

**2ª  
SÉRIE**

## **CANAL SEDUC-PI2**



PROFESSOR (A):

**ALEXSANDRO  
KESLLER**



DISCIPLINA:

**MATEMÁTICA**



AULA Nº:

**02**



CONTEÚDO:

**GEOMETRIA  
ESPACIAL**



TEMA GERADOR:



DATA:

**12/08/2020**

## ROTEIRO DE AULA

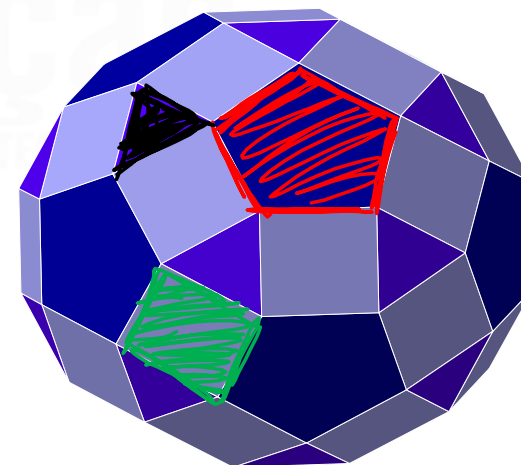
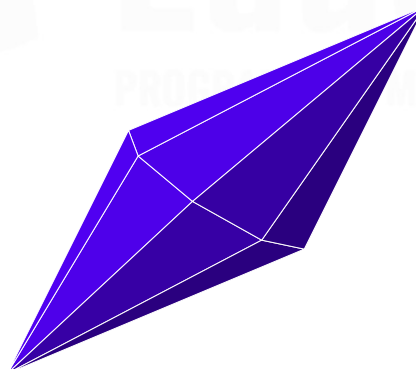
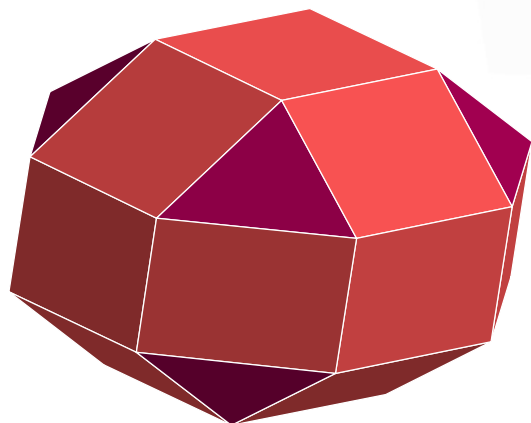
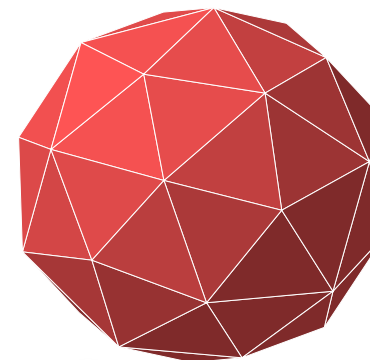
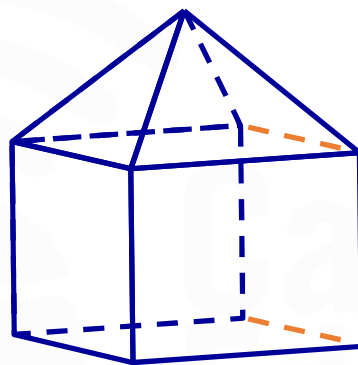
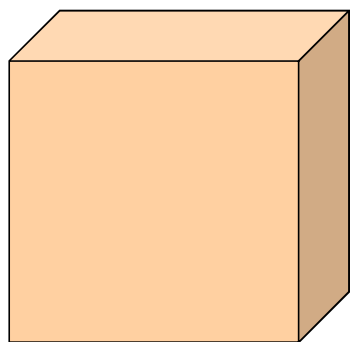
### *Geometria Espacial*

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

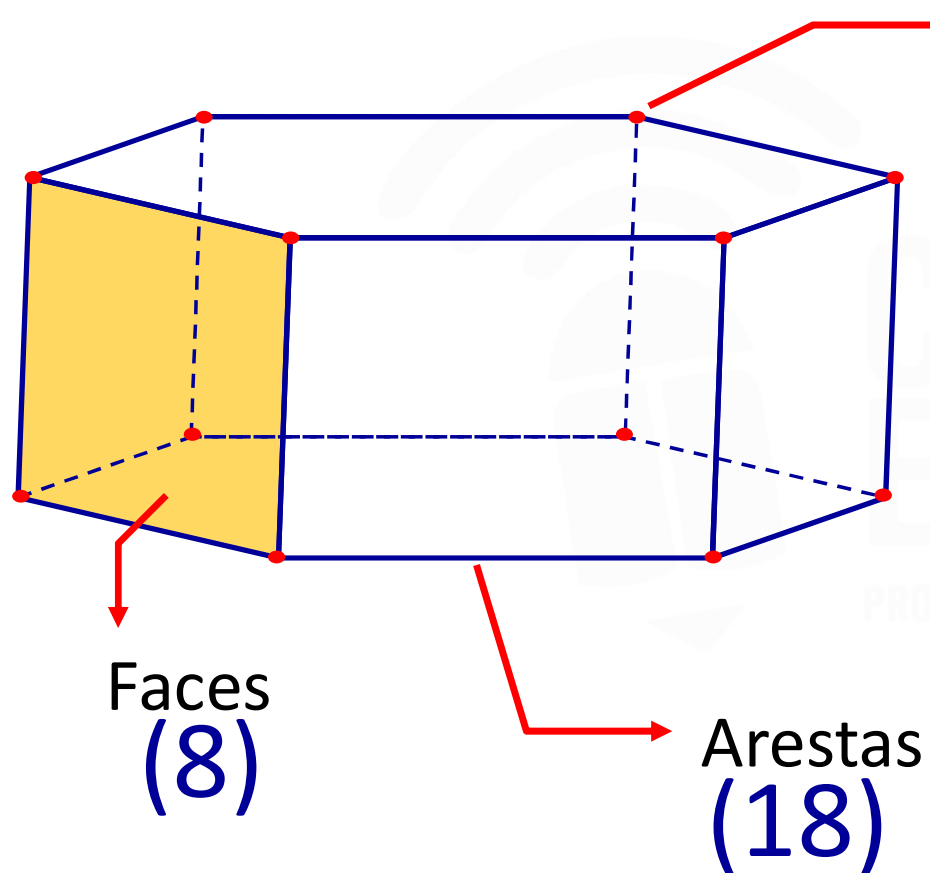
Canal  
Educação  
PROGRAMA DE MEDIAÇÃO TECNOLÓGICA

# POLIEDROS

**Sólidos geométricos** limitados por polígonos.



# Elementos do Poliedro



Vértices  
(12)

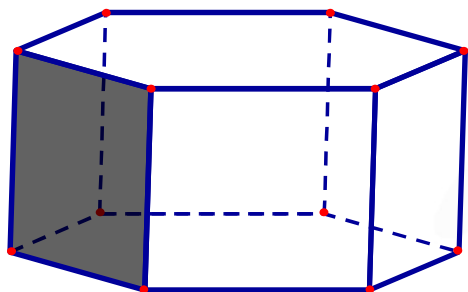
$$V - A + F = 2$$

Relação de Euler

$$V + F = A + 2$$

$$12 + 8 = 18 + 2$$

$$20 = 20 \quad \checkmark$$



## Elementos do Poliedro

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

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

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

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

$$V + F = A + 2$$

$$A = 18$$

$$V + 8 = 18 + 2$$

$$V = 12$$

## Exemplo Proposto

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

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

$$F = 11$$

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

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

$$A = 20$$

$$V + F = A + 2$$

$$V + 11 = 20 + 2$$

$$V = 11$$

# Soma dos ângulos das faces

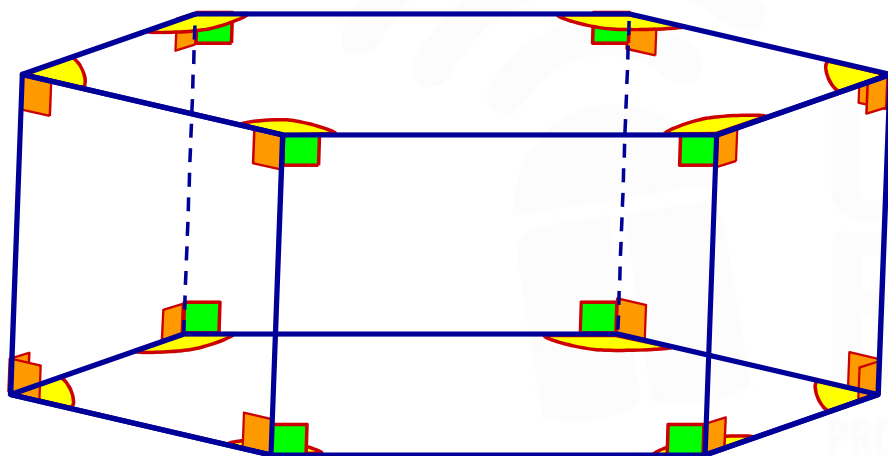
↖  $n^\circ$  Vértices

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

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

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

$$S = 3600^\circ$$



6 quadriláteros

2 hexágonos

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

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





## Atividade Proposta

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

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

$$V + F = A + 2$$

$$V + 10 = 20 + 2$$

$$\mathbf{V = 12}$$

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

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

$$\mathbf{A = 20}$$



## Atividade Proposta

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

$$\begin{array}{r} \rightarrow 9_{F(3)} \\ \rightarrow 9_{F(4)} \\ + 1_{F(5)} \\ 1_{F(6)} \\ \hline \end{array}$$

$$F = 20$$

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

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

$$A = 37$$

$$V + F = A + 2$$

$$V + 20 = 37 + 2$$

$$V = 19$$