

Discovering Euler's Formula

Polyhedron	$V$	$E$	$F$	???	Deficiency

For each polyhedron, count the number of vertices, edges, and faces on the polyhedron, and enter these numbers in the chart above. What can you discover about the relationship between these three numbers? If you need a hint, ask about what should go in the column “???”.

At each vertex, the sum of the angles meeting at that vertex must total less than  $360^\circ$ . The difference between the angle sum at a vertex and  $360^\circ$  is called the *angular deficiency* at that vertex. For each polyhedron, calculate the sum of the angular deficiencies of *all* the vertices on the polyhedron. What can you discover? This result is called *Descartes' Rule of Deficiency*.

