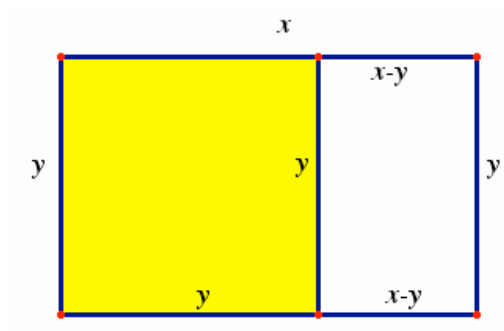## The Golden Number in Geometry

Problem I : in a rectangle of sides x (length) and y (width) we want to divide it such that the square inscribed in the rectangle determines a new rectangle of which the sides are in the same ratio.

1) Find what should be the value of the ratio $r = x/y$ such that :

$$r = \frac{x}{y} = \frac{y}{x-y}$$

2) Find a way to build such a rectangle with a compass and a ruler.

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Problem II : in an isosceles triangle of sides x (length) and y (width) we want to divide it such that the isosceles triangle inscribed in the triangle determines a new isosceles triangle of which the sides are in the same ratio.

1) Find what should be the value of the ratio $r = x/y$ such that :

$$r = \frac{x}{y} = \frac{y}{x - y}$$

2) Find a way to build such a triangle with a compass and a ruler.