

Euler's Formula for Polyhedra

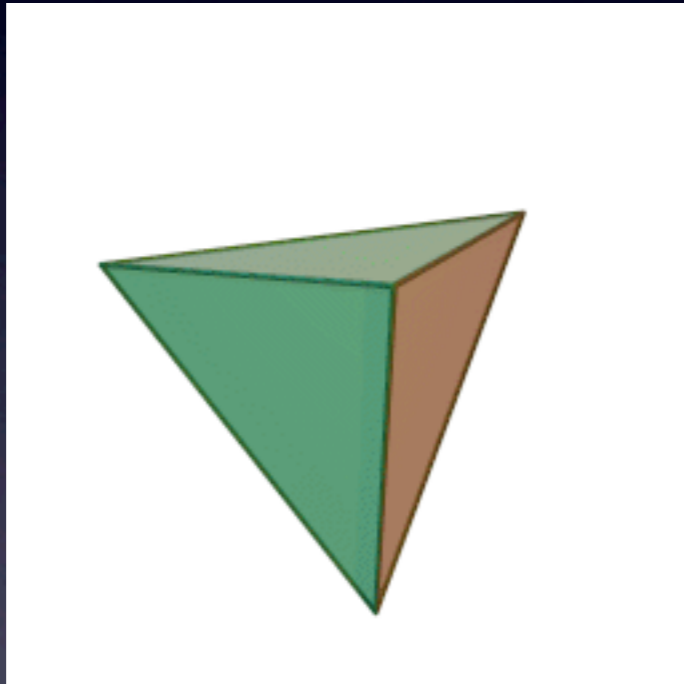


J. Colliander
U. Toronto

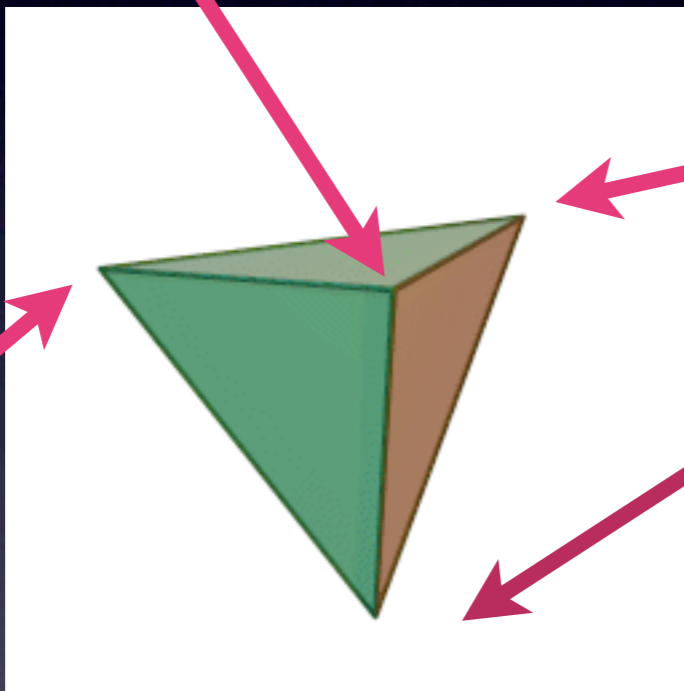


Presentation for Ms. Funston's Grade 1 Class
at Huron Street Public School

Tetrahedron

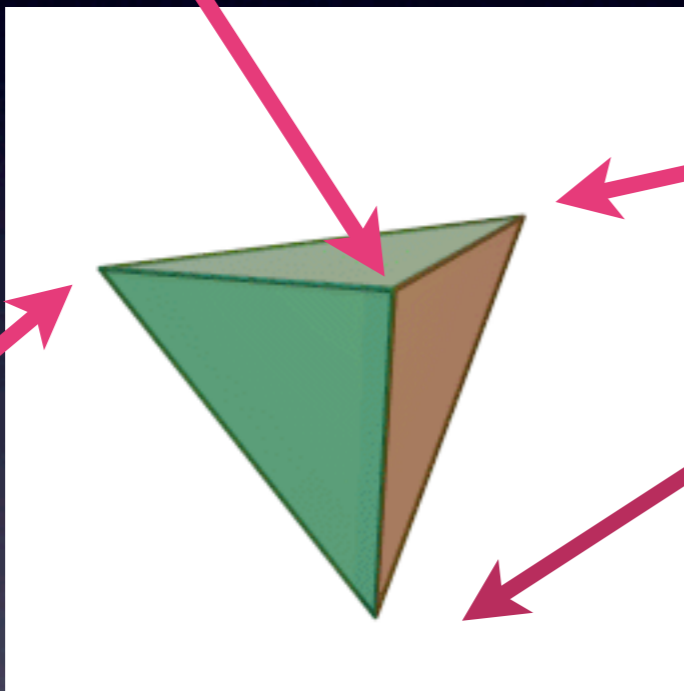


Tetrahedron



Vertices

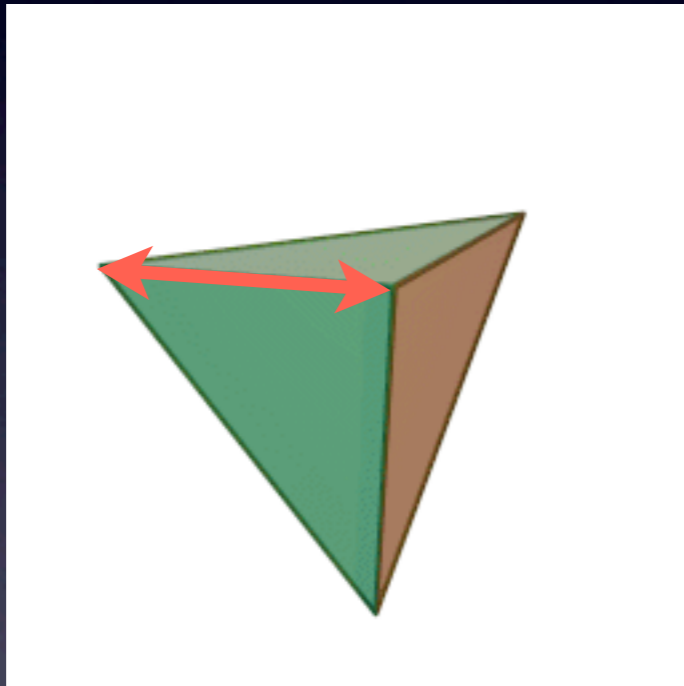
Tetrahedron



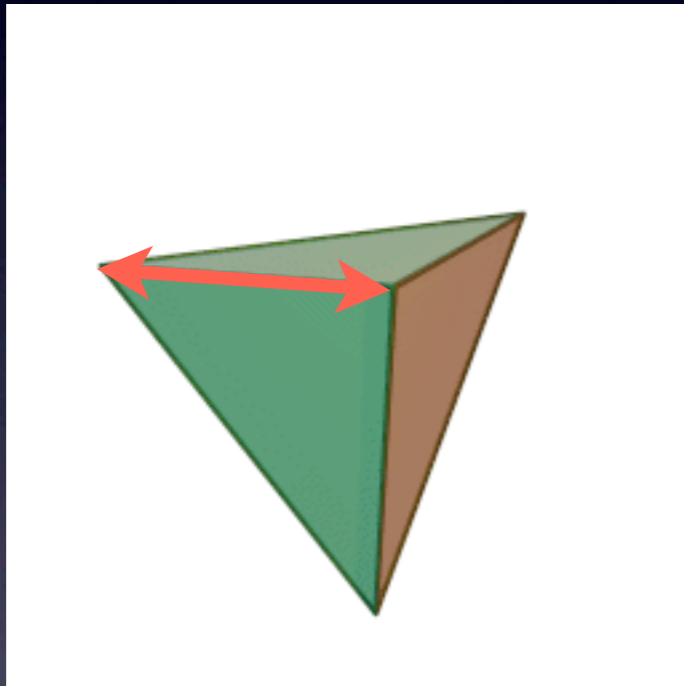
Vertices

$$V=4$$

Tetrahedron



Tetrahedron

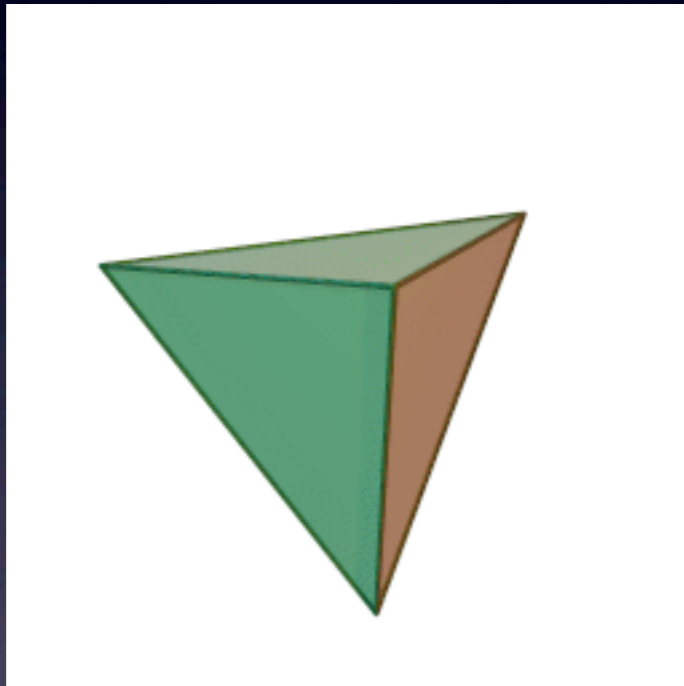


Edges

$$E=6$$

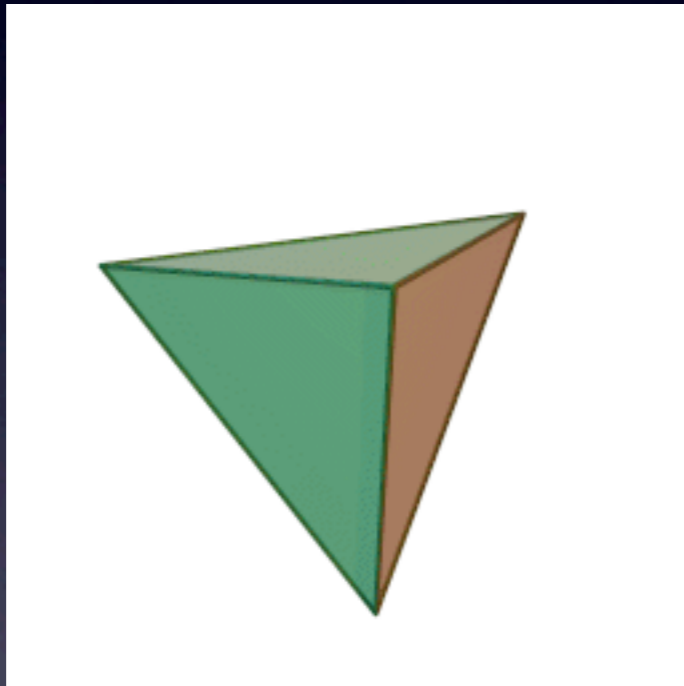
Tetrahedron

Faces



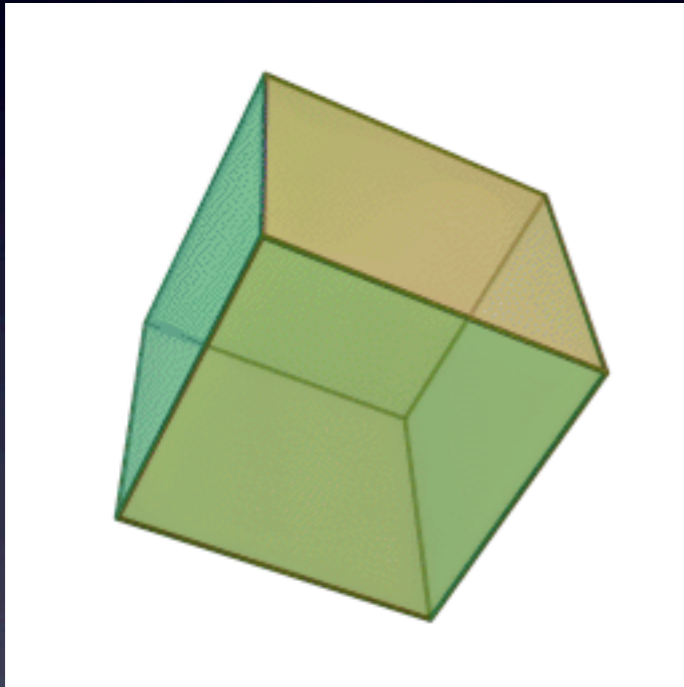
$$F=4$$

Tetrahedron



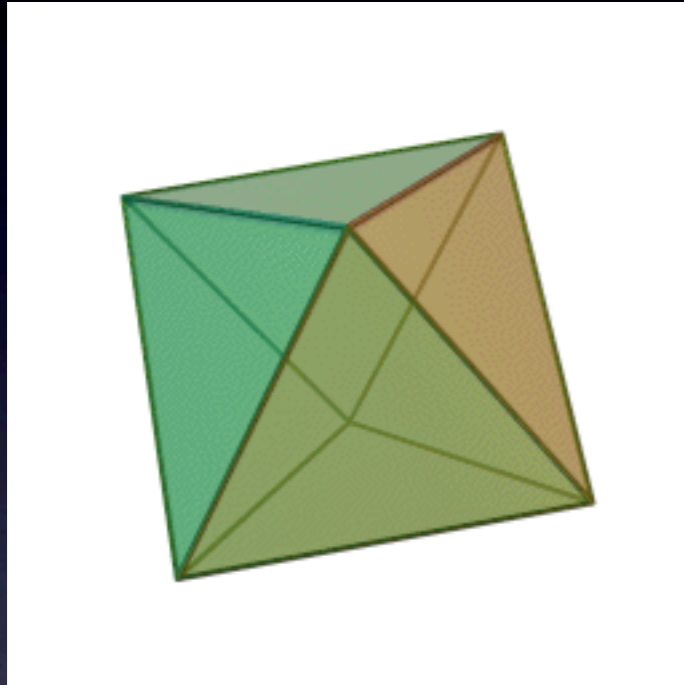
V	E	F	
4	6	4	

Cube



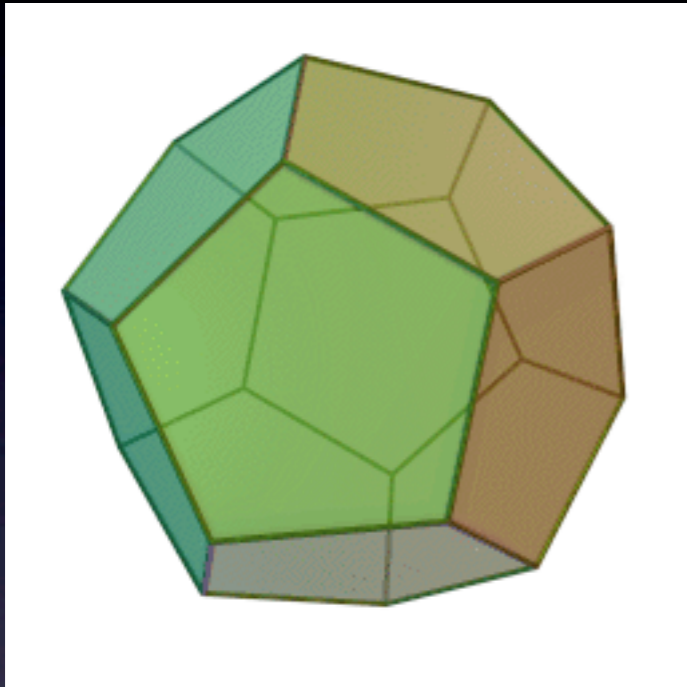
V	E	F	
8	12	6	

Octahedron



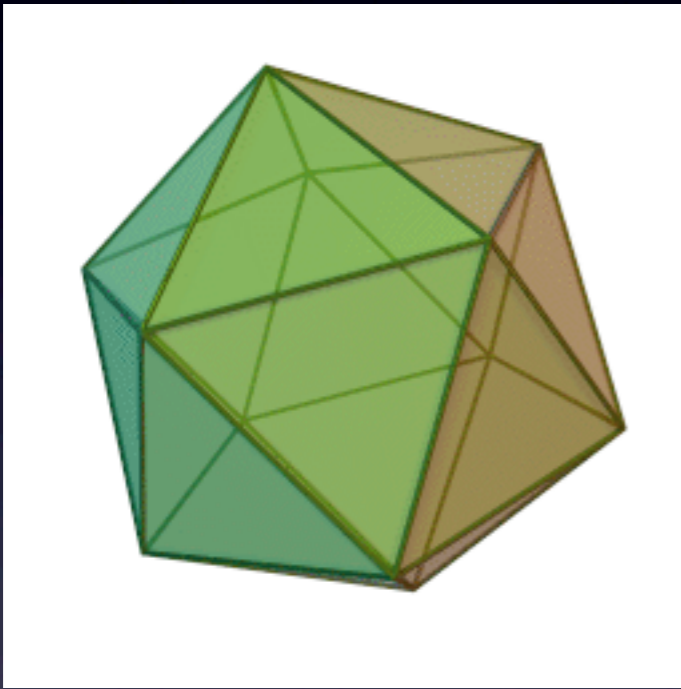
V	E	F	
6	12	8	

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

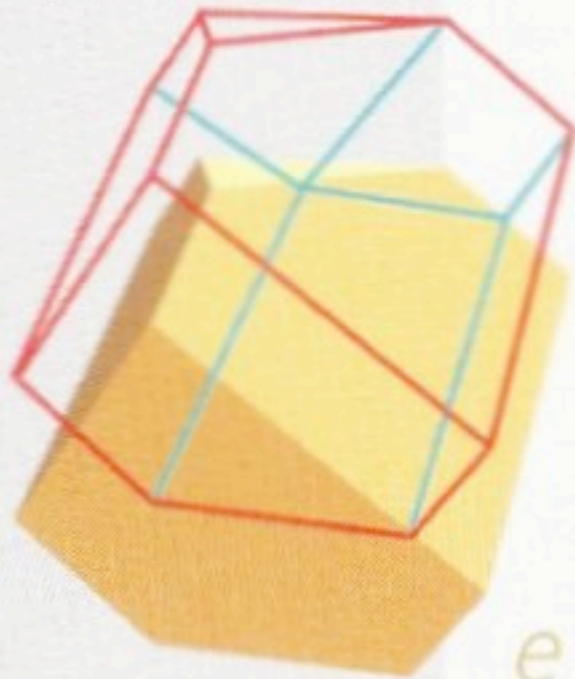
For ANY convex polyhedra

$$V - E + F = 2$$



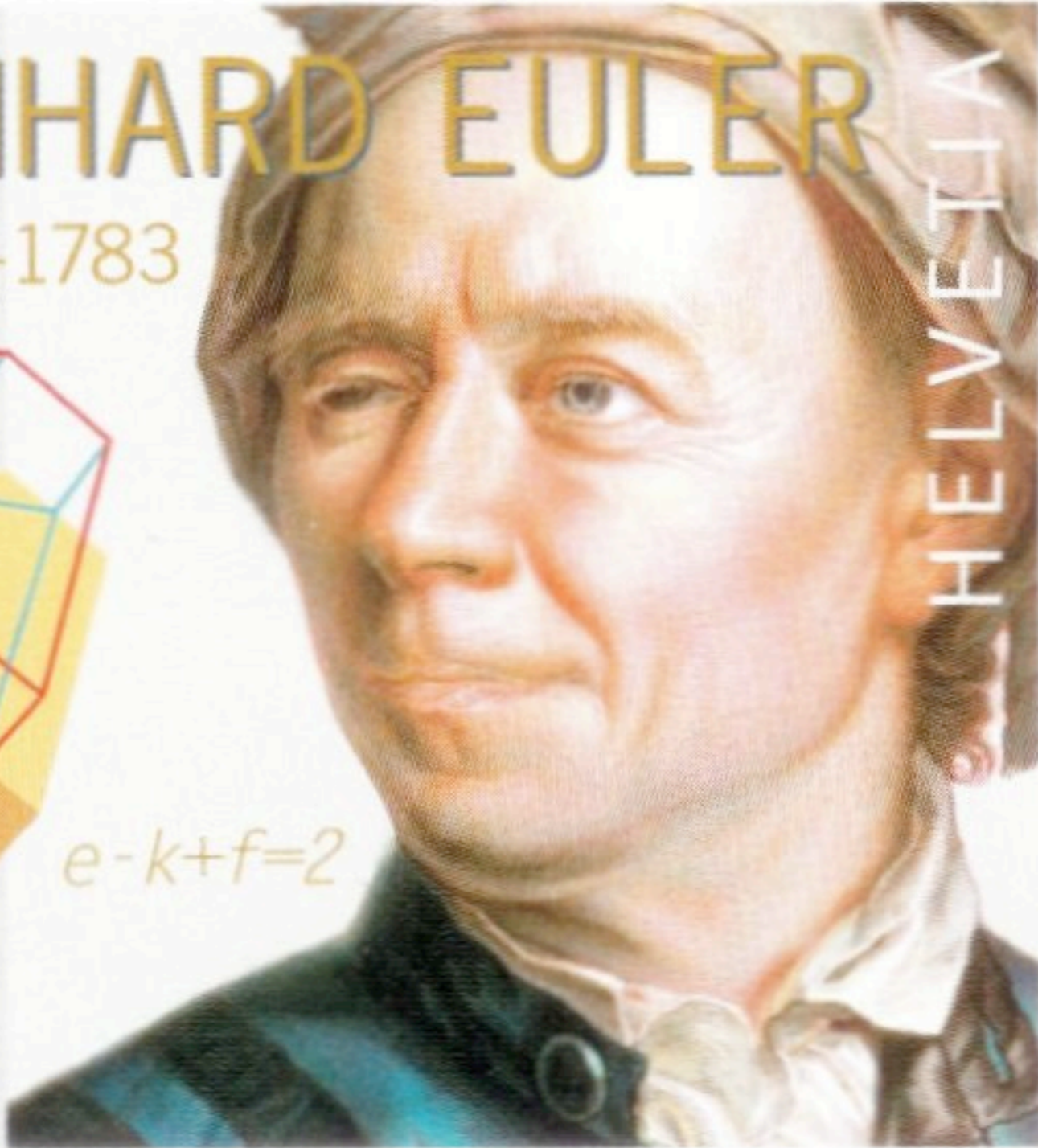
LEONHARD EULER

1707-1783



$$e - k + f = 2$$

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HELVETIA

ANGELO BOOG

2007

Online Fun at Home

- Download (free) software from Google:
<http://sketchup.google.com>
- Watch some of the help videos to learn how the buttons work.