2
2
1
2
2

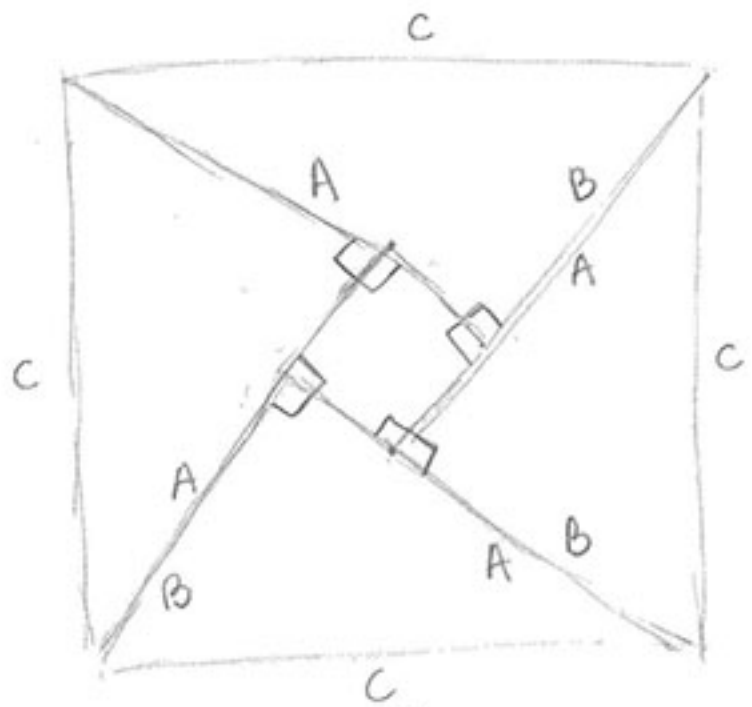
9/10

Pythagorean Theorem Write Up
Due October 11, 2013

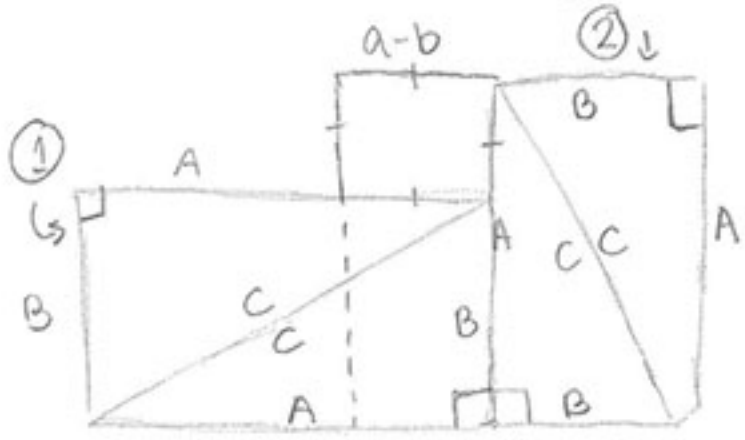
Conjecture: In a right triangle with sides *a* and *b* and a hypotenuse of *c*

$a^2 + b^2 = c^2$.

Proof:



This figure represents c^2 because all the outside side lengths are equal to c therefore it is c by c or c^2. You know the middle piece is a square because it has equal sides and equal angles. The sides of the inner square are all the length of a-b. All the angles in the square are equal to 90° because we know a straight line is equal to 180° and the angle from the right triangle is 90° so 180 - 90 = 90°.



Using the same 5 pieces you can arrange them to form two seperate squares. Square 1 represents B^2. The two vertical sides clearly are the length of b and the horizontal lengths are a-(a-b) and the a's cancel out leaving you with a value of just b. Since the square is b by b, it is b^2. Square 2 represents A^2, the horizontal sides of the square are clearly labeled a and the horizontal sides of the squares are b+(a-b) allowing the bs to cancel out so that the side is equal to a. Since the square is a by a the area of the square is a^2. Using the same 5 pieces you have a total of c^2 or the sum of a^2 and b^2 proving the Pythagorean theorem to be true.