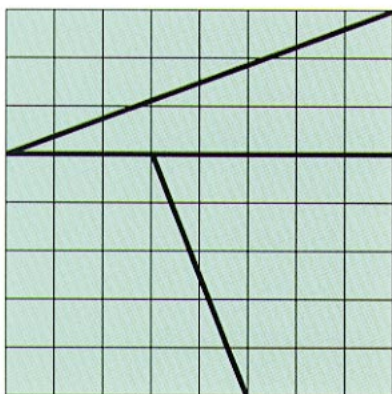


The Extra Square

Problem-of-the-Week

The Problem

The square at the left is cut into four pieces as shown. The pieces are then rearranged to make the rectangle at the right. Why does the rectangle have one more square unit than the square from which it is made?



Strategies and Hints

1. How many square units are in the square on the left? in the rectangle on the right?
2. Are the four pieces that make up each figure identical?
3. Use a sharp pencil and graph paper with fairly large squares. Copy the square on the left, cut it into four pieces, and then arrange the pieces to form the rectangle. Can you find the trick?
4. The “extra square” paradox seems to show that $8^2 + 1 = 5 \times 13$, although this equation is false. Draw the same types of figures to get a result that appears to show that $5^2 + 1 = 3 \times 8$.