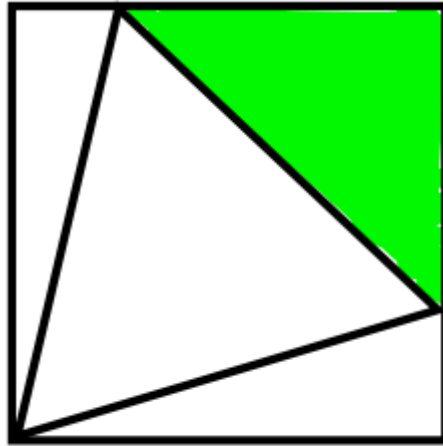


December 28th

An equilateral triangle is inscribed in a square below.

What is the ratio of the area of the equilateral triangle to the area of the shaded triangle?



If the length of the equilateral triangle is y

Then the area of the equilateral triangle =

$$\frac{1}{2} \times y \times y \times \sin 60 = \frac{y^2 \sqrt{3}}{4}$$

The height and base of the shaded triangle =

$$y \times \sin 45 = \frac{y\sqrt{2}}{2}$$

Therefore the area of the shaded area =

$$\frac{1}{2} \times \frac{y\sqrt{2}}{2} \times \frac{y\sqrt{2}}{2} = \frac{y^2}{4}$$

Hence ratio of equilateral to shaded triangle areas is

$$\sqrt{3}: 1$$