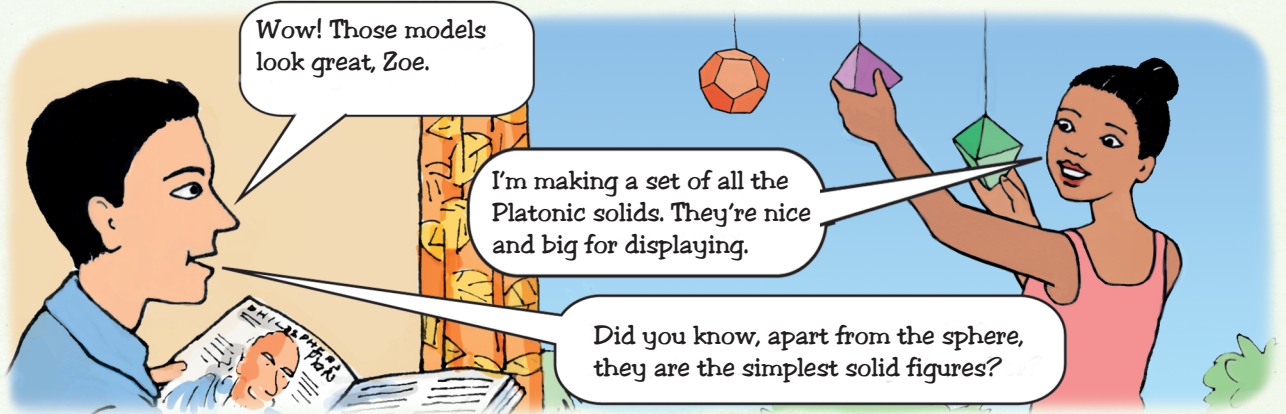
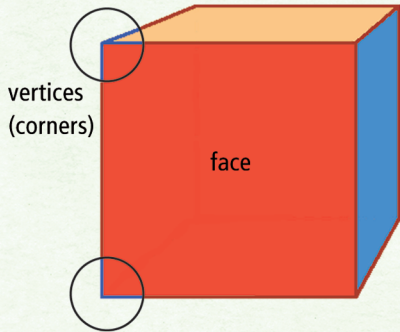


Plato's Polyhedra

Making the Platonic solids from their nets.



Hexahedron (cube)

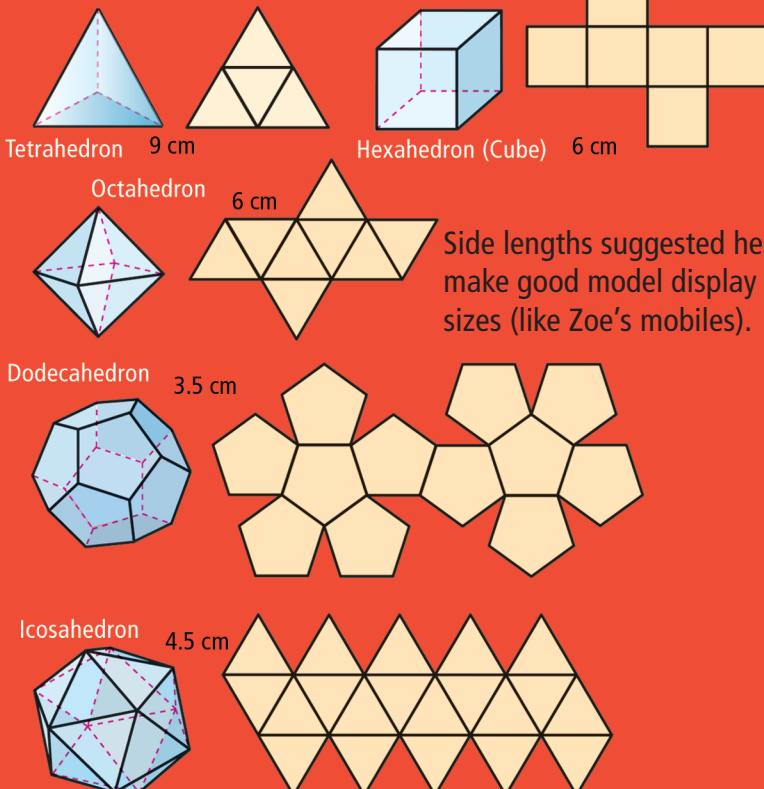


Those compact Platonic solids look really handy. You can keep them on your desktop, and handle them easily.

Thanks! Actually it was pretty straight forward using the Mathomat. I made them all in one session.

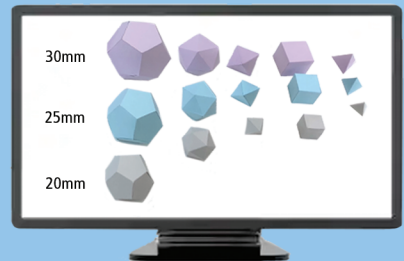
Show off!

Platonic solids



Side lengths suggested here make good model display sizes (like Zoe's mobiles).

The Platonic solids are made up of a single type of regular polygon face. Unlike the Archimedean solids which have two or more regular polygon faces. Each solid has the same pattern of faces at each vertex.



You can make models like Zoe's by enlarging Mathomat regular polygons using face making methods 2 – 4, or like Zac's by tracing then direct from Mathomat using face making method 1.

The Platonic solids

Designers, such as architects and engineers have throughout the ages used the simplicity of the Platonic solids in their designs.






$$v + f - e = 2$$

This describes the fact that for the Platonic solids the number of vertices plus the number of faces, minus the number of edges, always equals 2. Complete the 3rd column in the table.



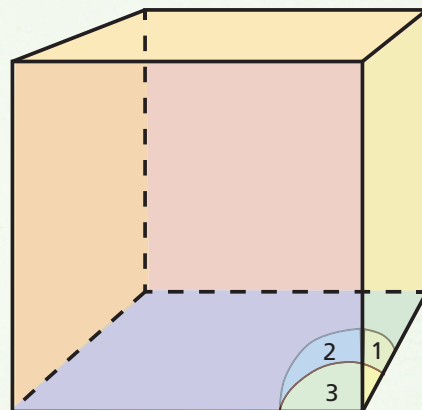
A cube has three squares meeting at each vertex, so we can give it a code of 4, 4, 4 or 4^3 .

Look at the set of five Platonic solids that Zoe created on the previous page, or which you have made, then fill in the right hand column in the table above with the code name for each model.

Face shape	Solid	$v + f - e = 2$	Code
	 Tetrahedron	+ - =	
square	 Hexahedron	$8 + 6 - 12 = 2$	4,4,4 or 4^3
	 Octahedron	+ - =	
	 Dodecahedron	+ - =	
	 Icosahedron	+ - =	

Coding our models

Because the Platonic and Archimedean solids have the same pattern at each vertex we can use a coding system to name each model. One coding method is to list the faces with a common vertex using the number of sides for each regular polygon face and arranging them in the order that they appear in.



Why study the Platonic and Archimedean solids?

- Build knowledge of ideas in geometry
- Foster appreciation of the historical role of geometry
- Help create a link between your Mathomat activities in this manual and the mathematics curriculum

Find more model making methods and great solids to make (activities 6.4 and 6.5), to print out in **MAC**.