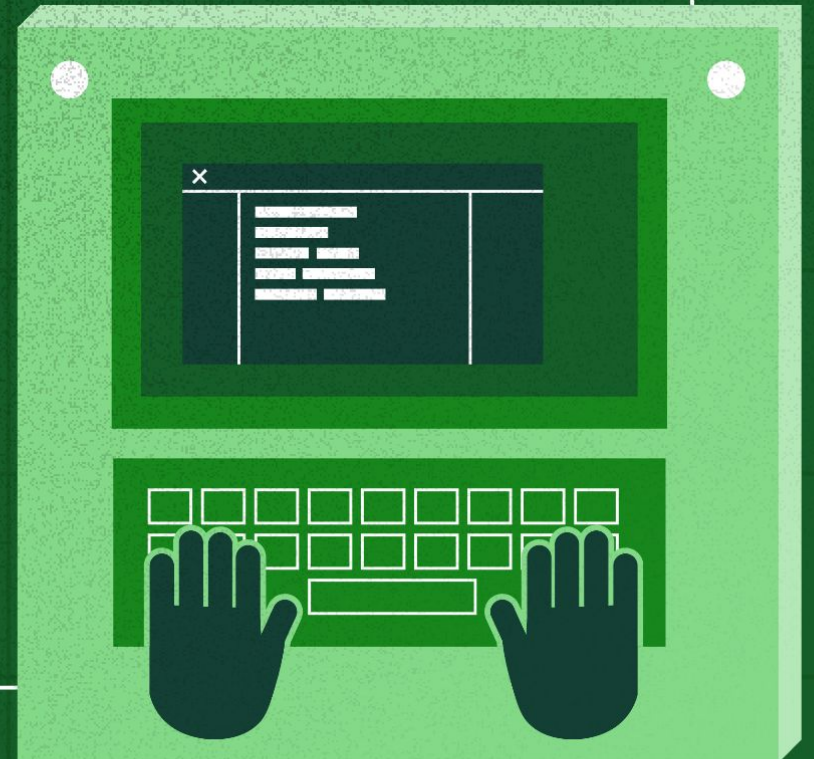








Taller Práctico de JavaScript: ■ Matemáticas

Juan David Castro



Temario

- Math en JavaScript 
- Porcentajes y descuentos 
- Estadística básica 
- Análisis de salarios 



JuanDC

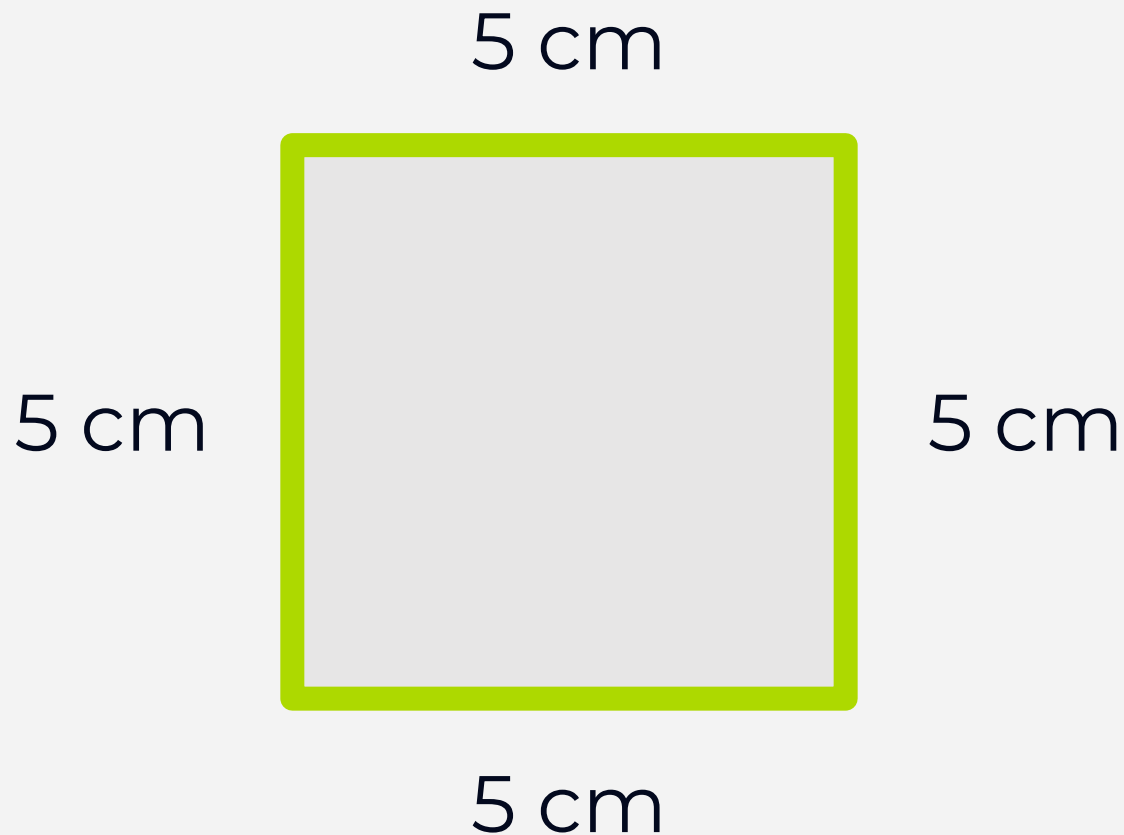




Cómo convertir fórmulas matemáticas a JavaScript



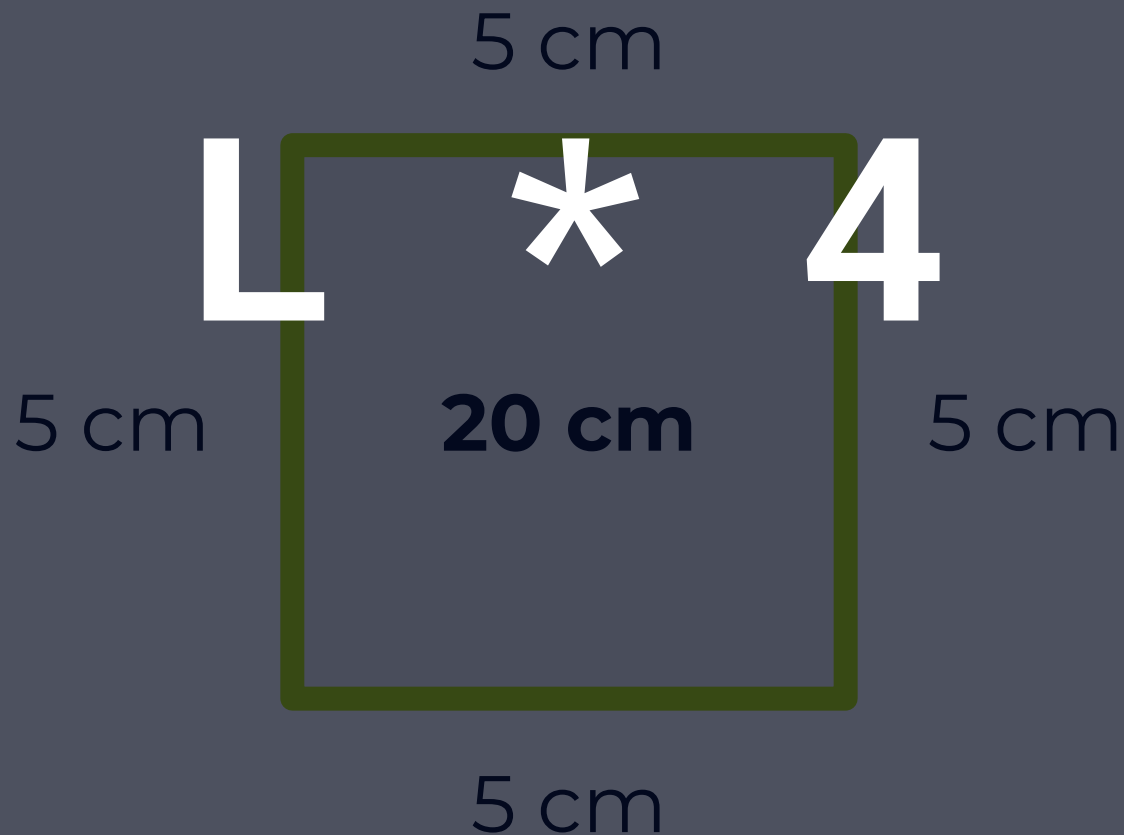
Perímetro del cuadrado



Perímetro del cuadrado



Perímetro del cuadrado



Área del cuadrado

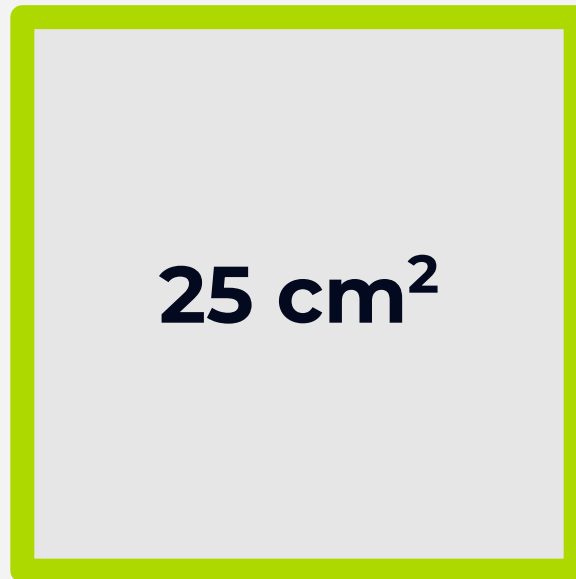
5 cm



5 cm

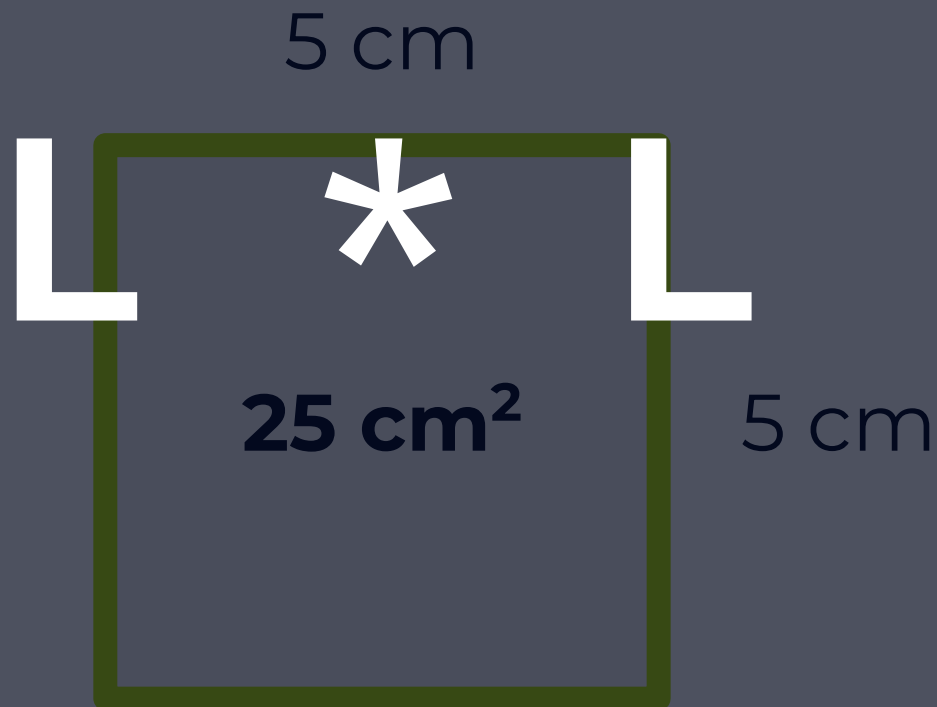
Área del cuadrado

5 cm



5 cm

Área del cuadrado



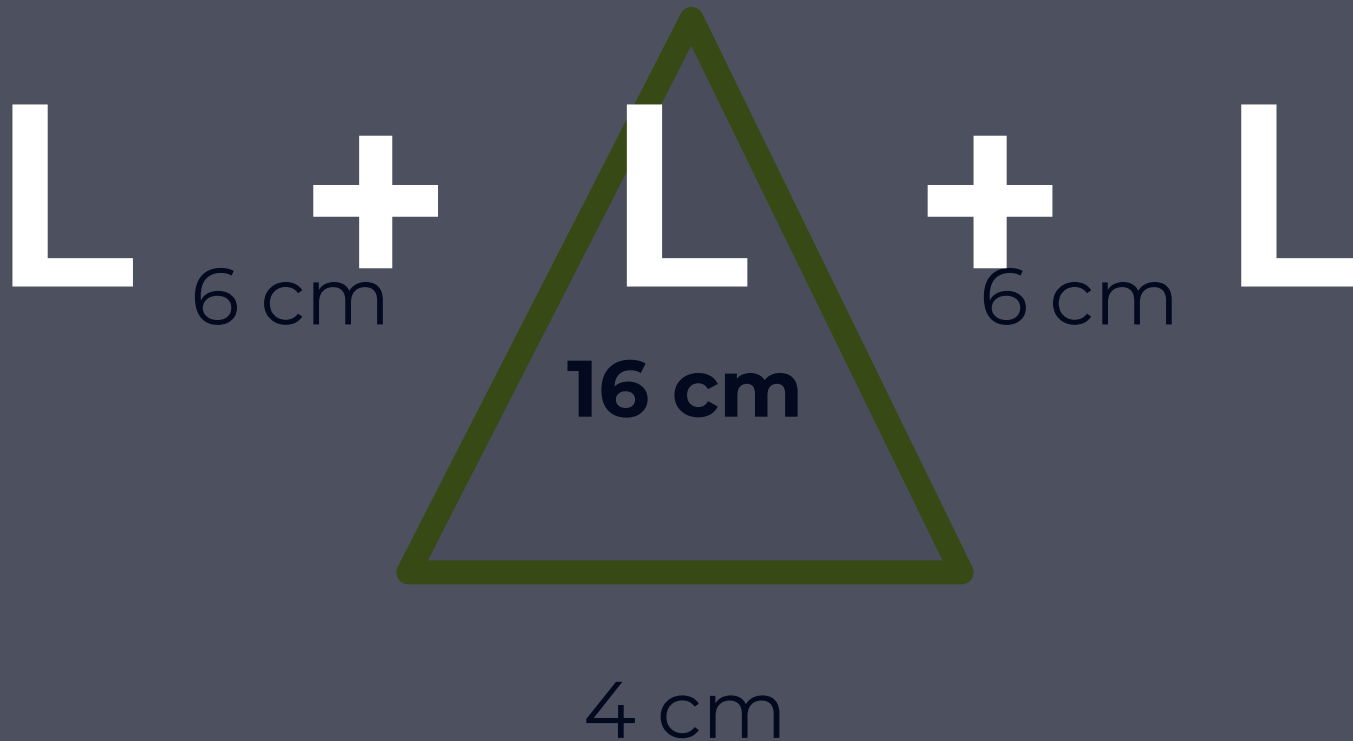
Perímetro del triángulo



Perímetro del triángulo



Perímetro del triángulo



Área del triángulo

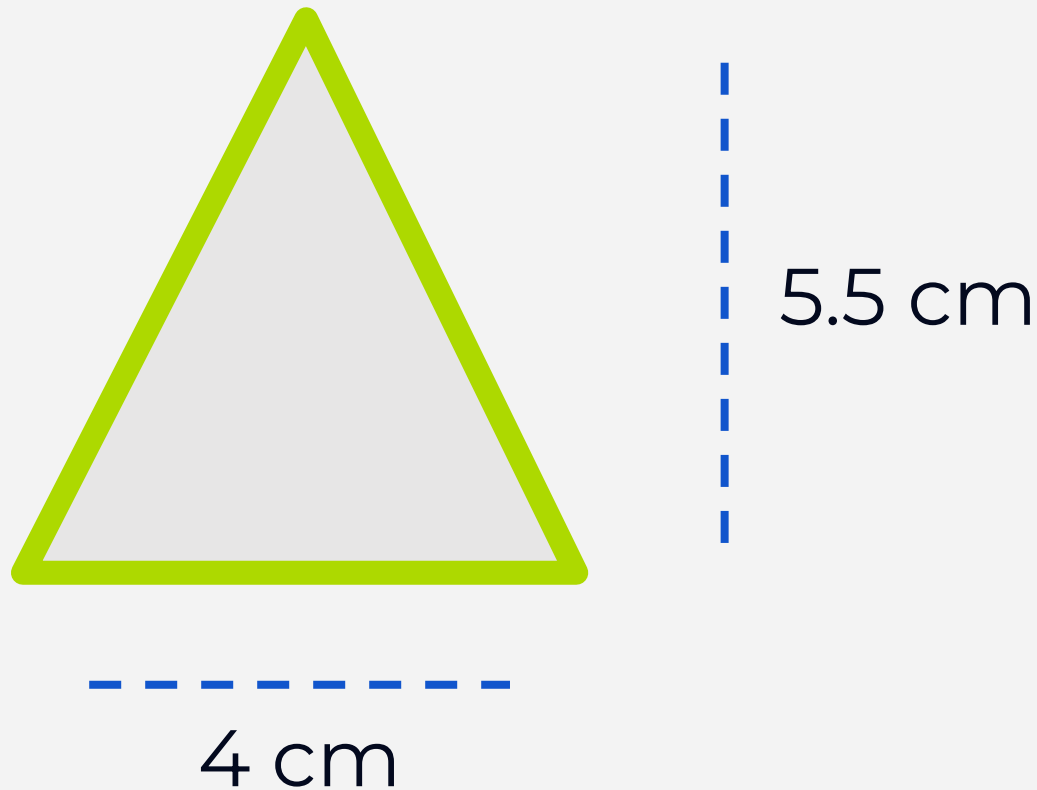


Altura



Base

Área del triángulo



Área del triángulo

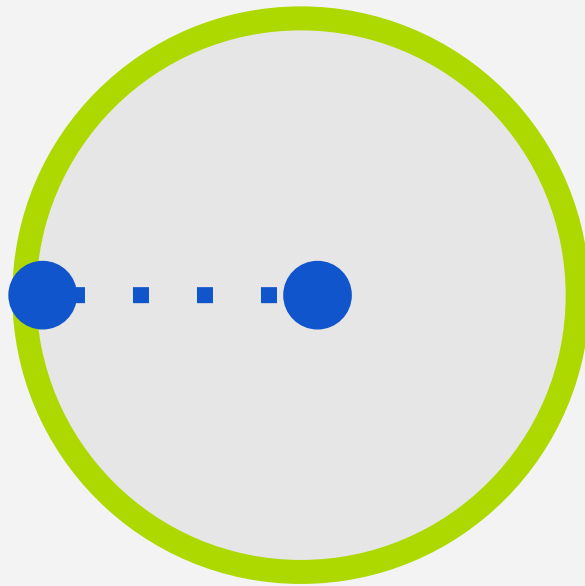




Math en JavaScript

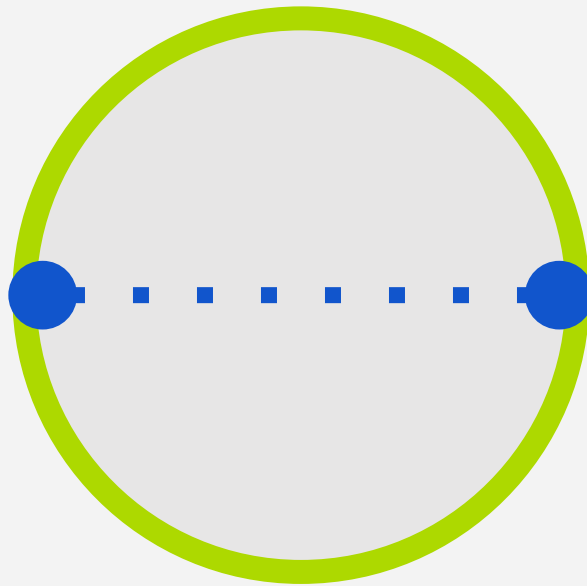


Perímetro del círculo (circunferencia)



Radio

Perímetro del círculo (circunferencia)



Diámetro

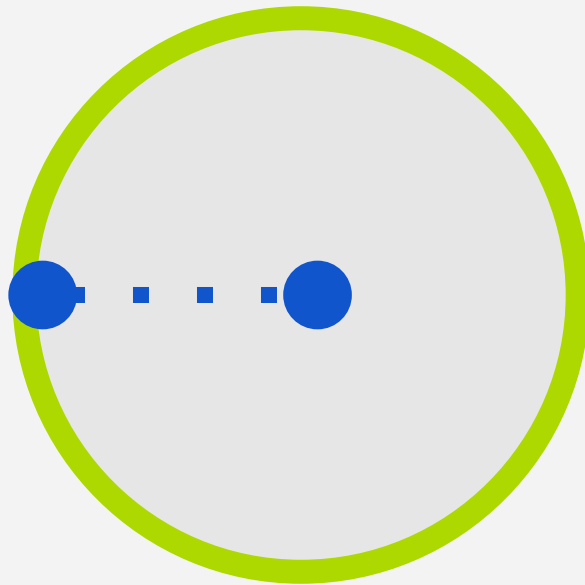
Circunferencia

Diámetro

*



Área del círculo



Radio

Área del círculo

Radio²

*

PI

(π)

Radio



Altura de un triángulo isósceles



Requisitos

- Sabiendo lo que miden los 3 lados, **encontrar la altura**.
- Debe ser un **triángulo isósceles no equilátero** (2 lados iguales y 1 diferente).

*

$$h = \sqrt{a^2 - \frac{b^2}{4}}$$

*

altura

base

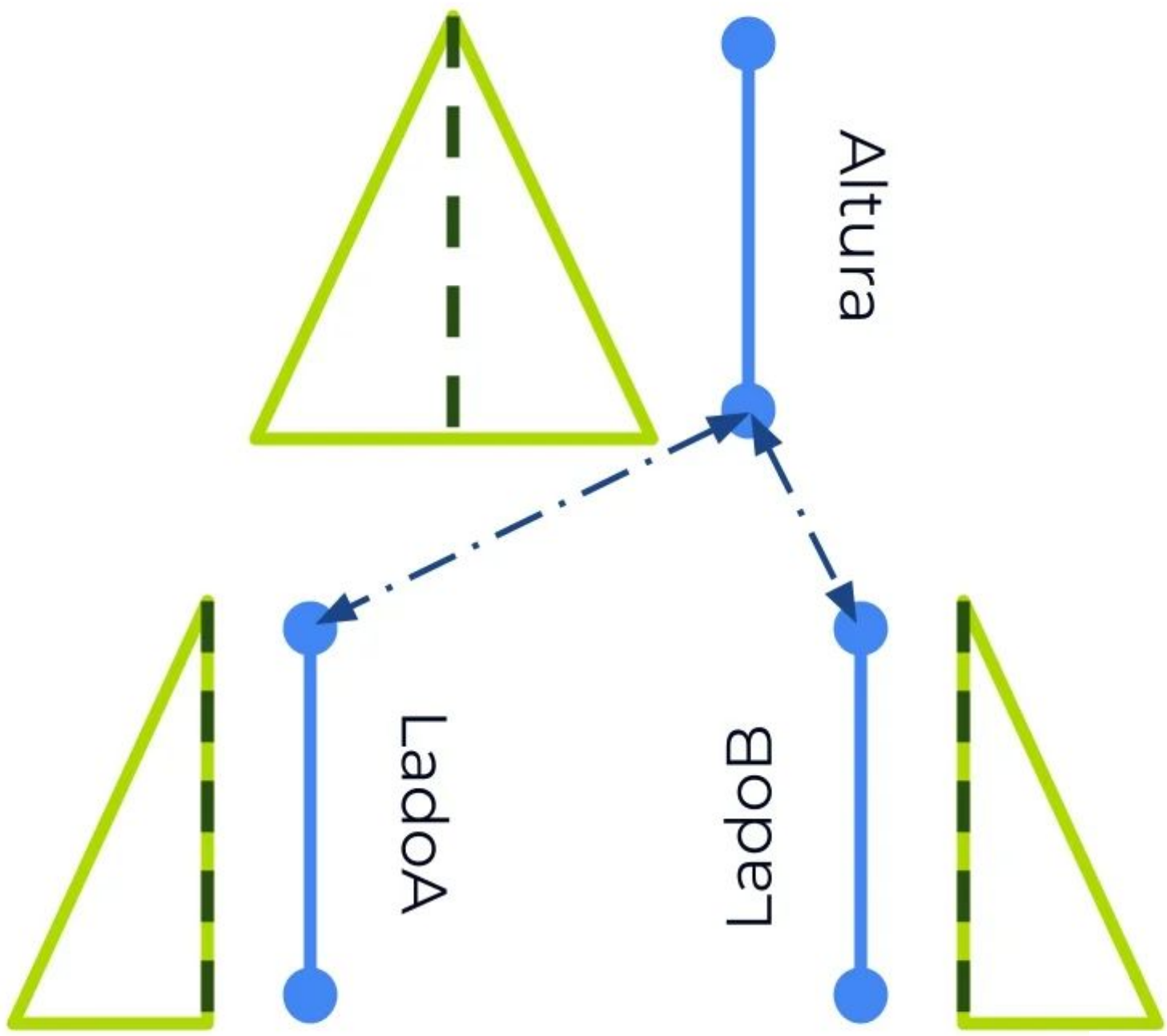
$$h = \sqrt{a^2 - \frac{b^2}{4}}$$

lado1

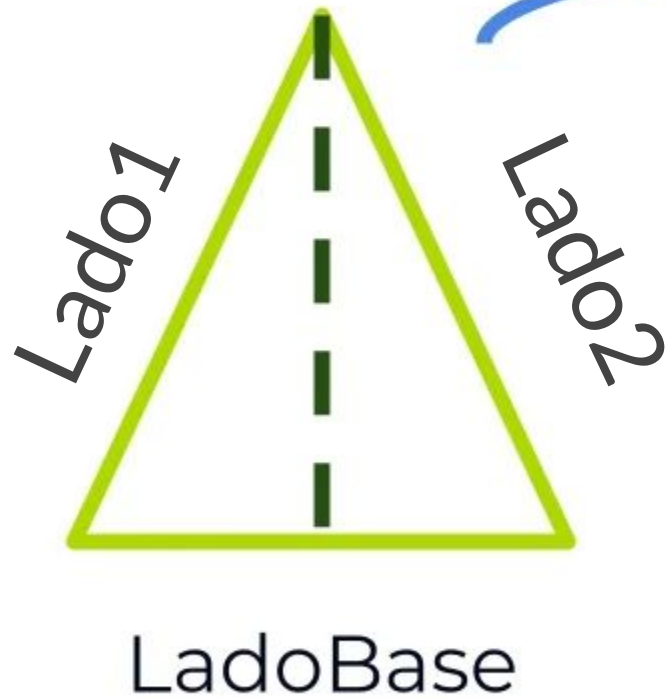
The diagram illustrates the formula for the height h of a triangle. The formula is $h = \sqrt{a^2 - \frac{b^2}{4}}$. A blue arrow points from the label **altura** to the variable h . Another blue arrow points from the label **base** to the variable b in the fraction. A third blue arrow points from the label **lado1** to the variable a . There are two yellow asterisks, one above the formula and one below it.

Teorema de Pitágoras

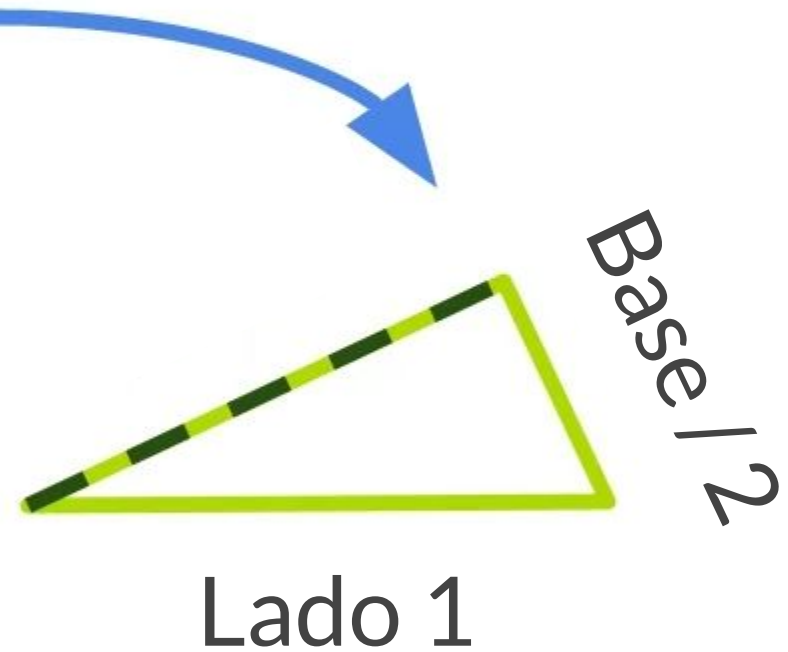
- El cuadrado de la **hipotenusa** es igual a la suma de los cuadrados de los catetos.



Triángulo Grande



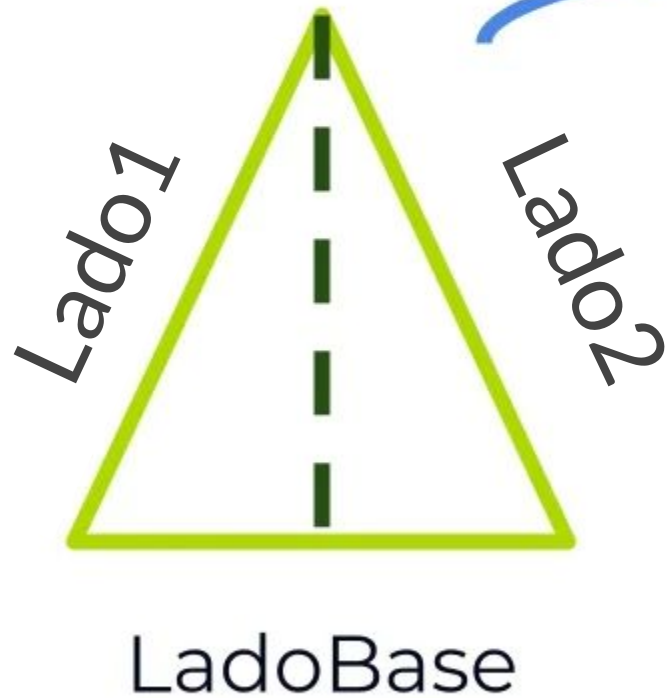
Triángulo Pequeño



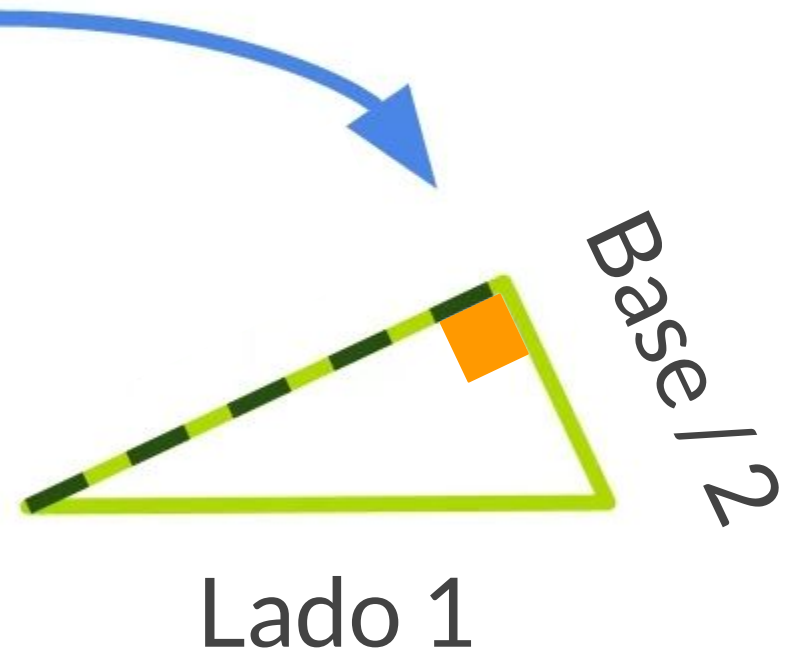
Hipotenusa

- El lado del triángulo rectángulo al frente del ángulo de 90 grados.

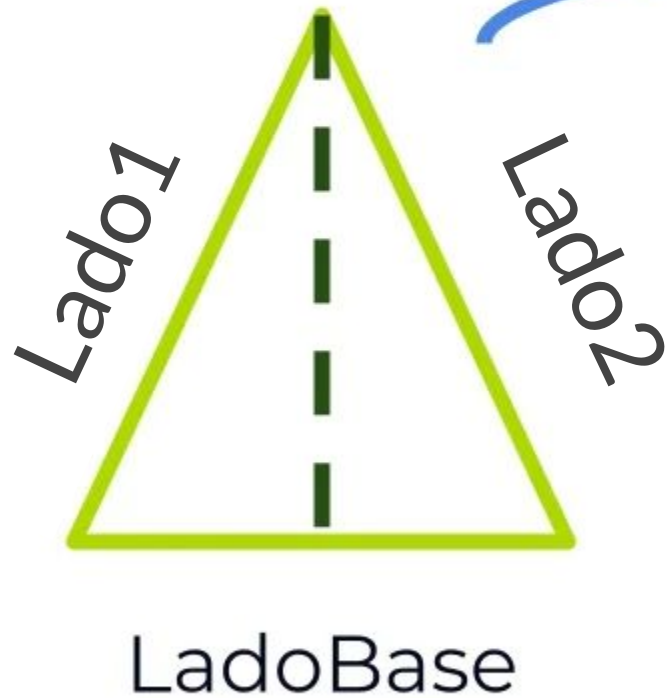
Triángulo Grande



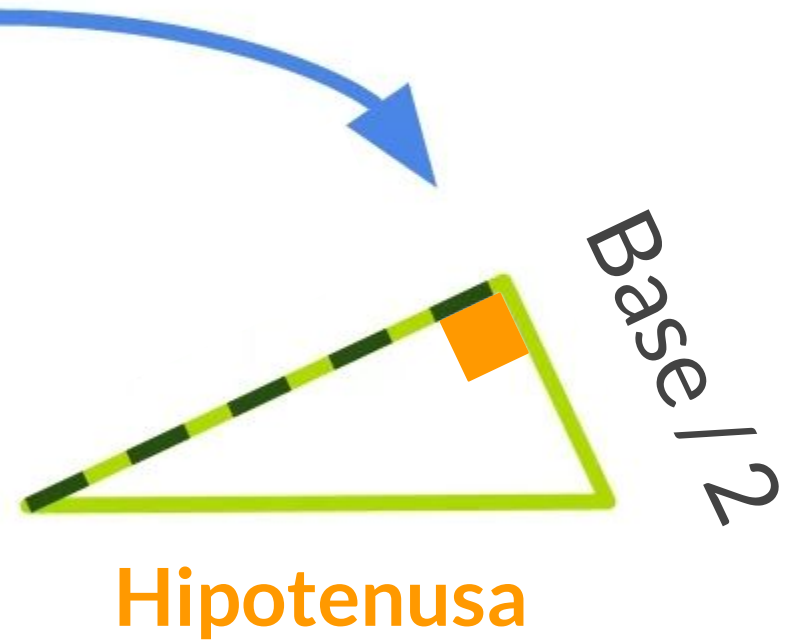
Triángulo Pequeño



Triángulo Grande



Triángulo Pequeño



Teorema de Pitágoras

El **cuadrado** de la **hipotenusa** es igual a la **suma de los cuadrados** de los catetos.

*

$$a^2 = h^2 + \left(\frac{b}{2}\right)^2$$

*

$$a^2 = h^2 + \left(\frac{b}{2}\right)^2$$

Diagram illustrating the relationship between variables in a geometric formula:

- a^2 is labeled **lado1** (side 1).
- h^2 is labeled **altura** (height).
- $\frac{b}{2}$ is labeled **base** (base).

A yellow asterisk (*) is positioned above the plus sign (+).

*

$$a^2 = h^2 + \frac{b^2}{4}$$

*

*

$$h^2 = a^2 - \frac{b^2}{4}$$

*

*

$$h = \sqrt{a^2 - \frac{b^2}{4}}$$

*

altura

*

base

$$h = \sqrt{a^2 - \frac{b^2}{4}}$$

lado1

*

Reto

- Sabiendo lo que miden los 3 lados, **encuentra la altura.**
- Debe ser un **triángulo escaleno** (todos los lados diferentes).



**¿Cómo calcular
porcentajes?**



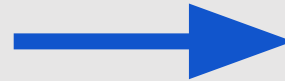
Precios y descuentos



Precio



Descuento



Compra

Precios y descuentos

\$100 → **15%** → **\$85**

Precio

Descuento

Compra

Precios y descuentos

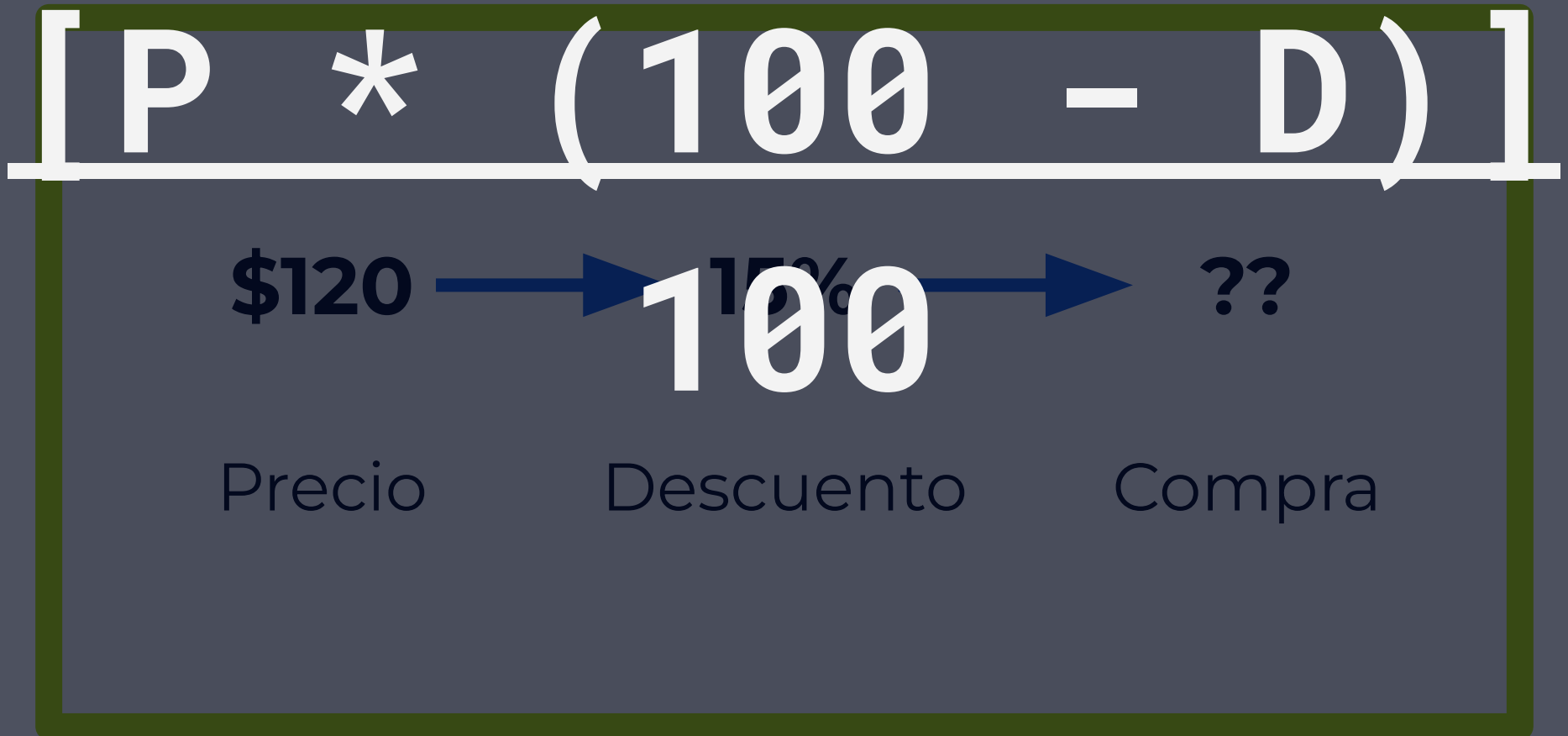
\$120 → **15%** → **??**

Precio

Descuento

Compra

Precios y descuentos



Precios y descuentos

\$120 → **15%** → **102**

Precio

Descuento

Compra



Cupones de descuento





Método find vs. método filter





**¿Qué es el promedio,
moda y mediana?**





**¿Cómo calcular
promedio, moda
y mediana?**





Calculando el promedio





Método reduce





Calculando la mediana de una lista impar





Calculando la mediana de una lista par



The background of the image is a close-up, slightly blurred view of an abacus. It features several horizontal wooden rods with beads. The beads are in various colors: dark brown, blue, yellow, green, and red. The lighting is soft, highlighting the texture of the wood and the smooth surface of the beads. The word "Promedio" is centered over the middle of the image in a white, sans-serif font.

Promedio

Media aritmética

Venta1 + Venta2 + Venta3

Cantidad de ventas

Media aritmética

$$\text{\$500} + \text{\$300} + \text{\$600}$$

3

Media aritmética

\$466.67



Media aritmética

$$\begin{aligned} & \text{Sueldo1} + \text{Sueldo2} \\ & + \text{Sueldo3} + \text{Sueldo4} \end{aligned}$$

Cantidad de gente
en el bar



Media aritmética

$$\text{\$500} + \text{\$750} + \text{\$400} + \text{\$450}$$

4



Media aritmética

\$525



Media aritmética

**Sueldo1 + Sueldo2 + Sueldo3
+ Sueldo4 + Bill Gates**

**Cantidad de gente
en el bar**



Media aritmética

$$\begin{array}{r} \$500 + \$750 + \$400 \\ + \$450 + \$100.000.000 \\ \hline \end{array}$$

5



Media aritmética

\$20.000.420

A high-speed photograph of a water droplet hitting a surface, creating a crown-shaped splash with many smaller droplets flying upwards. The image is in a monochromatic blue color scheme.

Mediana

Mediana

Sueldo1, Sueldo2, Sueldo 3

Mediana

\$450,

\$500,

\$600,

Mediana

\$500

Mediana

Sueldo1, Sueldo2, Sueldo3, Sueldo4

2

Mediana

\$450, \$500, \$600, \$100.000.000

2

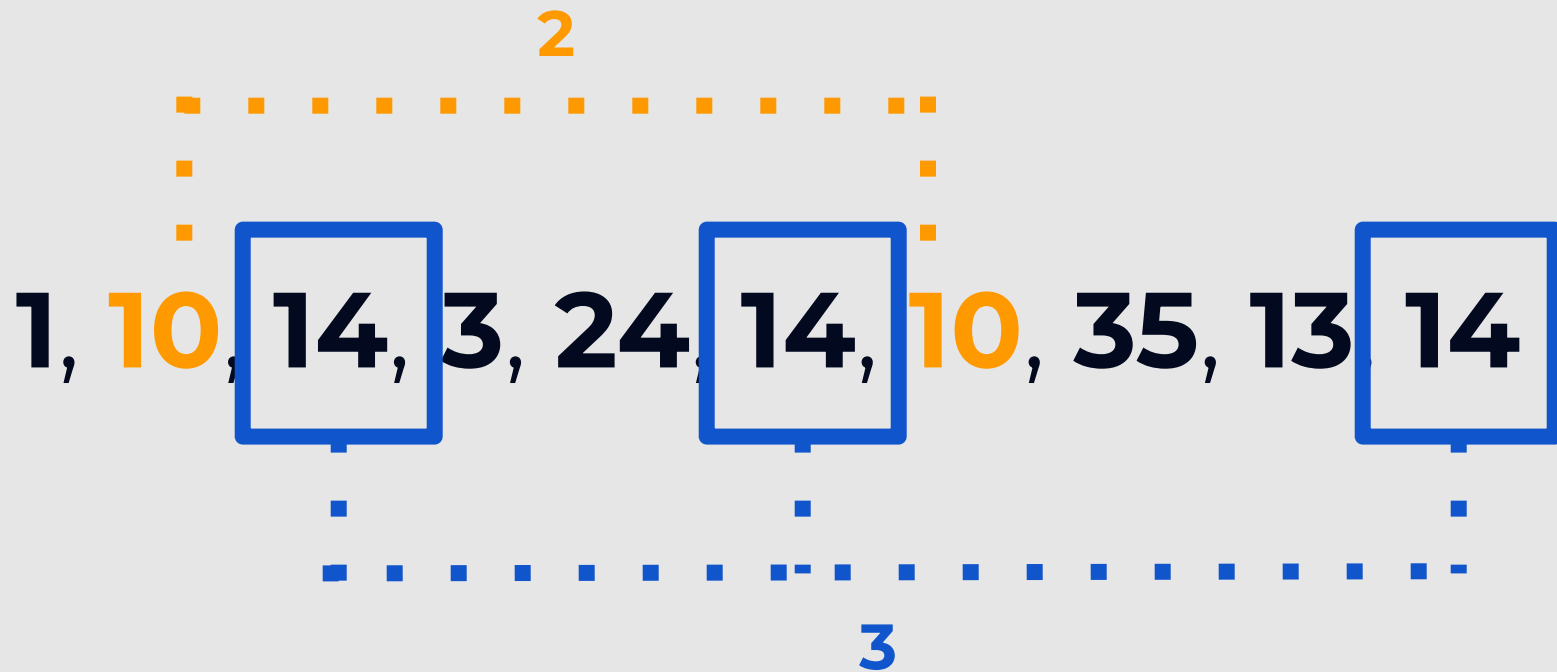
Mediana

\$550

The background of the image is a dark blue-grey color. It is covered with a dense, repeating pattern of green, cursive script that resembles handwriting. A thick, solid purple line runs diagonally from the top-left towards the bottom-right, crossing the entire frame. In the center of the image, the word "Moda" is written in a clean, white, sans-serif font.

Moda

Moda





Método sort



Array de números

11, 8, 31, 47, 53, 49, 72, 81, 99

Array de números



Array de números



Array de números

The diagram shows an array of numbers: 8, 11, 31, 47, 53, 49, 72, 81, 99. The number 11 is highlighted with a blue border and a green dot below it, labeled 'A'. The number 31 is highlighted with an orange border and an orange dot above it, labeled 'B'. The number 49 is highlighted in red.

8, 11, 31, 47, 53, 49, 72, 81, 99

A

B

Array de números

8, 11, 31, 47, 53, 49, 72, 81, 99

The diagram shows an array of numbers: 8, 11, 31, 47, 53, 49, 72, 81, 99. The number 11 is green. The number 31 is enclosed in a blue box, with a blue dashed line pointing down to the letter 'A'. The number 47 is enclosed in a yellow box, with an orange dashed line pointing up to the letter 'B'.

Array de números

The diagram shows an array of numbers: 8, 11, 31, 47, 53, 49, 72, 81, 99. The number 11 is green, 47 is blue, 53 is yellow, and 49 is red. A blue box highlights 47, and a yellow box highlights 53. A blue dashed line with the letter 'A' at the bottom points to the 47. An orange dashed line with the letter 'B' at the top points to the 53.

8, 11, 31, 47, 53, 49, 72, 81, 99

A

B

Array de números

The diagram shows an array of numbers: 8, 11, 31, 47, 53, 49, 72, 81, 99. The number 11 is green. The number 53 is enclosed in a blue box, with a blue dashed line and the letter 'A' below it. The number 49 is enclosed in an orange box, with an orange dashed line and the letter 'B' above it.

8, 11, 31, 47, 53, 49, 72, 81, 99

A

B

Array de números

8, 11, 31, 47, 49, 53, 72, 81, 99

B

A

The diagram shows a horizontal array of numbers: 8, 11, 31, 47, 49, 53, 72, 81, 99. The number 11 is green. The number 49 is enclosed in an orange box, and the number 53 is enclosed in a blue box. Above the orange box is an orange letter 'B' with three orange dots pointing down to it. Below the blue box is a blue letter 'A' with three blue dots pointing up to it.

Index	Value
0	8
1	11
2	31
3	47
4	49
5	53
6	72
7	81
8	99

Array de números

8, 11, 31, 47, 49, 53, 72, 81, 99

B

A




The diagram shows a horizontal array of numbers: 8, 11, 31, 47, 49, 53, 72, 81, 99. The numbers 11 and 49 are green, while the others are black. The number 53 is enclosed in a blue square, and the number 72 is enclosed in an orange square. Above the orange square is an orange letter 'B' connected to the square by a vertical dashed line. Below the blue square is a blue letter 'A' connected to the square by a vertical dashed line.

Index	Value	Color	Annotation
0	8	Black	
1	11	Green	
2	31	Black	
3	47	Black	
4	49	Green	
5	53	Black	Blue box, Pointer A
6	72	Black	Orange box, Pointer B
7	81	Black	
8	99	Black	

Algoritmos de ordenamiento

- Quicksort + Insertion sort.
- Bubble sort, Merge sort,
Binary tree sort...

Algoritmos con JS

- Estructuras de Datos. 
- Complejidad Algorítmica. 
- **¿Quieres más?** 



PlatziMath





Análisis salarial



Persona individual



Name



Salary



Persona individual



Name



Trabajos



Trabajos

[{



Year



Salary

}]

Países

[



]

Personas

Empresas

[



]

Personas

Trabajos



Company



Salary



Empresas

[] **.filter**
Personas

Análisis



Total



Promedio

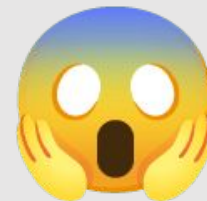


Mediana

Análisis



General



Top 10%