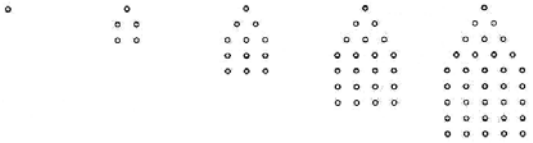
Functions

1 RECTANGULAR NUMBERS

Find a formula for the rectangular numbers. Then find the number of dots in the 73rd figure.

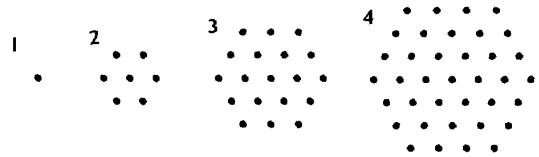
2 PENTAGONAL NUMBERS

Find a formula for the pentagonal numbers. Then find the number of dots in the 55th figure



3 HEXAGONAL NUMBERS

Find a formula for the hexagonal numbers. Then find the number of dots in the 87th figure.



4 DIAGONALS

How many diagonals are there in a polygon with *n* sides?

5 GREAT PYRAMID OF ORANGES

A very bored grocer was stacking oranges one day. She decided to stack them in a triangular pyramid. She put one orange in the top layer. three oranges in the second layer, six oranges in the third layer, and so on. Each layer except the top formed an equilateral triangle. How many oranges would it take to build such a pyramid 50 layers high?

6 WRITE YOUR OWN

Create your own pattern that can be solved with finite differences. Start with the equation that you are going to use and then create the chart. If you feel ambitious, try creating a situation that will give you the numbers in your chart, like the situation in the Great Pyramid of Oranges problem in this problem set.

7 SUM OF CUBES

What is the sum of the first 100 cubes?

From *How to Solve It* by George Pólya.