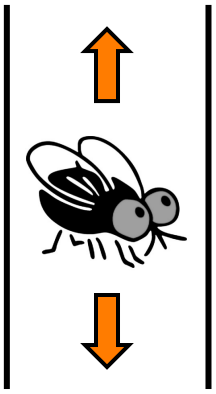

# *Fly in the Ointment*

| | |
|---|---|
| ***Aim*** | To determine the density of a 'fly' by timing its descent through a viscous liquid. |
| ***Materials*** | 1 liquid-filled cylinder of diameter 4 cm<br>2 rubber bands 1 stopwatch |
| ***Method*** | Drop the 'fly' into the liquid and time how long it takes to fall a known distance. Use this to determine the density (see over). |
| ***Conditions*** | Assume a spherical fly with uniform density. |
| ***Time Limit*** | 25 minutes |
| ***Ranking*** | The ranking order will be determined by the difference between the calculated density and the known density. |

***Team*** ***Result***

***Do not write below this line***

***Rank***

**Stokes' Law**

$$\eta = \frac{2gr^2}{9v}(\rho - \sigma)$$

| | | |
|---|---|---|
| $\eta$ | = viscosity of fluid | = 0.236 kg/ m・s |
| $g$ | = acceleration due to gravity | = 9.81 m/s$^2$ |
| $r$ | = radius of 'fly' | = 2.025 mm |
| $v$ | = velocity | |
| $\rho$ | = density of 'fly' | = ????? |
| $\sigma$ | = density of fluid | = 1.25 g/cm$^3$ |