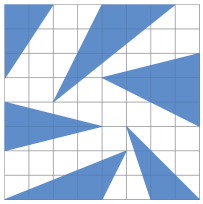


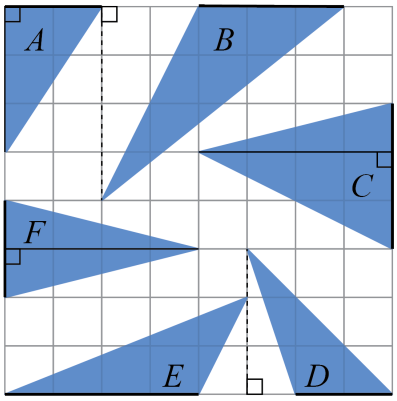
Problem of the Week
Problem C and Solution
Tile Art

Problem

A tile measuring 8 cm by 8 cm has gridlines drawn on it, parallel to each side and spaced 1 cm apart. Six blue triangles are then painted on the tile, as shown. What fraction of the tile is painted blue?

Solution

We will start by determining the areas of the six painted triangles. We label the triangles A, B, C, D, E, and F and draw in a height and a base for each triangle.



We will calculate the area of each triangle using the formula for the area of a triangle:

$$\text{area} = \frac{\text{base} \times \text{height}}{2}$$

Triangle A has base 2 cm and height 3 cm. The area of triangle A is then $\frac{2\times3}{2} = \frac{6}{2} = 3$ cm^2.

Triangle B has base 3 cm and height 4 cm. The area of triangle B is then $\frac{3\times4}{2} = \frac{12}{2} = 6$ cm^2.

Triangle C has base 3 cm and height 4 cm. The area of triangle C is then $\frac{3\times4}{2} = \frac{12}{2} = 6$ cm^2.

Triangle D has base 2 cm and height 3 cm. The area of triangle D is then $\frac{2\times3}{2} = \frac{6}{2} = 3$ cm^2.

Triangle E has base 4 cm and height 2 cm. The area of triangle E is then $\frac{4\times2}{2} = \frac{8}{2} = 4$ cm^2.

Triangle F has base 2 cm and height 4 cm. The area of triangle F is then $\frac{2\times4}{2} = \frac{8}{2} = 4$ cm^2.

The total area painted blue is then $3 + 6 + 6 + 3 + 4 + 4 = 26$ cm^2.

The area of the entire tile is $8 \times 8 = 64$ cm^2.

Thus, $\frac{26}{64} = \frac{13}{32}$ of the tile is painted blue.