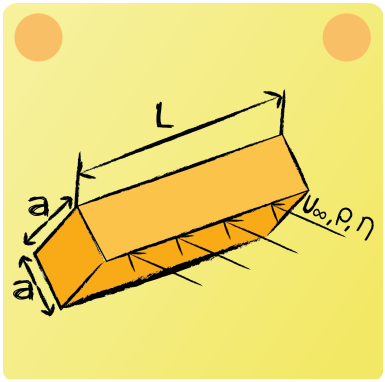
Lecture 6 Question 2.3

Give an expression for the Reynolds number Re, for transverse flow around a rhombus.



From Pythagoras it yields that:

$$a^2 = \left(\frac{1}{2}d\right)^2 + \left(\frac{1}{2}d\right)^2$$

$$\Rightarrow d = \sqrt{2}a$$

The characteristic length in this case is $d = \sqrt{2}a$, thus:

$$\mathrm{Re_d} = \frac{u_\infty \cdot \rho \cdot d}{\eta} = \frac{u_\infty \cdot \rho \cdot \sqrt{2}a}{\eta}$$