



CANAL SEDUC-PI2



PROFESSOR (A):

**ALEXANDRO
KESLLER**



DISCIPLINA:

MATEMÁTICA



AULA Nº:

02



CONTEÚDO:

**GEOMETRIA
ESPECIAL**



TEMA GERADOR:



DATA:

12/08/2020

ROTEIRO DE AULA

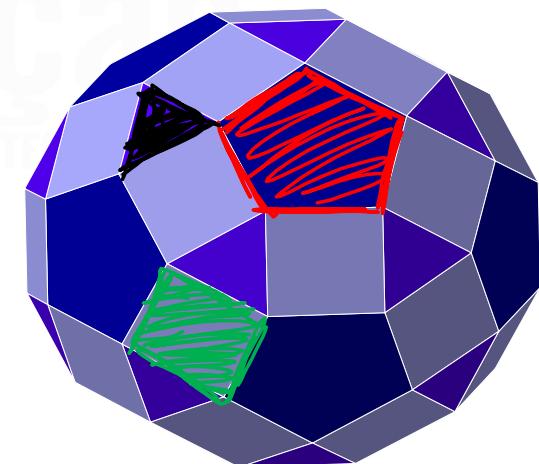
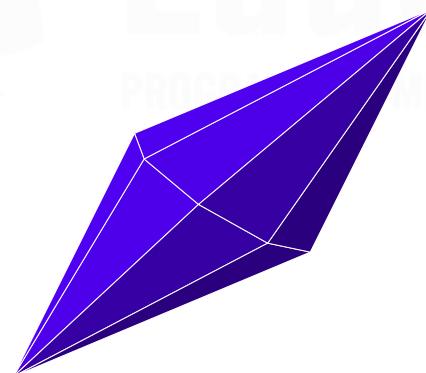
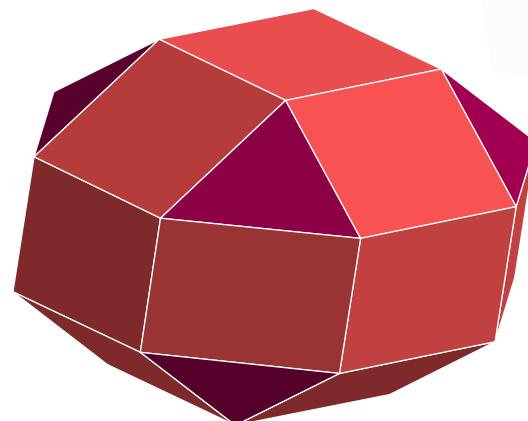
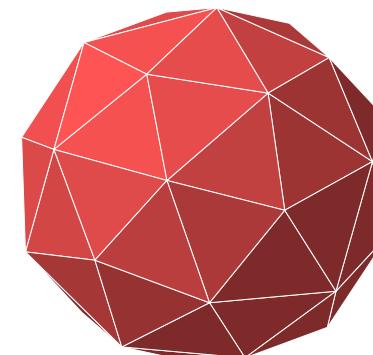
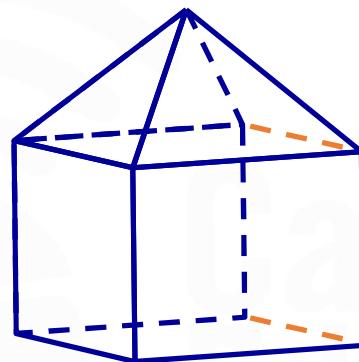
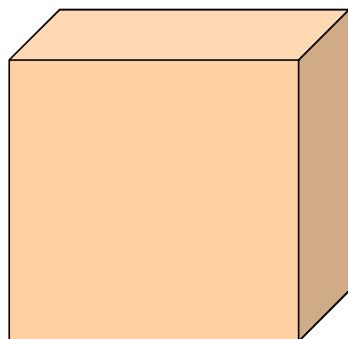
Geometria Espacial

- ✓ **Poliedros**
- ✓ **A noção de poliedro.**
- ✓ **Poliedro convexo e poliedro não-convexo.**
- ✓ **A relação de Euler.**
- ✓ **Poliedros regulares.**

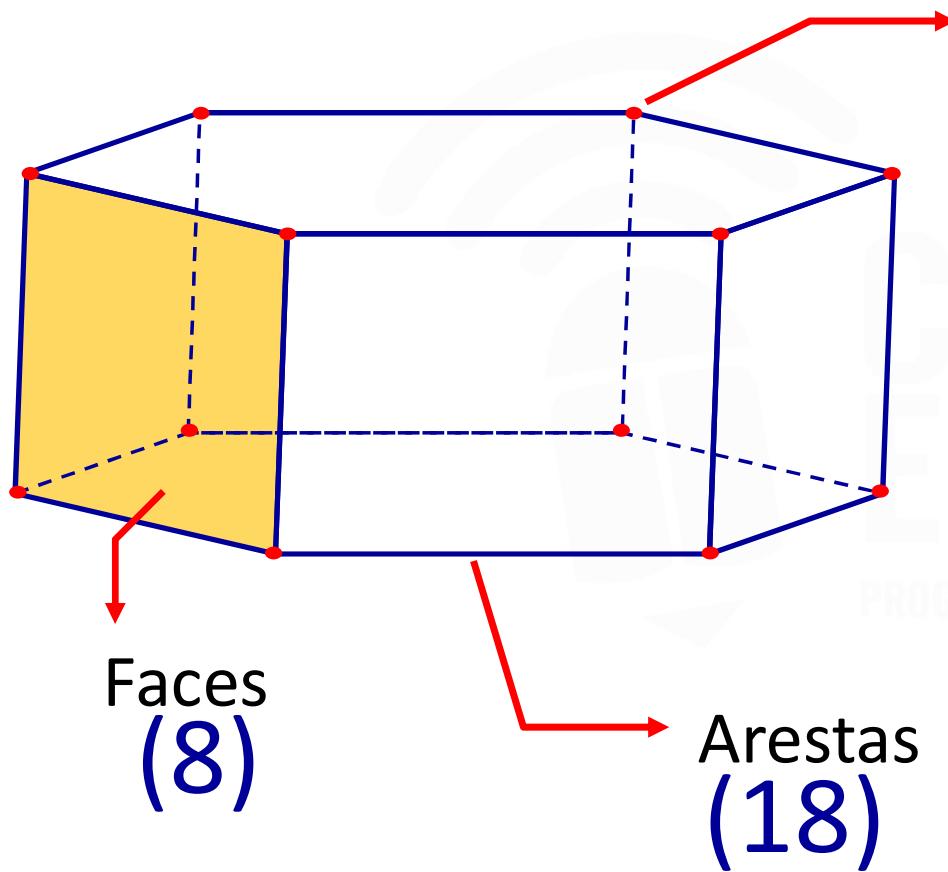
PROGRAMA DE MEDIAÇÃO TECNOLÓGICA

POLIEDROS

Sólidos geométricos limitados por polígonos.



Elementos do Poliedro



Vértices
(12)

$$V - A + F = 2$$

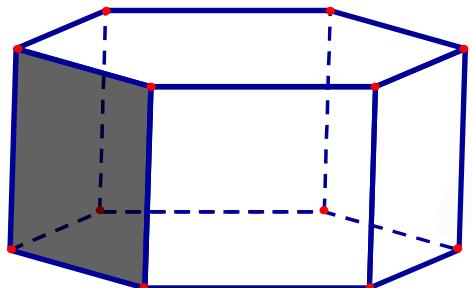
Relação de Euler

$$V + F = A + 2$$

$$12 + 8 = 18 + 2$$

$$20 = 20$$

Elementos do Poliedro



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

$$\begin{array}{r} + 6_{F4} \\ + 2_{F6} \\ \hline F = 8 \end{array}$$

$$A = \frac{6(4) + 2(6)}{2} \quad A = \frac{24 + 12}{2}$$

$$V + F = A + 2$$

$$A = 18$$

$$V + 8 = 18 + 2$$

$$V = 12$$

Exemplo Proposto

Um poliedro possui cinco faces triangulares, cinco faces quadrangulares e uma pentagonal, determine as arestas, faces e vértices.

$$\begin{array}{r} 5_{F(3)} \\ + 5_{F(4)} \\ 1_{F(5)} \\ \hline F = 11 \end{array}$$

$$A = \frac{5(3) + 5(4) + 1(5)}{2} \quad A = \frac{15 + 20 + 5}{2}$$

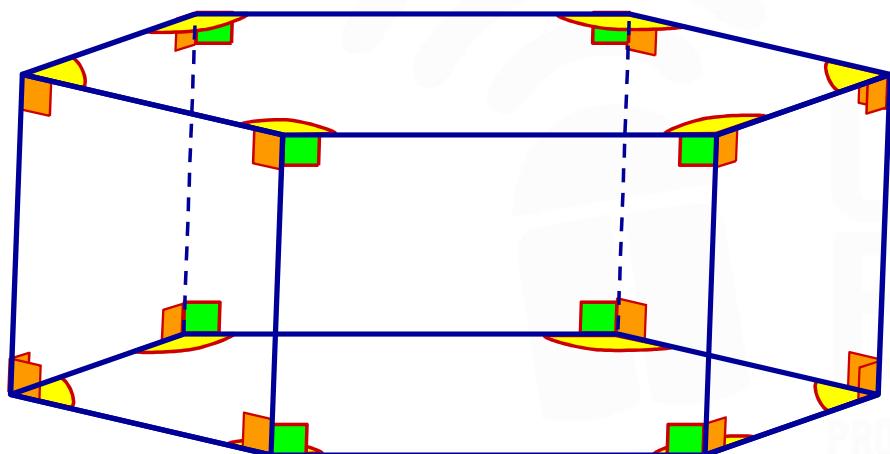
$$V + F = A + 2$$

$$V + 11 = 20 + 2$$

$$A = 20$$

$$V = 11$$

Soma dos ângulos das faces



η° Vértices

$$S = (V - 2) \cdot 360^{\circ}$$

$$S = (12 - 2) \cdot 360^{\circ}$$

$$S = (10) \cdot 360^{\circ}$$

$$S = 3600^{\circ}$$

6 quadriláteros

$$6 \times 360^{\circ} = 2160^{\circ}$$

2 hexágonos

$$2 \times 720^{\circ} = 1440^{\circ}$$



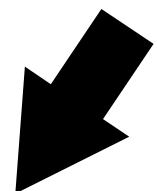
Atividade Proposta

Qual o número de vértices de um poliedro convexo de 10 faces quadrangulares

$$\begin{array}{r} + 10F(4) \\ \hline F = 10 \end{array}$$

$$V + F = A + 2$$

$$V + 10 = 20 + 2$$



$$V = 12$$

$$A = \frac{10(4)}{2}$$

$$A = \frac{40}{2}$$

$$A = 20$$

Atividade Proposta

Um poliedro convexo possui 9 faces triangulares, 9 faces quadrangulares, 1 face pentagonal e 1 face hexagonal. Quantos vértices tem esse poliedro?

$$\begin{array}{r} \rightarrow 9_{F(3)} \\ \rightarrow 9_{F(4)} \\ + 1_{F(5)} \\ \hline \end{array} \quad \mathbf{F = 20}$$

$$A = \frac{9(3) + 9(4) + 1(5) + 1(6)}{2}$$

$$A = \frac{27+36+5+6}{2}$$

$$\mathbf{A = 37}$$

$$\begin{aligned} V + F &= A + 2 \\ V + 20 &= 37 + 2 \end{aligned}$$

$$\mathbf{V = 19}$$