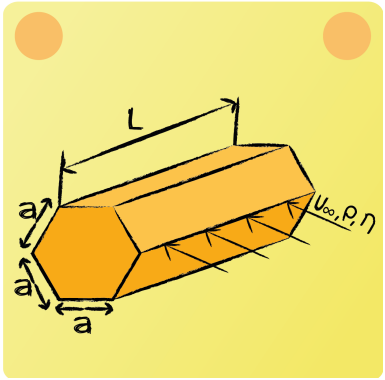
Lecture 6 Question 2.4

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



From trigonometry it yields that:

$$\sin(60^\circ) = \frac{d/2}{a}$$

$$\Rightarrow d = \sqrt{3}a$$

The characteristic length in this case is $d = \sqrt{3}a$, thus:

$$\mathrm{Re_d} = \frac{u_\infty \cdot \rho \cdot d}{\eta} = \frac{u_\infty \cdot \rho \cdot \sqrt{3}a}{\eta}$$