Overlapping Squares

(Martin Gardner)

A square with side of 5 inches overlaps a square with side of 6 inches in such a way that its corner A is placed exactly at the center of the small square. What is the area of overlap of the two squares?



It may seem that you do not have enough information but you do. Cut out the squares and place the corner of the small square at the center of the larger square. Rotate the blue square around Point A and see if you can find what the area of overlap of the two squares is.

Solution:

The yellow square is 6 in by 6 inches. Its total area is 36 square inches. The blue square will always overlap 1 /4 th of the area of the yellow square. The area of overlap of the blue square on the yellow square will always be 9 square inches.

Why?

If you start at the position shown below the blue square will overlaps 1 /4 th of the area of the yellow square.





As the blue square is rotated with it's corner staying at point A the overlapping area aded at the top of the blue square will always be exactly equal to the areas lost at the lower left.

