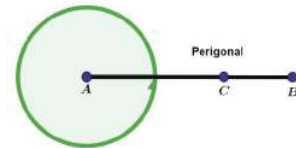
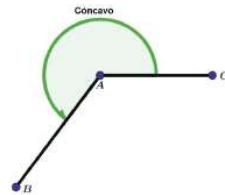
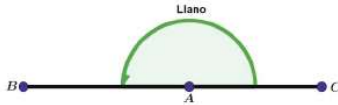
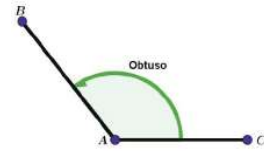
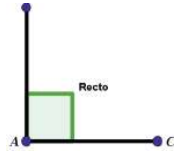
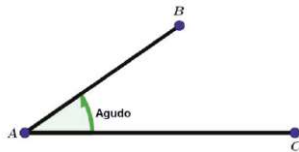
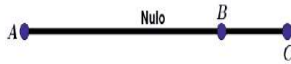
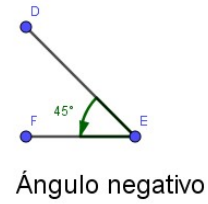
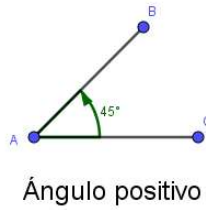
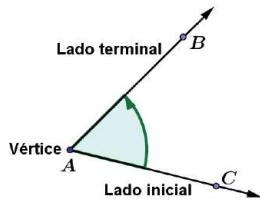
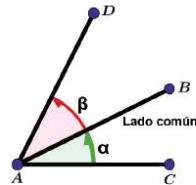


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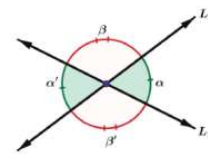
1



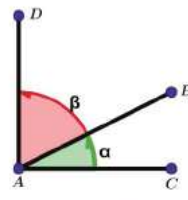
Adyacentes



Opuestos por el vértice

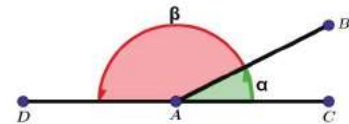


Complementarios

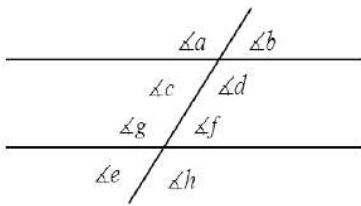


$$\alpha + \beta = 90^\circ$$

Suplementarios



$$\alpha + \beta = 180^\circ$$



Ángulos:

Opuestos por el vértice $a=d$

Correspondientes $a=f$

Internos Alternos $c=d$

Externos Alternos $a=h$

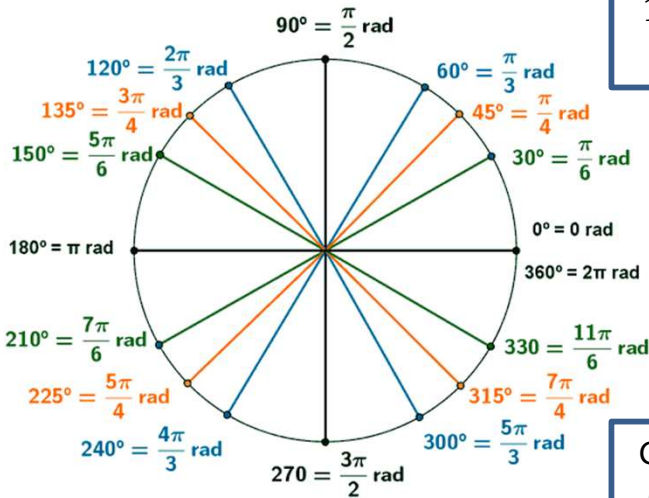
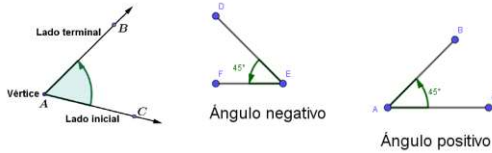
Colaterales $b+d=180^\circ$

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2

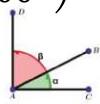


Factores de conversión:

$$\left(\frac{\pi \text{ rad}}{180^\circ}\right) \quad \left(\frac{\pi \text{ rad}}{200^g}\right) \quad \left(\frac{180^\circ}{200^g}\right)$$

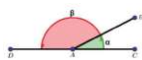
Ángulos complementarios

$$\alpha + \beta = 90^\circ$$

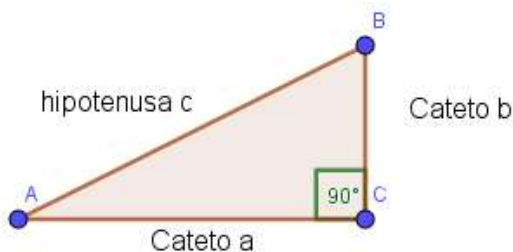


Ángulos suplementarios

$$\alpha + \beta = 180^\circ$$



Triángulo rectángulo



$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

$$a = \sqrt{c^2 - b^2}$$

$$b = \sqrt{c^2 - a^2}$$

$$A = \text{Sen}^{-1}(\text{Sen } A)$$

$$A = \text{Cos}^{-1}(\text{Cos } A)$$

$$A = \text{Tan}^{-1}(\text{Tan } A)$$

$$B = \text{Sen}^{-1}(\text{Sen } B)$$

$$B = \text{Cos}^{-1}(\text{Cos } B)$$

$$B = \text{Tan}^{-1}(\text{Tan } B)$$

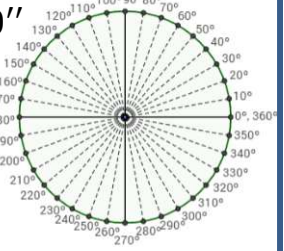
Sistema de medidas de Ángulos

Grados (°) 1 vuelta = 360°

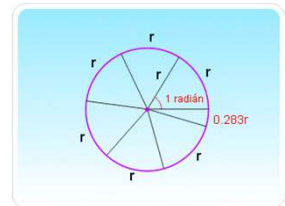
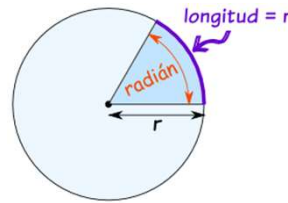
Sexagesimal : 10° 59' 10"

Unidades menores

$$1^\circ = 60' \quad 1' = 60''$$



Radianes (rad) 1 vuelta = 2π



Gradianes o centesimales

(^g) 1 vuelta = 400^g

Unidades menores

$$1^g = 100^m$$

$$1^m = 100^s$$

Suma de ángulos internos

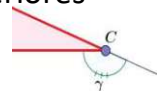
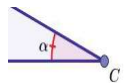
$$\alpha + \beta + \gamma = 180^\circ$$

Suma de ángulos exteriores

$$\alpha + \beta + \gamma = 360^\circ$$

ángulos interiores de un T. equilátero

$$60^\circ + 60^\circ + 60^\circ = 180^\circ$$



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C = 90°

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3

Razones trigonométricas

$$\text{Seno} = \text{Sen } \alpha = \frac{c.o.}{h}$$

$$\text{Cosecante} = \text{Csc } \alpha = \frac{h}{c.o.}$$

$$\text{Coseno} = \text{Cos } \alpha = \frac{c.a.}{h}$$

$$\text{Secante} = \text{Sec } \alpha = \frac{h}{c.a.}$$

$$\text{Tangente} = \text{Tan } \alpha = \frac{c.o.}{c.a.}$$

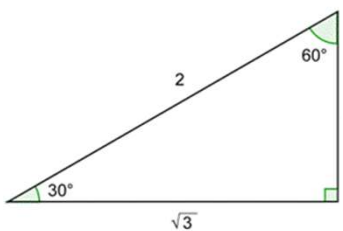
$$\text{Cotangente} = \text{Cot } \alpha = \frac{c.a.}{c.o.}$$

Triángulos Unitarios

$$\text{Sen } 30^\circ = \frac{1}{2}$$

$$\text{Cos } 30^\circ = \frac{\sqrt{3}}{2}$$

$$\text{Tan } 30^\circ = \frac{1}{\sqrt{3}}$$



$$\text{Sen } 60^\circ = \frac{\sqrt{3}}{2}$$

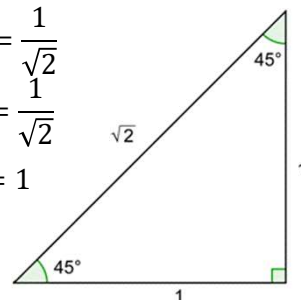
$$\text{Cos } 60^\circ = \frac{1}{2}$$

$$\text{Tan } 60^\circ = \frac{\sqrt{3}}{1}$$

$$\text{Sen } 45^\circ = \frac{1}{\sqrt{2}}$$

$$\text{Cos } 45^\circ = \frac{1}{\sqrt{2}}$$

$$\text{Tan } 45^\circ = 1$$



Identidades Trigonómicas

$$\text{Sen } \alpha = \frac{1}{\text{Csc } \alpha} \quad \text{ó} \quad \text{Csc } \alpha = \frac{1}{\text{Sen } \alpha}$$

$$\text{Cos } \alpha = \frac{1}{\text{Sec } \alpha} \quad \text{ó} \quad \text{Sec } \alpha = \frac{1}{\text{Cos } \alpha}$$

$$\text{Tan } \alpha = \frac{1}{\text{Cot } \alpha} \quad \text{ó} \quad \text{Cot } \alpha = \frac{1}{\text{Tan } \alpha}$$

$$\text{Tan } \alpha = \frac{\text{Sen } \alpha}{\text{Cos } \alpha}$$

$$\text{Cot } \alpha = \frac{\text{Cos } \alpha}{\text{Sen } \alpha}$$

$$1 + \text{Tan}^2 \theta = \text{Sec}^2 \theta$$

$$\text{Tan}^2 \theta = \text{Sec}^2 - 1$$

$$1 = \text{Tan}^2 \theta - \text{Sec}^2 \theta$$

$$\text{Sen}^2 \theta + \text{Cos}^2 \theta = 1$$

$$\text{Sen}^2 \theta = 1 - \text{Cos}^2 \theta$$

$$\text{Cos}^2 \theta = 1 - \text{Sen}^2 \theta$$

Triángulos oblicuángulos

Ley de los senos

$$\frac{\text{Sen } A}{a} = \frac{\text{Sen } B}{b} = \frac{\text{Sen } C}{c}$$

$$\frac{a}{\text{Sen } A} = \frac{b}{\text{Sen } B} = \frac{c}{\text{Sen } C}$$

$$A = \text{Sen}^{-1}(\text{Sen } A)$$

$$B = \text{Sen}^{-1}(\text{Sen } B)$$

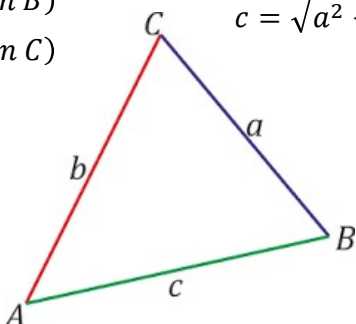
$$C = \text{Sen}^{-1}(\text{Sen } C)$$

Ley de los cosenos

$$a = \sqrt{b^2 + c^2 - 2 \cdot b \cdot c \cdot \cos A}$$

$$b = \sqrt{a^2 + c^2 - 2 \cdot a \cdot c \cdot \cos B}$$

$$c = \sqrt{a^2 + b^2 - 2 \cdot a \cdot b \cdot \cos C}$$



$$\text{Cos } A = \frac{b^2 + c^2 - a^2}{2 \cdot b \cdot c}$$

$$\text{Cos } B = \frac{a^2 + c^2 - b^2}{2 \cdot a \cdot c}$$

$$\text{Cos } C = \frac{a^2 + b^2 - c^2}{2 \cdot a \cdot b}$$

$$A = \text{Cos}^{-1}(\text{Cos } A)$$

$$B = \text{Cos}^{-1}(\text{Cos } B)$$

$$C = \text{Cos}^{-1}(\text{Cos } C)$$

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4

Igualdad en número de:

Lados

Vértices

A. interiores

A. Exteriores

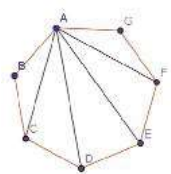
A. Centrales

$$\sum A. interiores = 180^\circ(n - 2)$$

$$\sum A. exteriores = 360^\circ$$

No. Diagonales trazadas de un vértice:

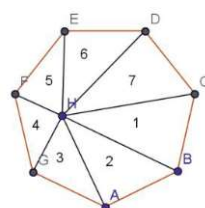
$$D_v = n - 3$$



n-2 triángulos

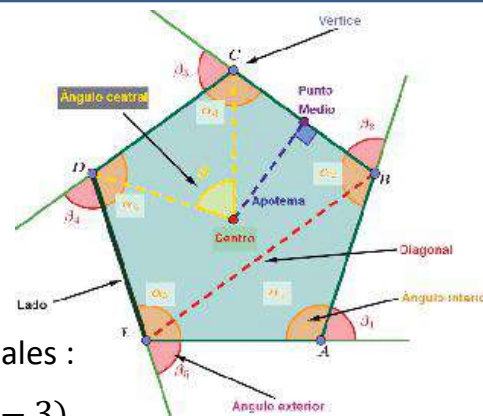


n-1 triángulos



n triángulos

Elementos del Polígono:



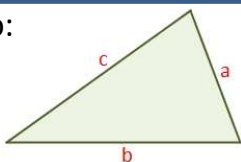
Total de Diagonales :

$$D_T = \frac{n(n - 3)}{2}$$

$$AE = AC = \frac{360}{n}$$

$$apotema = \frac{l}{2 \tan\left(\frac{AC}{2}\right)}$$

Triángulo:



Área :

$$A = \frac{b \cdot h}{2}$$

Teorema de Herón

$$\text{Semi perímetro } S = \frac{P}{2}$$

Perímetro :

$$A = \frac{a \cdot b \cdot \sin \theta}{2}$$

$$A = \sqrt{S(S - a)(S - b)(S - c)}$$

Equilátero

$$P = l \cdot n$$

Isósceles y Escaleno

$$P = l_1 + l_2 + l_3$$

Trapezio o trapezoide

Perímetro

$$P = l_1 + l_2 + l_3 + l_4$$

Área

$$A = \frac{B \cdot b \cdot h}{2}$$

Cuadrado:

Perímetro

$$P = l \cdot n$$

Área

$$A = l \times l = l^2$$

Rectángulo o paralelogramo:

Perímetro

$$P = 2b + 2a$$

Área

$$A = \text{base} \cdot \text{altura}$$

Rombo o romboide:

Perímetro

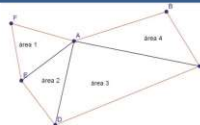
$$P = l_1 + l_2 + l_3 + l_4$$

Área

$$A = \frac{D \cdot d}{2}$$

Polígono irregular

$$A_T = \sum A_i$$



Pentágono, hexágono, heptágono, etc.

Perímetro :

$$P = l \cdot n$$

Área :

$$A = \frac{P \cdot \text{apotema}}{2}$$

Figuras compuestas

Círculo

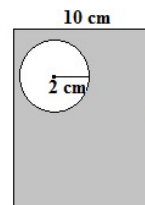
Perímetro

$$P = \pi \cdot D$$

$$P = 2\pi \cdot r$$

$$\text{Área} = \pi \cdot r^2 = \pi \cdot \frac{D^2}{4}$$

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$$P_S = P_R + P_C$$

$$A_S = A_R - A_C$$