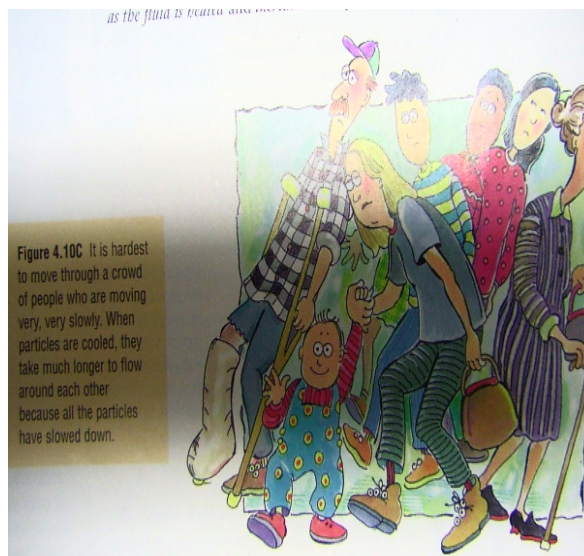


**Figure 4.10A**  
Small groups of people can move through crowds more easily than large groups. Similarly, small particles can flow more easily than large particles.



**Figure 4.10B**  
Bulkiness can slow down the flow of pedestrian traffic in a shopping mall. Similarly, bulky particles flow past each other more slowly than less bulky ones.

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**Figure 4.10C**  
It is hardest to move through a crowd of people who are moving very, very slowly. When particles are cooled, they take much longer to flow around each other because all the particles have slowed down.

## FACTORS THAT AFFECT VISCOSITY

### 1) Temperature

As you increase temperature, you decrease a fluid's viscosity. As you decrease temperature, you increase a fluid's viscosity. (It is opposite for gasses)

Ex) Trying to get through the mall when everyone is moving slow(Cold) parcels or moving fast (Hot).

### 2) Concentration

-The amount of a substance dissolved in a specific volume.

-Increasing the concentration(Bulkiness), increases the viscosity.

Ex) Trying to get through the mall when everyone is carrying parcels.

### 3) Attractive Forces

If the attractive forces are strong, it is difficult for the particles to pull away thereby the fluid flows slowly and is more viscous.

ex)Moving through a crowded mall where everyone is wearing velcro sneakers. Your sneakers will stick to someone else's velcro.

### 4) Particle Size

The smaller the particle size, the faster the fluid flows and is less viscous.

Ex) Moving though a crowded mall either in a small group or a large group

VISCOSITY & FRICTION?

- Friction resists movement.
- The greater the friction, the greater the viscosity.
- The particles are holding on tightly to each other.

## Attachments

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Grade 8 Science Fluids 65.pdf

Grade 8 Science Fluids 67.pdf

Grade 8 Science Fluids 68.pdf

Grade 8 Science Fluids 70.pdf