

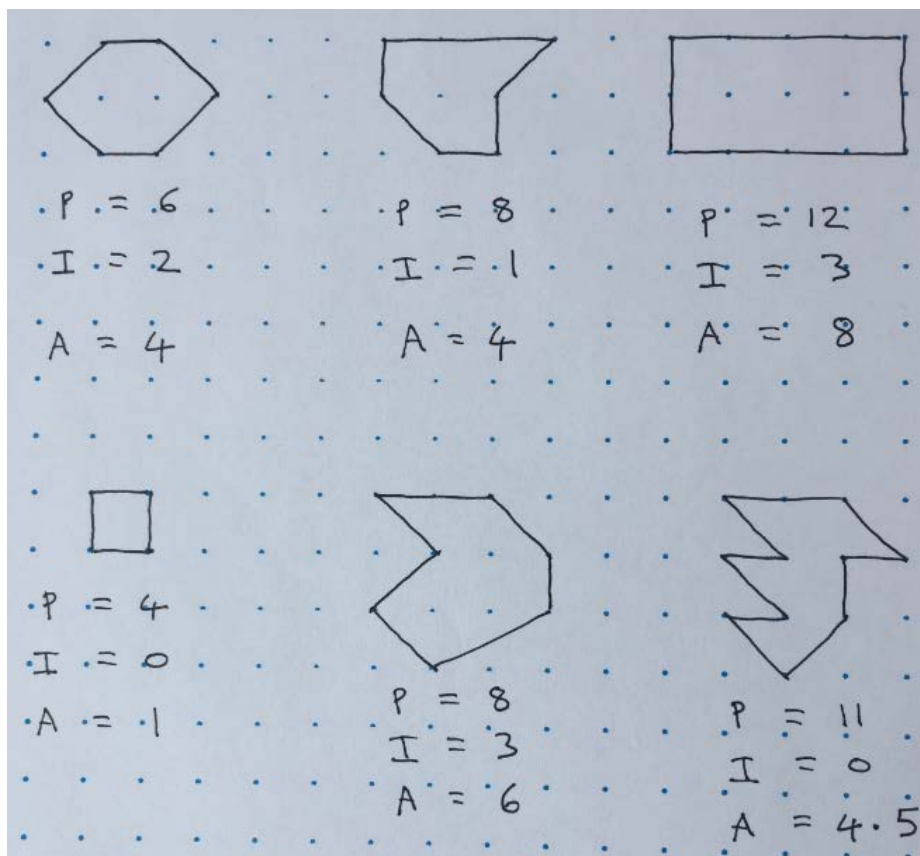
PICK'S THEOREM

Take a piece of square dotted paper and draw a closed shape with straight sides on it. The vertices (corners) of this shape have to be at one of the dots on the paper. Some examples appear below.

Count how many dots your shape passes through. These are called perimeter points (P)

Count how many dots lie inside your shape. These are called interior points (I).

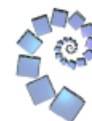
Find the area (A) of your shape by counting how many squares it covers.



Draw some more shapes and find P, I and A for each one. The numbers P, I and A are related by a very simple formula. Can you find out what it is? If you find it, you will be able to get the areas of certain very complicated shapes just by counting the perimeter points and interior points.

There is a poster on the reverse of this sheet that gives you more information. The formula is called Pick's theorem. Georg Pick (1859-1942) was a Jewish-Austrian mathematician. Go on the Internet and find out what you can about him.

Pick's Theorem



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.

Each figure can be described as (p,i) .

How many different figures can be described as $(4,0)$?

Each figure always encloses an area (A).

Draw more figures: tabulate the information about their perimeter points (p), interior points (i) and areas (A).

Can you find a relationship between all these three variables (p, i, A)?

