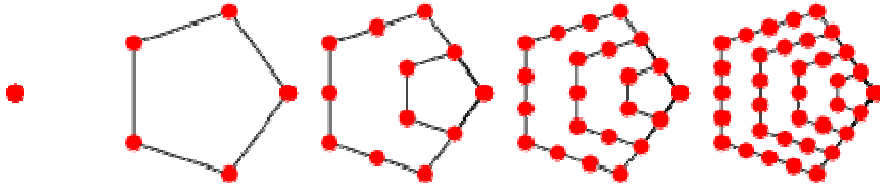


2.E. Polygonal numbers

The Pythagoreans were interested in certain geometrically determined sequences of numbers called polygonal numbers, and the first few cases (*triangular* and *square* numbers) are mentioned on page 95 of Burton. Pentagonal numbers are also mentioned; their definition is suggested by the following picture.



(Source: <http://mathworld.wolfram.com/PentagonalNumber.html>)

As in the case of triangular and square numbers, if one knows the n^{th} pentagonal number p_n then the next one is given recursively in terms of p_n . One of the exercises for this unit is to find the recursive formula and to derive a closed formula for p_n as an explicit function of n .

Clearly one can proceed indefinitely, starting with hexagonal numbers. The following online references contain further information on this topic:

http://en.wikipedia.org/wiki/Polygonal_number

<http://mathworld.wolfram.com/PolygonalNumber.html>