COC
SANTA CATARINA
by Pearson

Matemática

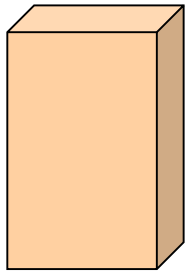
POLIEDROS

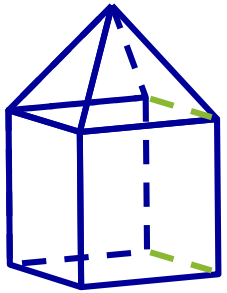
Módulo 18

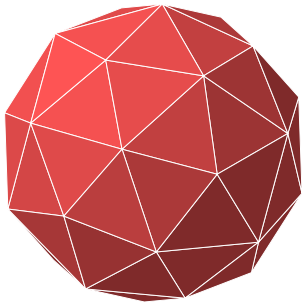
BAIANO

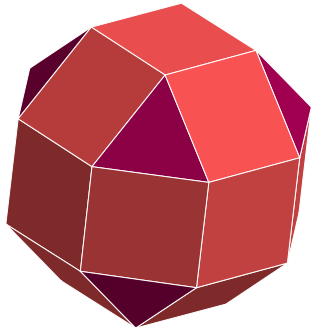
Poliedros

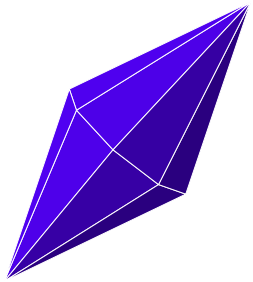
Definição: Sólido cuja superfície é composta por um número finito de faces, onde cada face é um polígono.

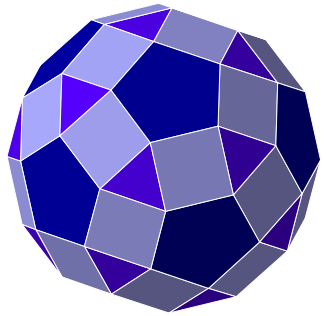












Poliedros

Poliedro Regular

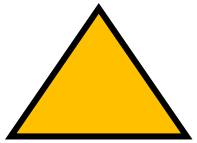
As faces são polígonos regulares, todos idênticos.

Todos os ângulos poliédricos são idênticos entre si.

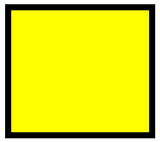
Os cinco sólidos regulares.

Poliedros de Platão

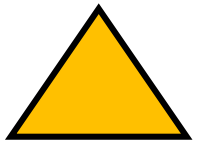
TETRAEDRO → 4



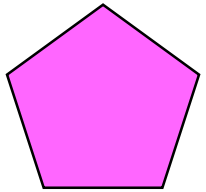
HEXAEDRO → 6



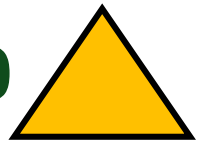
OCTAEDRO → 8

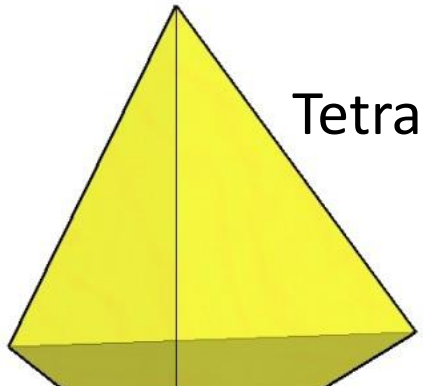


DODECAEDRO → 12

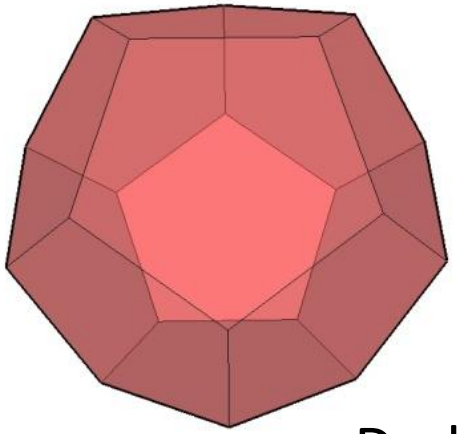


ICOSAEDRO → 20

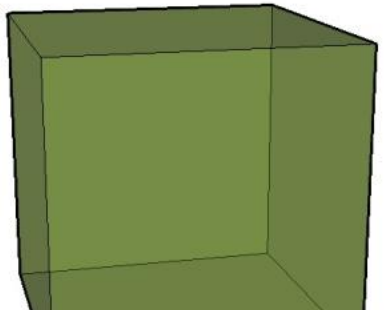




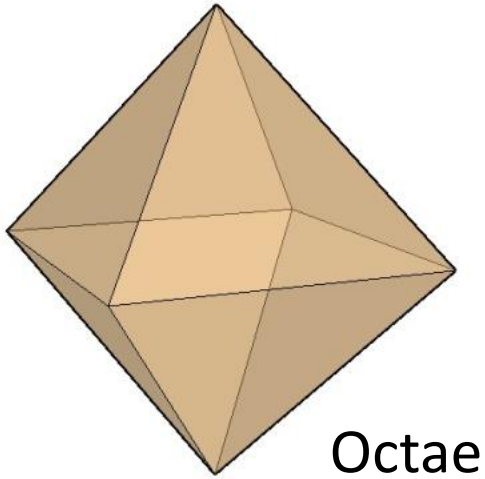
Tetraedro



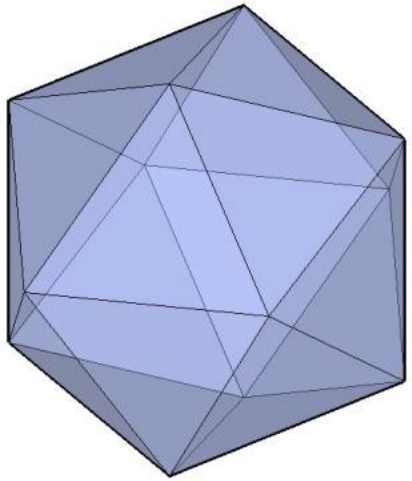
Dodecaedro



Hexaedro



Octaedro



Icosaedro

Poliedros

Teorema de Euler

$V + F = A + 2$ Poliedros Fechados

Teorema de Cauchy

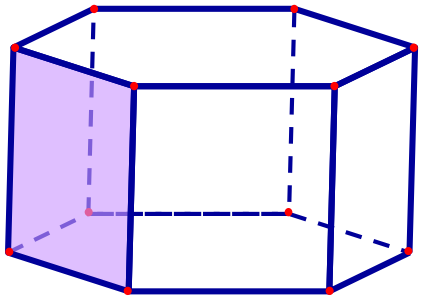
$V + F = A + 1$ Poliedros Abertos

Soma dos Ângulos Internos das Faces

$S = 360º (V – 2)$

UFSC - ADAPTADO

Qual a quantidade de vértices, arestas e faces de um poliedro limitado por seis faces quadrangulares e duas faces hexagonais?



6^{F4}

2^{F6}

$+$

F = 8

$$A = \frac{6(4) + 2(6)}{2}$$

$$A = \frac{24 + 12}{2}$$

A = 18

V + 8 = 18 + 2

V = 12

UDESC

Um poliedro possui cinco ângulos triédricos, cinco ângulos tetraédricos e um pentaédrico, determine as arestas, faces e vértices.

$5V(3)$

$5V(4)$

$1V(5)$

$+$

$V = 11$

$$A = \frac{5(3) + 5(4) + 1(5)}{2}$$

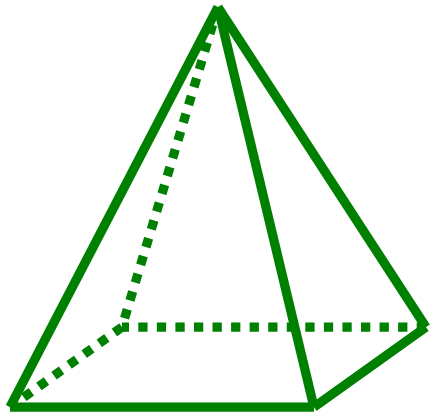
$$A = \frac{15 + 20 + 5}{2}$$

$A = 20$

$V + F = A + 2$

$11 + F = 20 + 2$

$F = 11$



FUVEST

Um poliedro de 16 vértices possui 8 faces triangulares e faces quadrangulares, quantas arestas ele possui

$$A = \frac{8(3) + X(4)}{2}$$

$$A = \frac{24 + 4X}{2}$$

$A = 12 + 2X$

$8_{F(3)}$

$X_{F(4)}$

$+$

$F = 8 + X$

$V + F = A + 2$

$16 + 8 + X = 12 + 2X + 2$

$X = 10$

$A = 32$