Viscosity and Flow Rate

What is viscosity?
Viscosity is how thick or thin a fluid is or how easily a fluid can flow.

What is flow rate?
Flow rate is the amount of liquid that flows past a point in a given amount of time.
How are flow rate and viscosity related?

The higher the viscosity the lower the flow rate.

or

The lower the viscosity the higher the flow rate.

Factors Affecting Viscosity
What factors can affect viscosity?

- temperature
- concentration
- attractive force
- particle size

Temperature:

LIQUIDS AND GASES REACT OPPOSITELY TO CHANGES IN TEMPERATURE.

In liquids, when the temperature increases (energy added) the particles move faster and begin to move away from each other. Because the particles are moving around more they can flow more; their viscosity is lower.

In gases, the particles are far apart so when energy is added the particles move faster and collide with each other more often causing an increase in viscosity.
Concentration:

- Concentration is the amount of substance that is dissolved in a specific volume.
- An increase in concentration will usually result in an increase in viscosity.

Attractive Force:

- Particles of the same substance have an attractive force on one another.
- Some substances have a strong attraction while some substances have a weaker attraction.
- The stronger the attraction of particles, the higher the viscosity.
Particle Size:

• The size of the particles of a substance will greatly affect its viscosity.
• Small particles can move more easily past each other and can therefore flow faster, meaning they have a lower viscosity.
• Large particles would mean a higher viscosity.

**Homework:**

p. 297  Q. 1-6 (pick 3)
Q. 7

p. 298  Q. 14, 15