

- A rectangle's longer side is 1. Find the exact value of the shorter side if the following is true. The ratio of the shorter side to the longer side is the same as the ratio of the longer side to the sum of the longer and shorter sides.
- Find the exact value of each of the following expressions if $x = 2$, $y = \sqrt{3}$, and $z = 0.2011$
 - $\frac{1}{(x-y)(x-z)} + \frac{1}{(z-x)(z-y)} + \frac{1}{(y-x)(y-z)}$
 - $\frac{1}{x(x+z)} + \frac{1}{z(x+z)} + \frac{1}{x(x-z)} + \frac{1}{z(z-x)}$
- Consider the triangle shown on the picture below. It is an isosceles triangle with base angles 72° . Find the exact value of x , the length of the longer side if the shorter side is 1. Hint: bisect the base angle as shown on the picture below and use similar triangles.
After that, compute the exact value of $\sin 18^\circ$.

