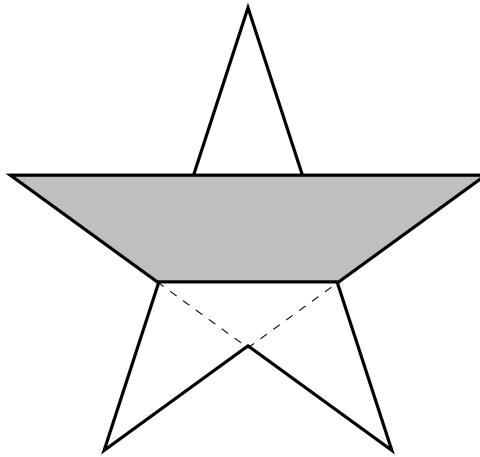


Monthly Maths Circle India Challenge

Due Date: 29 February 2024

Problem 1. Anita and Bindu collaborated to create a festive cake arrangement. Anita contributed four cakes, each an isosceles triangle, while Bindu baked a single large cake shaped like a trapezium. When they assembled the cakes at the party, a delightful surprise awaited them - the arrangement formed a regular five-pointed star, as in the picture below.



A regular pentagonal star is created by connecting alternate vertices of a regular pentagon.

Now comes the time to split the cost. Bindu claims that the total area of Anita's four triangular cakes equals the single large trapezium cake. Anita argues that the combined area of her cakes might be larger. Can you help them split the cost?

Problem 2. Construct a square on a square grid with an area five times that of a single square on the grid using only a straight edge and a pen or pencil.

