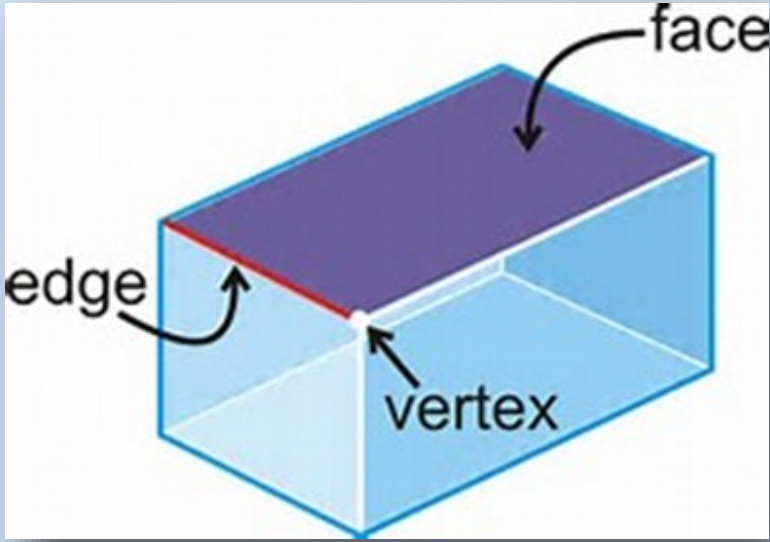


Construction with Polyhedrons

In nature and in architecture, simple shapes like triangles, squares, or octagons can be put together to create strong, stable structures. Shapes, or “Faces” will fit together along their “Edges” and “Vertices”. Regular Polyhedrons (also called *Platonic Solids*) have sides that are all the same shape and size; and are described by their number of faces, edges, and vertices.



Challenge!

Can you build a structure with 12 edges but only 6 vertices? How many faces will it have?









Try making the structure with craft sticks and glue, or straws and string, or even pipe cleaners!

The Math

Convex, regular polyhedrons are solids that use the same shape over and over, and don't have any dents in their structure. They also follow a pattern described by Swiss mathematician Leonhard Euler:

Euler's formula is $V-E+F=2$

The number of vertices, minus the number of edges, plus the number of faces, will always equal 2!

the Platonic solids				
				
	The Platonic solids have faces made from regular polygons.			
Platonic solids	Name	Faces	Edges	Vertices
	tetrahedron	4	6	4
	octahedron	8	12	6
	icosahedron	20	30	12
	cube	6	12	8
	dodecahedron	12	30	20

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Look Closely

People have been building with polyhedrons for thousands of years because of their strength and stability. Think about pyramids, columns, skyscrapers... those all use polyhedrons! Can you find polyhedrons in the picture here?

