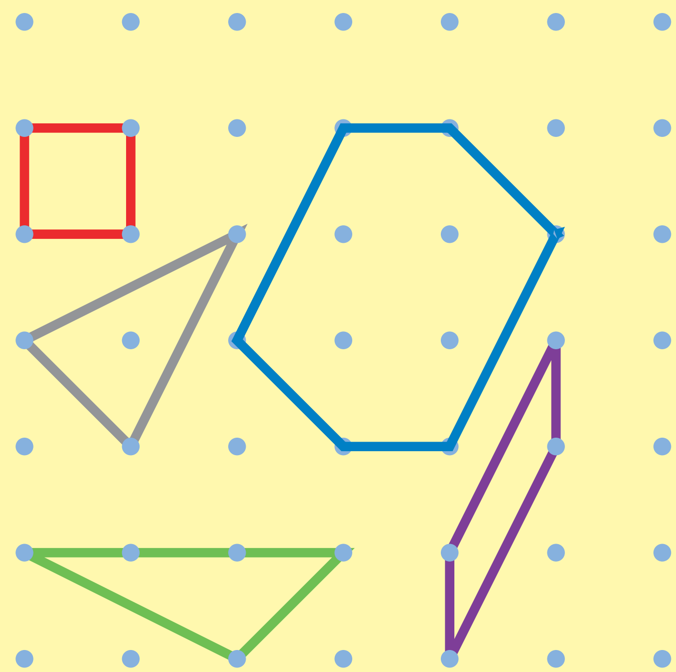
Pick's theorem

Deduction

When the dots on square dotty paper are joined by straight lines, the resulting figures have dots on their perimeter (p) and often internal (i) ones as well.
As such each figure can be described according to its (p, i).
For example, the square has a (p, i) of (4, 0),
the isosceles triangle (3, 1),
the scalene triangle (5, 0)
and the hexagon (6, 4).



How many different figures can be described as (4, 0)?
What do you notice about the areas of these (4, 0) figures?

Each figure you produce will always enclose an area (A) of the square dotty paper.
The examples in the diagram have areas of 1, $1\frac{1}{2}$ and 6 square units.
Which diagrams have each of the areas?

Draw more figures; tabulate the information about their perimeter points (p), interior points (i) and their areas (A).
Can you find a relationship between all three variables (p, i and A)?

Pick's theorem: finding the area of a polygon

Resource sheet