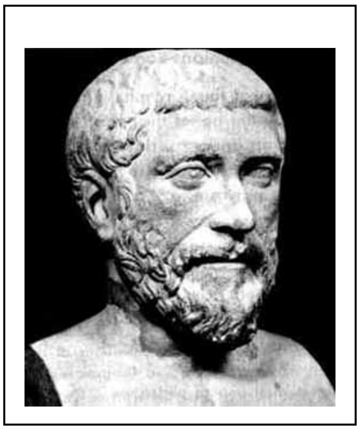

# *Cutting into pieces and Pythagorean theorem*

**1.** Is it possible to cut an 8x8 square into pieces, such that we can assemble them into a 5x13 rectangle?

**2.** a) Cut two equal squares into equal triangles such that we can assemble them into one big square.
b) Find the size of the final square if the initial squares were of size 1x1.

**3.** Cut a 7x7 squares into
a) a 4x4 square, a 3x3 square, and four equal right triangles.
b) one square and four right triangles equal to triangles in (a)
c) find the size of the square in (b)

**4.** Given 4 right triangles with two legs $a$, $b$ and hypotenuse $c$. Show that we can make a square with side $a+b$ if we add to them
a) one square with side $c$ or
b) two squares with sides $a$ and $b$,

**5.** (Pythagorean theorem) For a right triangle with legs $a$, $b$ and hypotenuse $c$ the equality $a^2 + b^2 = c^2$ holds.

**6.** Cut a square into pieces and assemble a right triangle.

**7.** a) Cut a square into equal smaller squares and assemble them into two different squares.
b) Cut a square into equal triangles and assemble them into two different squares.

**8.** Cut a square into pieces and assemble them into 8 equal squares.

**9.** Cut a 5-box cross into pieces and assemble them into a square.

**10.** Cut a square into pieces and assemble them into
a) three squares
b) three different squares.

**11.** Cut a square into pieces and assemble them into 5 equal squares.

**12.** Cut a square into equal parts. Assemble them into three different squares.

**13.** Every matchstick is 1 inch long. Make one figure of the area 4 sq. inches using 12 matchsticks.

**14.** Cut a square into pieces and assemble them into three equal smaller squares.

**15.** Let $a^2 + b^2 = c^2$. Cut a square with side c and assemble two new squares with sides a and b.