Tetrahedrons

The tetrahedrons at the pictures are made of magnetic sticks and iron balls.

Figure 1

Figure 1 shows one single tetrahedron, size 1.

Four single tetrahedrons are put together to a larger tetrahedron of size 2
as shown in figure 2.

Figure 2

A tetrahedron of size 3 is made of four tetrahedrons of size 2.

A tetrahedron of size 4 is made of four tetrahedrons of size 3.

… and so on …

Investigate the number of sticks and iron balls.

You should investigate

    a) the number of iron balls required for each figure
    b) the number of sticks required for each figure

Find a relation between the figure number and both the number of iron balls needed for the tetrahedron (a) and the number of sticks needed for the whole figure (b).

    1. Solve the problem in different ways.
    2. Compare and contrast the different solutions. What is the same? What is different?

A   SUBJECT REPORT

The whole class should work on the problem and make a joint subject report which offers a thorough explanation of how the class has worked with the questions and what results you have reached.

B   EXHIBITION

The figure you have investigated is an example of a fractal. Fractals can be of both two and tree dimensions. Read more about fractals and create two different fractals. Make a colorful presentation of your work in such a way that the visitors will be informed about how the fractal is structured.

C   PRESENTATION

Make a presentation where the audience will get an insight into the inquiry based work, in such a way that it can awaken the interest of other young people.

Note
Thetraedrons can be made by different materials, for example wooden sticks and Styrofoam balls.