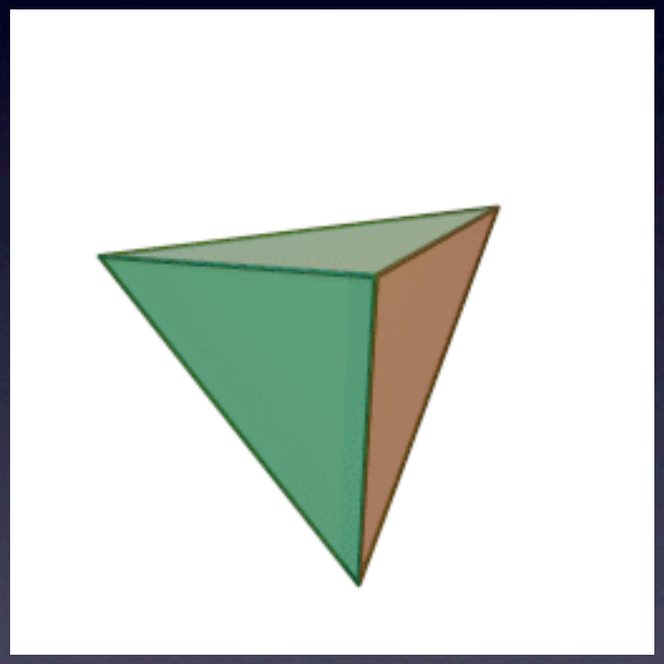
Euler's Formula for Polyhedra

J. Colliander

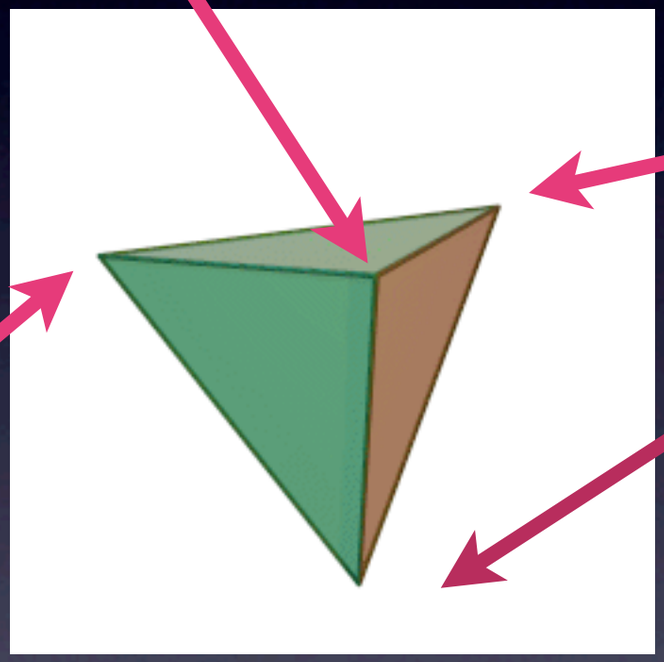
U. Toronto

Presentation for Mr. Goodyear's Grade 4 Class at Huron Street Public School

Tetrahedron

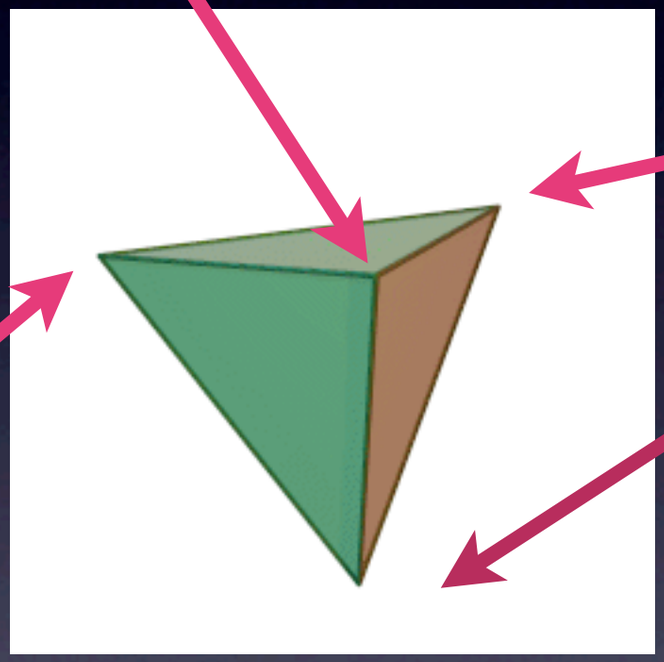


Tetrahedron



Vertices

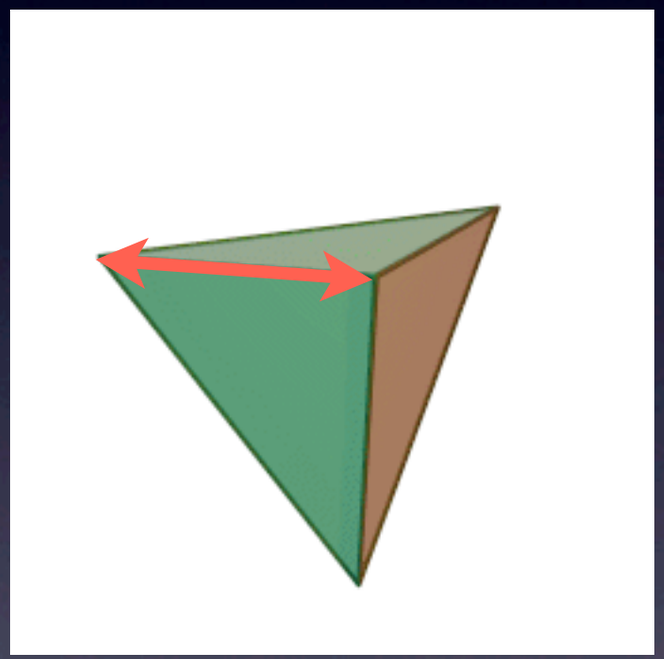
Tetrahedron



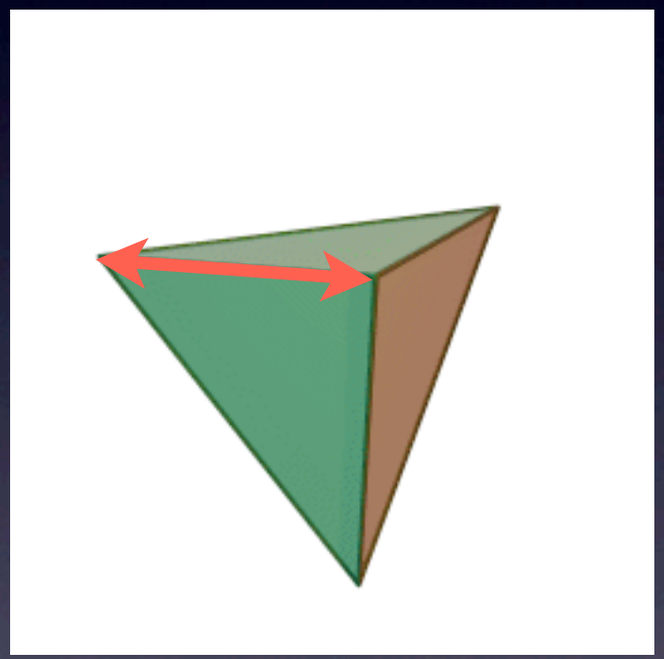
Vertices

V=4

Tetrahedron



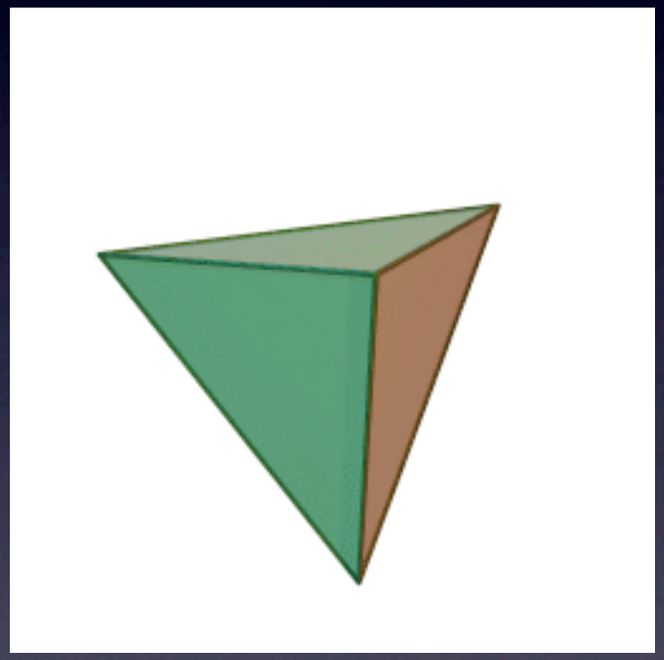
Tetrahedron



Edges

E=6

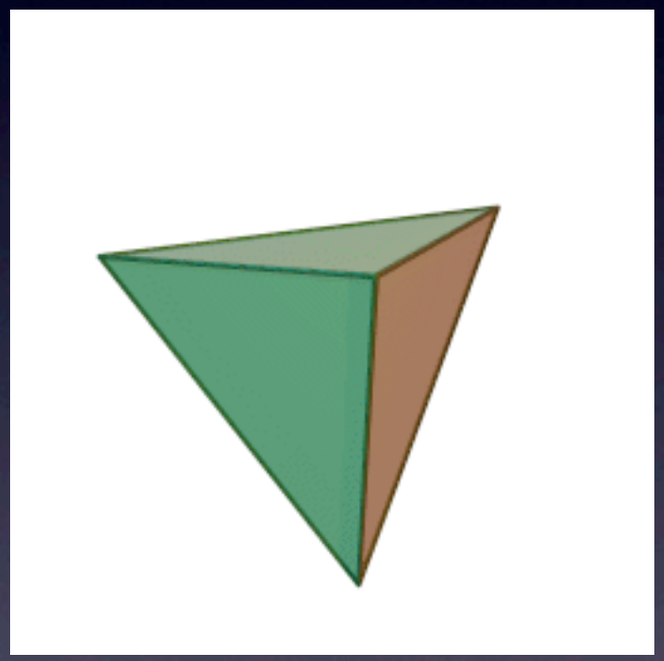
Tetrahedron



Faces

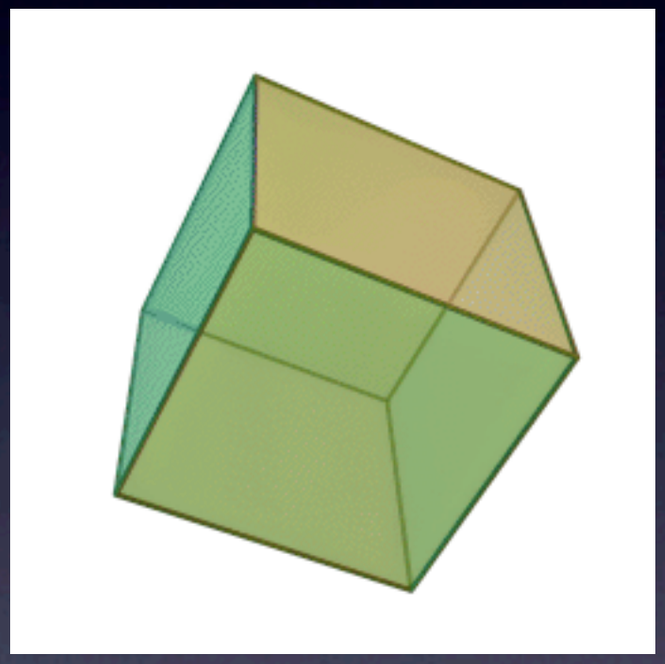
F=4

Tetrahedron



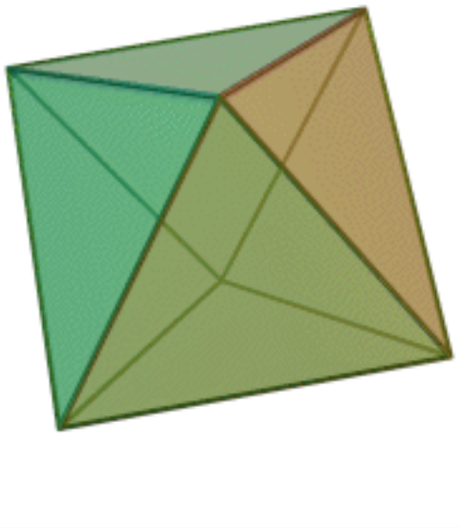
V	E	F	
4	6	4	

Cube



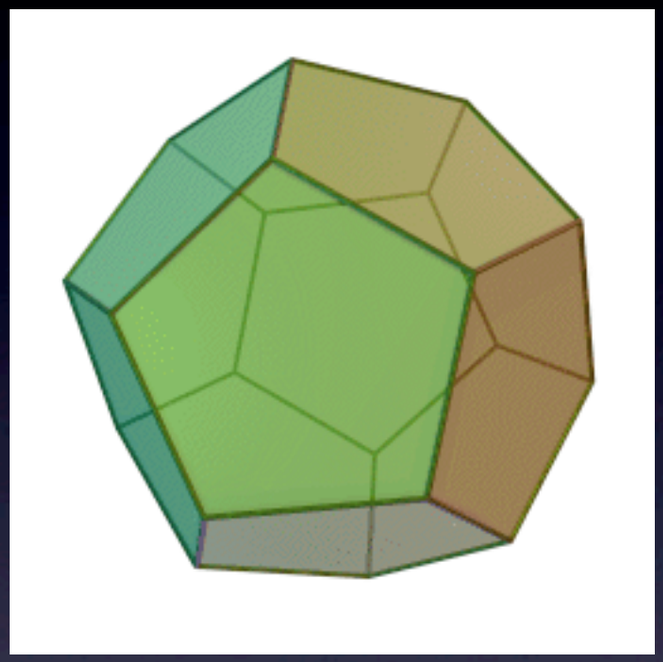
V	E	F	
8	12	6	

Octahedron



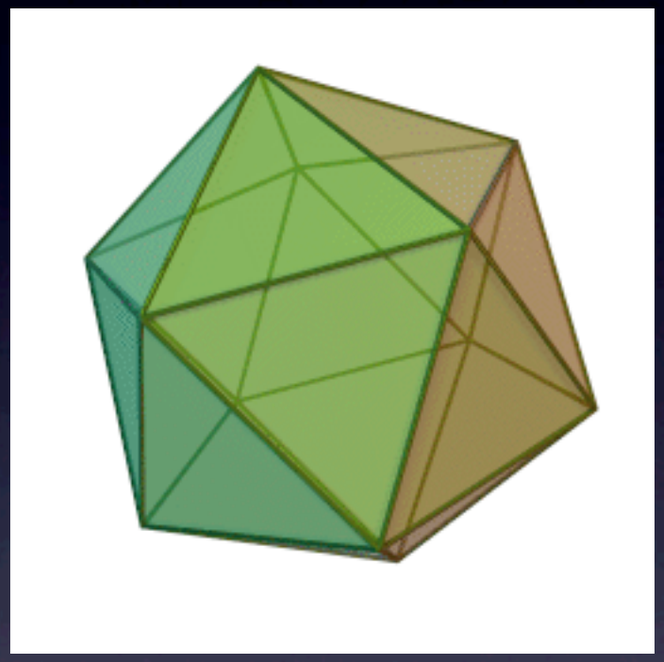
V	E	F	
6	12	8	

Dodecahedron



V	E	F	
20	30	12	

Icosahedron



V	E	F	
12	30	20	

Find a Pattern!

Hedron	V	E	F	
Tetra	4	6	4	
Cube	8	12	6	
Octa	6	12	8	
Dodeca	20	30	12	
Icosa	12	30	20	

Find a Pattern!

Hedron	V	E	F	?
Tetra	4	6	4	
Cube	8	12	6	
Octa	6	12	8	
Dodeca	20	30	12	
Icosa	12	30	20	

Pattern?

Hedron	V	E	F	???
Tetra	4	6	4	
Cube	8	12	6	
Octa	6	12	8	
Dodeca	20	30	12	
Icosa	12	30	20	

Pattern?

Hedron	V	E	F	V-E+F
Tetra	4	6	4	
Cube	8	12	6	
Octa	6	12	8	
Dodeca	20	30	12	
Icosa	12	30	20	

Pattern?

Hedron	V	E	F	V-E+F
Tetra	4	6	4	2
Cube	8	12	6	
Octa	6	12	8	
Dodeca	20	30	12	
Icosa	12	30	20	

Hedron	V	E	F	V-E+F
Tetra	4	6	4	2
Cube	8	12	6	2
Octa	6	12	8	
Dodeca	20	30	12	
Icosa	12	30	20	

Hedron	V	E	F	V-E+F
Tetra	4	6	4	2
Cube	8	12	6	2
Octa	6	12	8	2
Dodeca	20	30	12	
Icosa	12	30	20	

Hedron	V	E	F	V-E+F
Tetra	4	6	4	2
Cube	8	12	6	2
Octa	6	12	8	2
Dodeca	20	30	12	2
Icosa	12	30	20	

Hedron	V	E	F	V-E+F
Tetra	4	6	4	2
Cube	8	12	6	2
Octa	6	12	8	2
Dodeca	20	30	12	2
Icosa	12	30	20	2

Euler's Theorem

For ANY convex polyhedra

$$V - E + F = 2$$

Euler's Theorem

For ANY convex polyhedra

$$V - E + F = 2$$


LEONHARD EULER
1707–1783
e-k+f=2
HELVETIA
130
ANGELO BOOG
2007