May 6th

Prove the area of a regular hexagon with side length x, is given by

$$\text{Area} = \frac{3}{2}\sqrt{3}\,x^2$$

A hexagon is made from 6 identical equilateral triangles, side length x.

The area of a triangle = ½ ab sin C

In this case area = ½ x^2 sin 60°

Therefore total area = 6 x ½ x^2 sin 60°

= $3x^2 \times \sqrt{3}/2$

= $\frac{3}{2}\sqrt{3}\,x^2$

As required