Drag force (air resistance)

Drag force occurs when a body moves through a fluid. The particles of the fluid exert a force on the surface of the body, opposing its motion. It is also called fluid resistance.
Drug force depends on the
- density of fluid
- Objects
- Nature of surface

turbulence is ignored, hence we only consider the drag force from a smooth spherical object with small radius travelling at a relatively small velocity inside the fluid.

Viscosity
- Fluid resistance to flow

Unit: Pa
Pa s = (Kg m^-1 s^-1)

Greater viscosity increases the drag force experienced by the moving object.

Stoke law

$$F_d = 6\pi\eta r v$$

Where F_d = viscous drag force (N)

η = viscosity (Pa s)

r = radius (m)

v = velocity (m s^{-1})

Radius: for object
Velocity: for object

In fluid -
downward force weight
Up force Buoyancy and drag force
Fw = Fd +Fb   (in constant speed)
Therefore: mg = 6πnrv + pVg
Mg bigger, sink
Fb + Fd bigger, float