



Problem of the Week

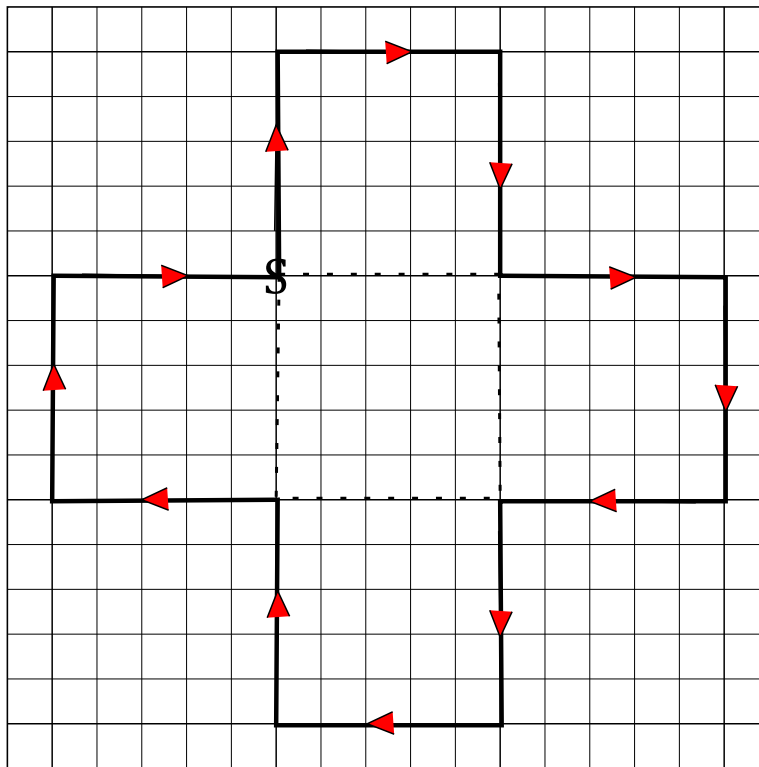
Problem B and Solution

Crossing Paths

Problem

Red and Justin are planning a countryside ride on their ATV. They will follow this pattern: drive five kilometres and turn right; drive five kilometres and turn right; drive five kilometres and turn left. Keep repeating these three steps until they return to their starting point.

- On the grid below, the side of each square is one kilometre. Map out the boys' route, starting from the point **S** in the direction shown. Then determine how far they will have travelled when they get back to **S**.
- What is the name of the shape enclosed by their route?
- What is the area of this shape?



Solution

- The boys' route is shown on the above grid as a solid line, with arrows indicating the directions travelled. Since each line segment has length 5 km, the total distance they travelled is $12 \times 5 = 60$ km.
- The 12-sided geometric shape enclosed by their route is called an *irregular dodecagon*.
- The dashed lines on the grid show that this shape consists of 5 squares, each with side length 5 km. Thus the total area enclosed is $5 \times (5 \times 5) = 125$ km².

