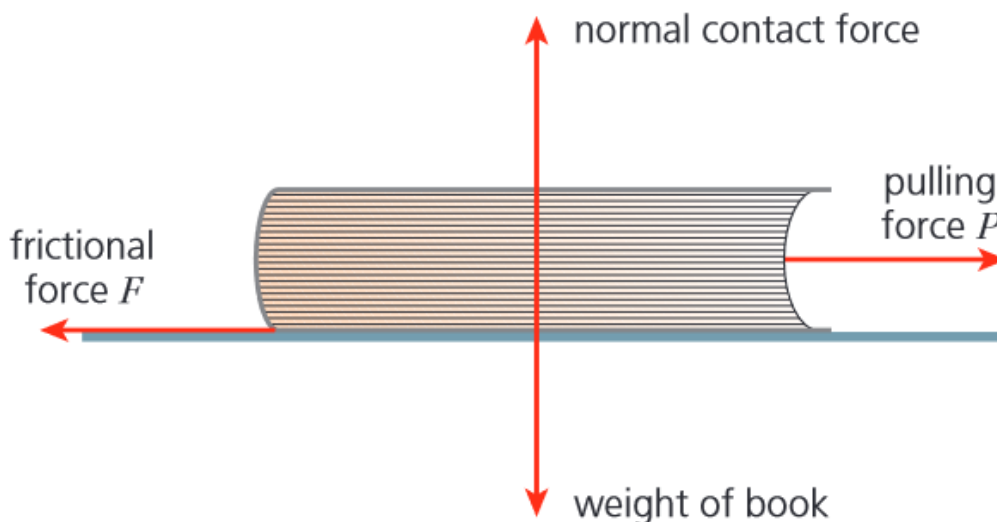


# Non-uniform motion

At the contact point of 2 objects, there is a friction point. Friction is a force which acts in the opposite direction as the forward force.

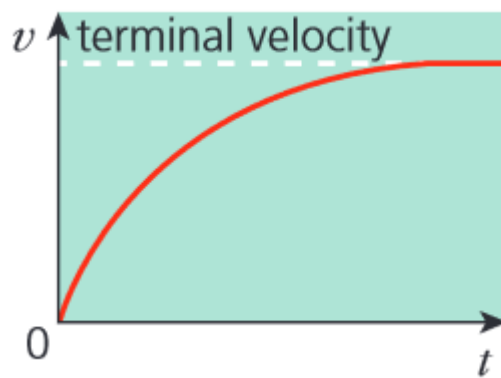
- If the forward force is greater than the friction, it accelerates forward.
- If the forward force is equal to the friction, it moves at a constant velocity.



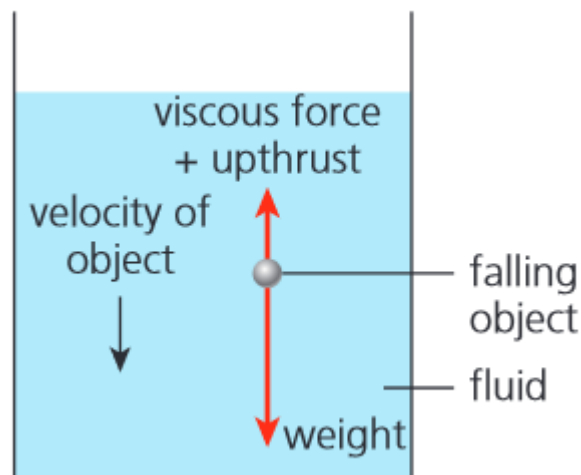
In fluids, this is called **viscous force** or **drag force**.

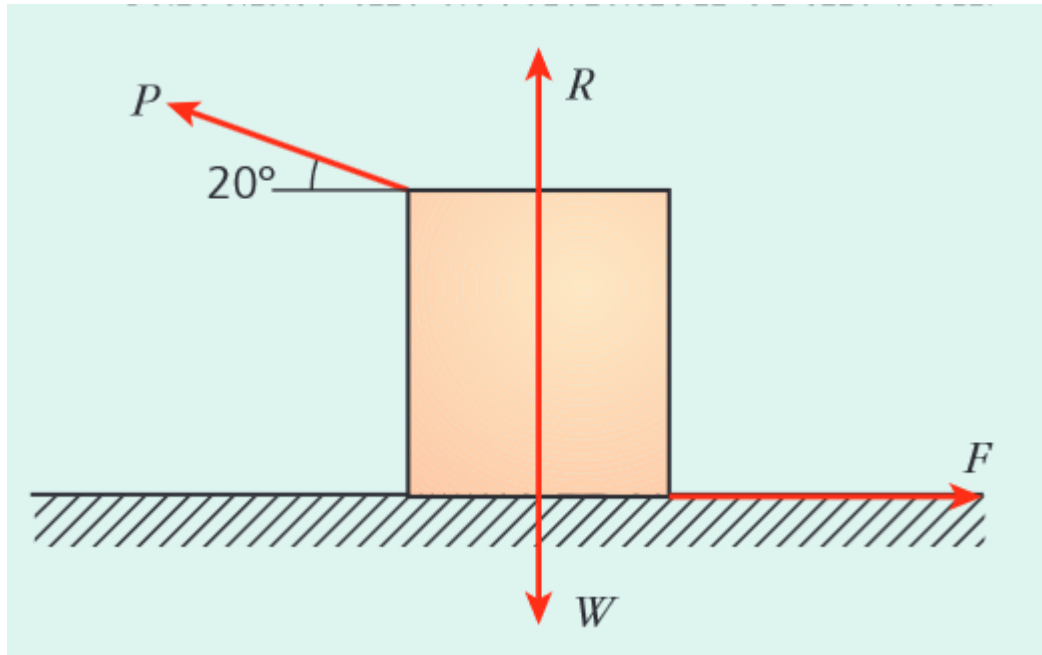
The amount of viscous force depends on the viscosity of the fluid. Fluids like glue have higher viscous force because it is more viscous.

Eventually, an object falling through a fluid will reach a **terminal velocity** and stop accelerating. This is achieved when the viscous force or drag force is equal to the weight of the object.



Objects also experience **upthrust or buoyancy force** because of the fluid pressure acting on it. The upthrust in air is negligible because it is very small. But in fluids like oil or glycerine, the upthrust is not negligible, so the terminal force is only achieved when **upthrust + drag force = weight**.





In problems like these, the forward force is **not**  $P$ . The forward force is  $P \cos \theta$