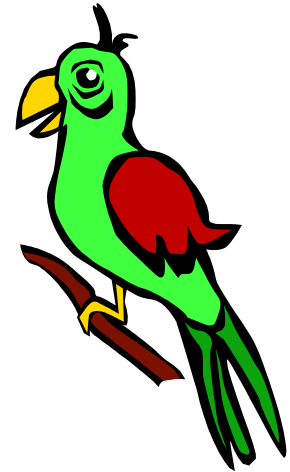


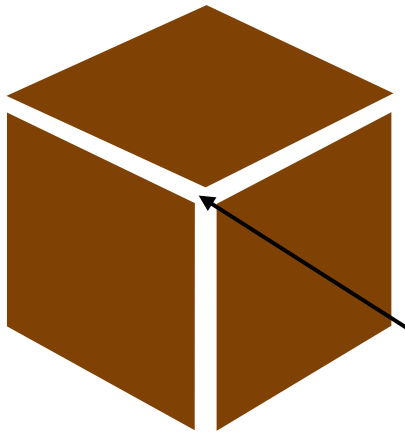
PRETTY POLYHEDRA (1)



A polyhedron is a solid figure - which will obviously have a number of faces.

In a regular polyhedron all the faces are the same shape.

There are only 5 regular polyhedra. *(NB: more than one "polyhedron" are called "polyhedra" – it's from the Greek language)* These are known as the Platonic solids – named after Plato, a Greek philosopher and mathematician.



The regular polyhedron with which we are most familiar is the CUBE.

This has 6 faces – each of which is a SQUARE.

(A CUBE could be called a HEXAHEDRON – because HEX = 6 and a cube has 6 faces.)

If you look at each "pointy-corner" (officially called a VERTEX), you can see that 3 SQUARES join together at each VERTEX.

How many VERTICES are there in a CUBE? *(You guessed it – more than one VERTEX are known as VERTICES – although you can also use VERTEXES.)*

How many edges has a CUBE got? Each SQUARE face has 4 edges and there are 6 faces – but remember that some of the edges are "shared".

Complete the following summary.

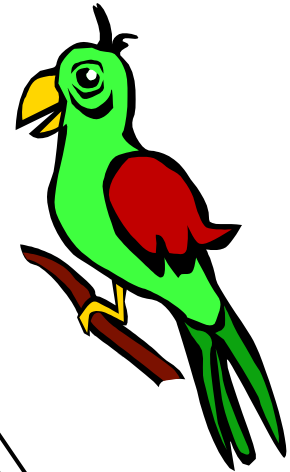
Name of solid	Number of faces	Shape of face	Number of vertices	Number of faces at each vertex	Number of edges
CUBE		SQUARE			

Using card, make a CUBE.

You could cut out 6 separate squares – or make a net.
(NB: It will help to glue your net into a cube if you leave some tabs on.)

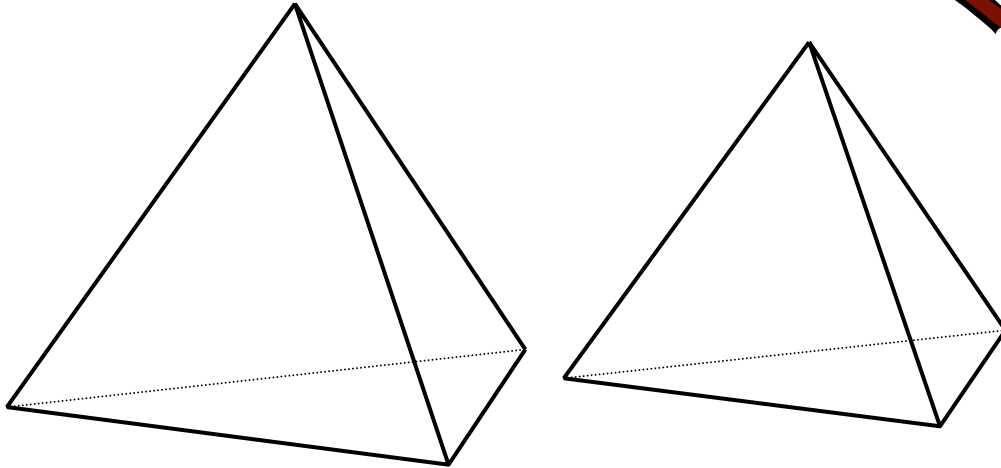
The CUBE is the only polyhedron made up of SQUARE faces.

PRETTY POLYHEDRA (2)



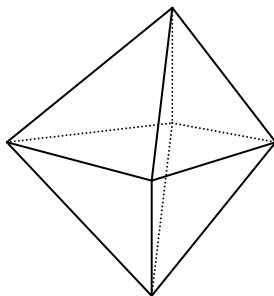
There are 3 polyhedra made up of TRIANGULAR faces.
 (NB: The triangles are equilateral triangles – that means all the edges of the triangle are the same length.)

A TETRAHEDRON has 3 equilateral TRIANGLES meeting at each VERTEX.



Make a TETRAHEDRON and use it to complete the following summary.

Name of solid	Number of faces	Shape of face	Number of vertices	Number of faces at each vertex	Number of edges
TETRAHEDRON		TRIANGLE			



An OCTAHEDRON has 4 equilateral TRIANGLES meeting at each VERTEX.

From the name, OCTAHEDRON, can you tell how many faces the solid has? (Check with the diagram. Dotted lines show hidden edges.)

Try to make an OCTAHEDRON and use it to complete the following summary.

Name of solid	Number of faces	Shape of face	Number of vertices	Number of faces at each vertex	Number of edges
OCTAHEDRON		TRIANGLE			

PRETTY POLYHEDRA (3)

An ICOSAHEDRON has 5 equilateral TRIANGLES meeting at each VERTEX.

This is quite complicated to make – as you will need 20 faces – but it is not impossible – and it is a lot of fun.

Try to make an ICOSAHEDRON and use it to complete the summary.



Name of solid	Number of faces	Shape of face	Number of vertices	Number of faces at each vertex	Number of edges
ICOSAHEDRON	20	TRIANGLE			

Designing the net for the icosahedron is a VERY tricky business – but it is not too difficult to make one from 20 separate triangles.

PRETTY POLYHEDRA (4)

The remaining polyhedron is a DODECAHEDRON.

Each of its 12 faces is a regular PENTAGON (*5-sided figure*)



Name of solid	Number of faces	Shape of face	Number of vertices	Number of faces at each vertex	Number of edges
DODECAHEDRON	12	PENTAGON			

Transfer your findings onto the summary chart below.

REGULAR POLYHEDRA SUMMARY CHART					
Name of solid	Number of faces	Shape of face	Number of vertices	Number of faces at each vertex	Number of edges
TETRAHEDRON					
CUBE					
OCTAHEDRON					
DODECAHEDRON					
ICOSAHEDRON					

Can you find any interesting facts about the relationships between numbers?

Can you explain these?