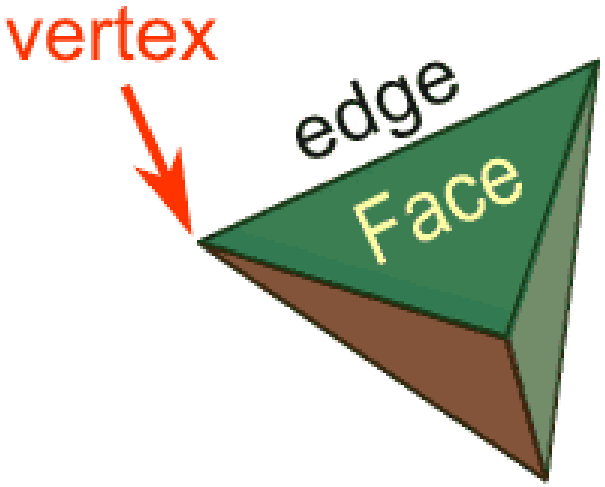
N 4

Solid Geometry

POLYHEDRONS

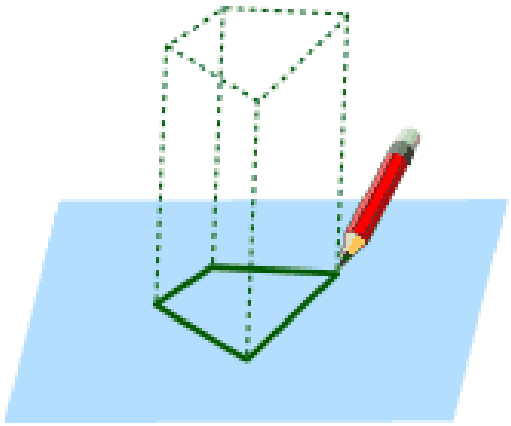
A **polyhedron** is a solid with flat faces.

(from Greek poly- meaning "many" and -edron meaning "face").



Prisms

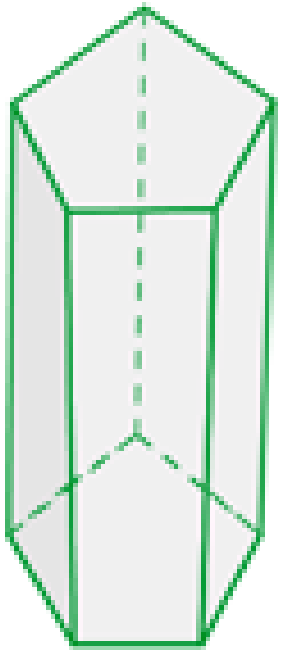
A prism is a polyhedron with an n-sided polygonal base, a translated copy, and n other faces joining corresponding sides of the two bases.



Types of prisms

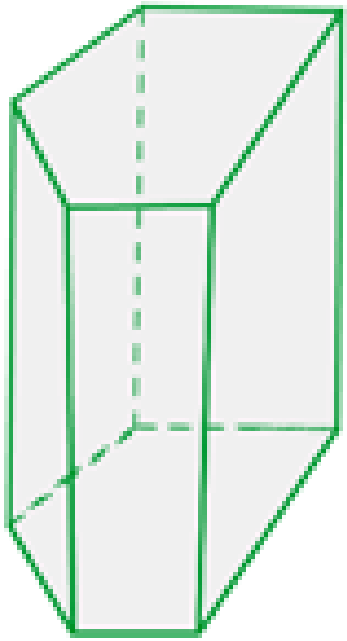
Regular Prisms

The bases of the regular prisms are regular polygons.



Irregular Prisms

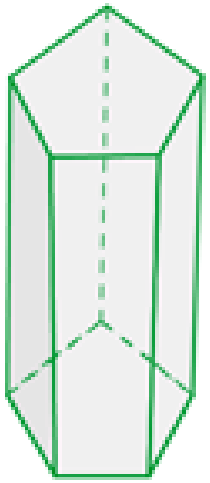
The bases of the irregular prisms are irregular polygons.



Types of prisms

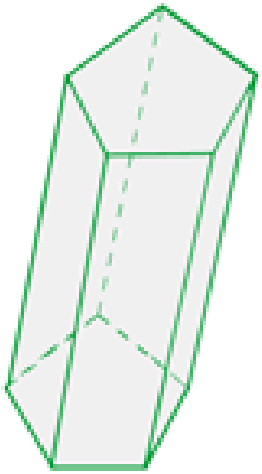
Right Prisms

The joining edges and faces are perpendicular to the base faces.



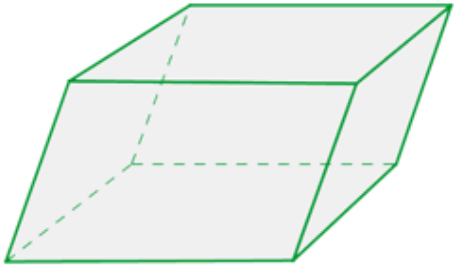
Oblique Prisms

The joining edges and faces are not perpendicular to the base faces.



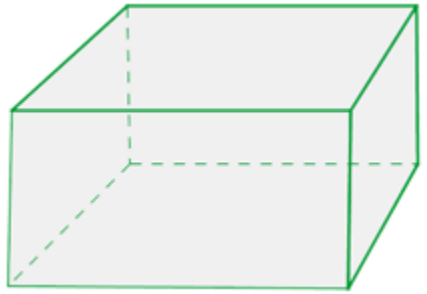
Parallelepipeds

The bases of parallelepiped prisms are parallelograms.



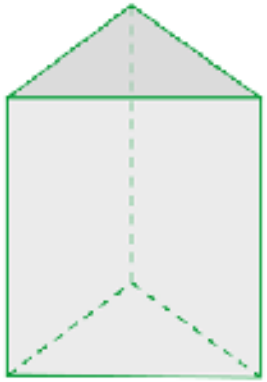
Cuboid

The faces of **cuboids** are rectangular faces.

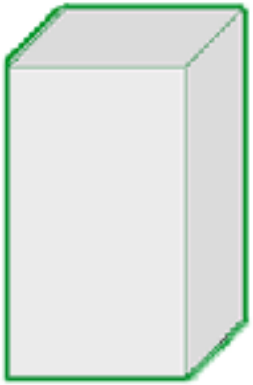


Types of Prisms by Their Base

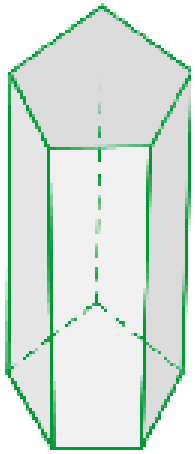
Triangular Prism



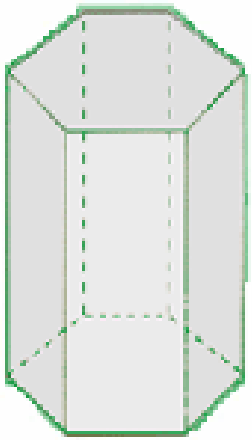
Quadrangular Prism



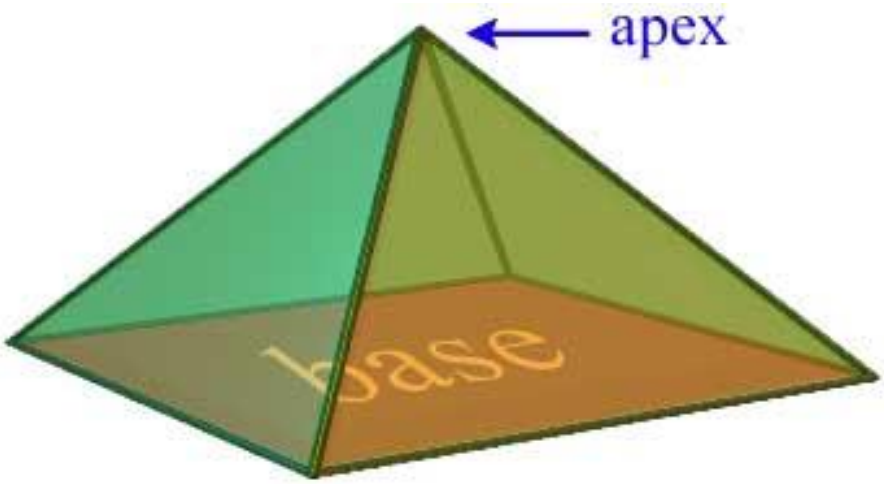
Pentagonal Prism



Hexagonal Prism



Pyramids



A **pyramid** is a polyhedron formed by connecting a polygonal base and a point, called the apex.

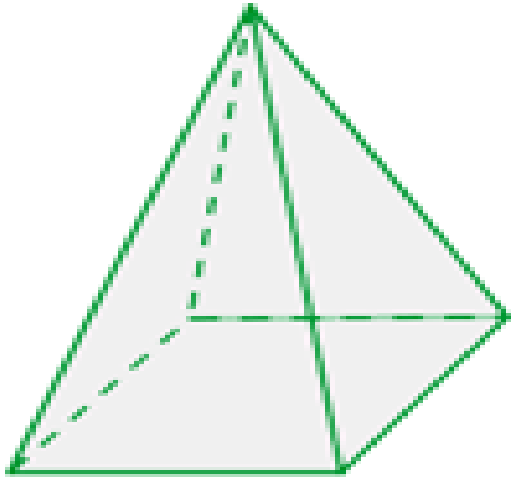
Each base edge and apex form a triangle.

A pyramid with an n-sided base will have $n + 1$ vertices, $n + 1$ faces, and $2n$ edges.

Types of Pyramids

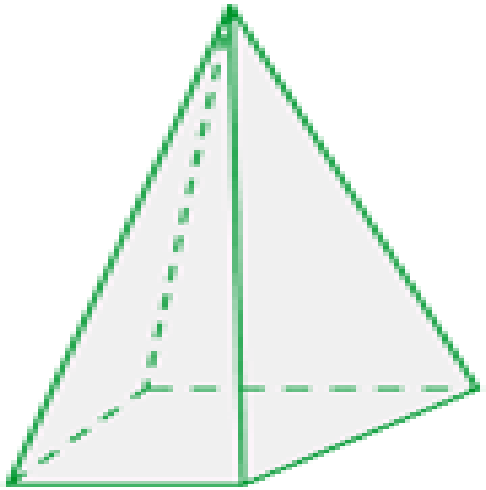
Regular Pyramid

The base of a regular pyramid is a regular polygon and its faces are equally sized triangles.



Irregular Pyramid

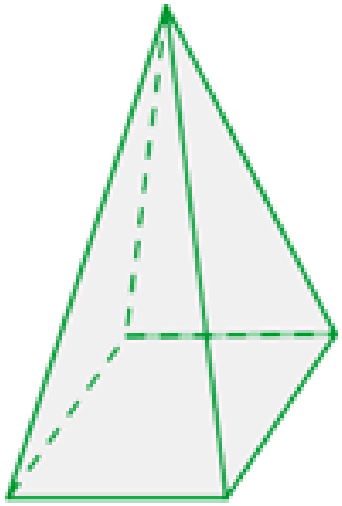
The base of an irregular pyramid is an irregular polygon, and as a result, its faces are not equally sized.



Types of Pyramids

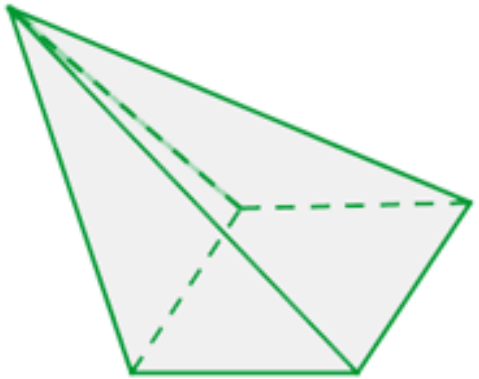
Right Pyramid

A right pyramid has isosceles triangles as its faces and its apex lies directly above the midpoint of the base.



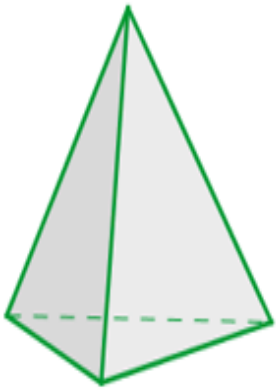
Oblique Pyramid

An oblique pyramid does not have all isosceles triangles as its lateral sides.

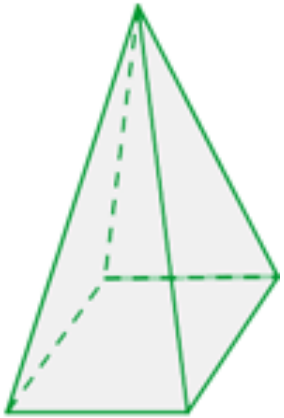


Types of Pyramids by their Base

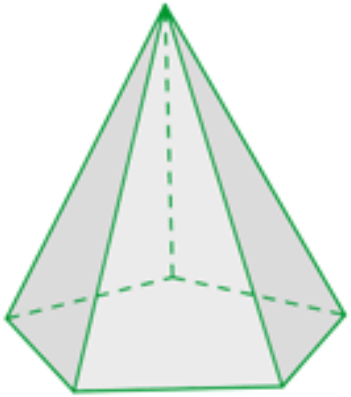
Triangular Pyramid



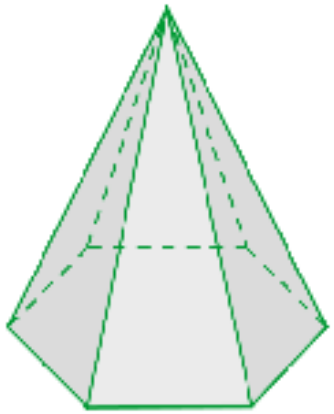
Quadrilateral Pyramid



Pentagonal Pyramid



Hexagonal Pyramid

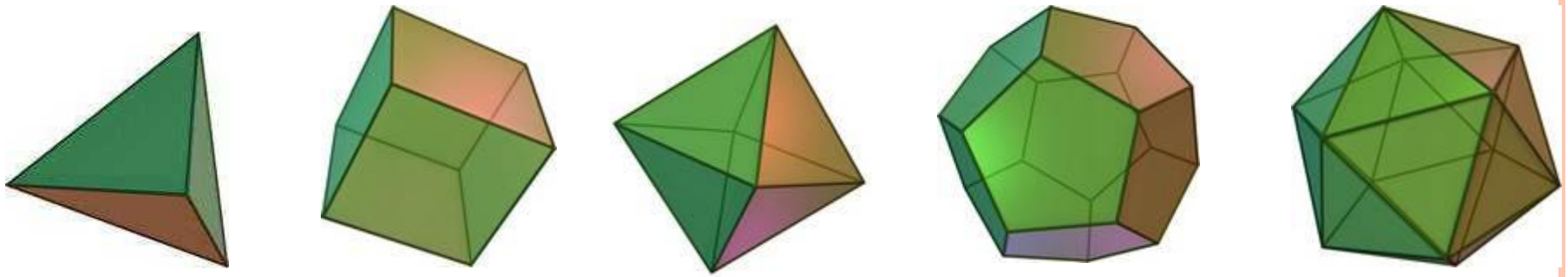


Platonic Solids

The Platonic solids, also called the regular solids or regular polyhedra, are convex polyhedra with equal faces.

There are only five platonic solids.

Tetrahedron **Cube** **Octahedron** **Dodecahedron** **Icosahedron**



Euler's Formula

For any polyhedron *that doesn't intersect itself*, the number of Faces plus the number of Vertices minus the number of Edges always equals 2

F + V - E = 2