

OPERACIONES CON NOTACIÓN CIENTÍFICA

OMG!

Analiza el siguiente video con mucha atención.



Realiza las siguientes operaciones con cantidades expresadas en notación científica, sin usar calculadora.



SUMA Y RESTA

A)

$$\begin{aligned} 345.6 \times 10^{21} + 17.2 \times 10^{19} &= 345.6 \times 10^{21} + 0.17 \times 10^{21} = \quad \times 10^{21} \\ 6.27 \times 10^{33} + 54.3 \times 10^{32} &= 6.27 \times 10^{33} + \quad \times 10^{33} = \quad \times 10^{33} \\ 4.82 \times 10^{-17} - 7.3 \times 10^{-19} &= 4.82 \times 10^{-17} - \quad \times 10^{-17} = \quad \times 10^{-17} \\ 42.2752 \times 10^{27} - 183.71 \times 10^{25} &= 42.2752 \times 10^{27} - \quad \times 10^{27} = \quad \times 10^{27} \\ 560 \times 10^{36} - 26.1 \times 10^{39} &= \quad \times 10^{36} - 26.1 \times 10^{39} = - \quad \times 10^{39} \\ 0.76 \times 10^{-28} - 30 \times 10^{-30} &= 0.76 \times 10^{-28} - \quad \times 10^{-28} = \quad \times 10^{-28} \end{aligned}$$



MULTIPLICACIÓN

B)

$$(36 \times 10^5)(2 \times 10^{11}) = 72 \times 10^{\quad} = 7.2 \times 10^{\quad}$$

$$-(4 \times 10^{-3})(3 \times 10^8) = -12 \times 10^{\quad} = -1.2 \times 10^{\quad}$$

$$(-20 \times 10^{-12})(50 \times 10^{-2}) = -1000 \times 10^{\quad} = -1 \times 10^{\quad}$$

$$(7 \times 10^3)(0.03 \times 10^{-4}) = 0.21 \times 10^{\quad} = 2.1 \times 10^{\quad}$$

$$(-12 \times 10^7)(-2 \times 10^{-3}) = 24 \times 10^{\quad} = 2.4 \times 10^{\quad}$$

$$(0.5 \times 10^{-11})(400 \times 10^{-2}) = 200 \times 10^{\quad} = 2 \times 10^{\quad}$$

En multiplicación, los exponentes se suman:

$$x^m \times x^n = x^{m+n}$$



DIVISIÓN

C)

$$\frac{22.6 \times 10^{15}}{2 \times 10^4} = 11.3 \times 10^{\quad} = 1.13 \times 10^{\quad}$$

$$\frac{-3 \times 10^{-23}}{6 \times 10^6} = -0.5 \times 10^{\quad} = -5 \times 10^{\quad}$$

$$\frac{210 \times 10^{14}}{5 \times 10^{-8}} = 42 \times 10^{\quad} = 4.2 \times 10^{\quad}$$

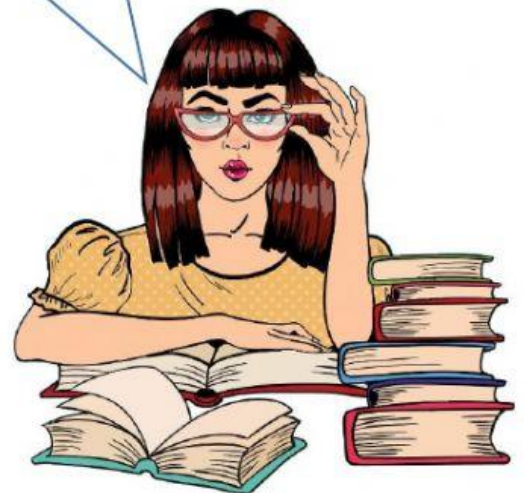
$$\frac{3.6 \times 10^{12}}{12.2 \times 10^{20}} = 0.2951 \times 10^{\quad} = 2.951 \times 10^{\quad}$$

$$\frac{33 \times 10^{-7}}{-3 \times 10^{-5}} = -11 \times 10^{\quad} = -1.1 \times 10^{\quad}$$

$$\frac{2 \times 10^{11}}{50 \times 10^9} = 0.04 \times 10^{\quad} = 4 \times 10^{\quad}$$

En división, los exponentes se restan:

$$\frac{x^m}{x^n} = x^{m-n}$$



POTENCIA

D)

$$(5 \times 10^{14})^2 = 25 \times 10^{\quad} = 2.5 \times 10^{\quad}$$

$$(-6 \times 10^{-22})^3 = -216 \times 10^{\quad} = -2.16 \times 10^{\quad}$$

$$(4 \times 10^{-21})^3 = 64 \times 10^{\quad} = 6.4 \times 10^{\quad}$$

$$(-8 \times 10^{32})^2 = \quad \times 10^{\quad} = \quad \times 10^{\quad}$$

$$-(13 \times 10^{18})^2 = -\quad \times 10^{\quad} = -\quad \times 10^{\quad}$$

$$(-2 \times 10^9)^{-4} = \quad \times 10^{\quad} = \quad \times 10^{\quad}$$

En potencia, los exponentes se multiplican:

$$(x^m)^n = x^{mn}$$



RAÍZ CUADRADA

E)

(Potencia par)

$$\sqrt{256 \times 10^{32}} = 16 \times 10^{\quad} = 1.6 \times 10^{\quad}$$

$$\sqrt{529 \times 10^{-54}} = 23 \times 10^{\quad} = 2.3 \times 10^{\quad}$$

$$\sqrt{121 \times 10^{-40}} = 11 \times 10^{\quad} = 1.1 \times 10^{\quad}$$

(Potencia impar)

$$\sqrt{102.4 \times 10^{25}} = \sqrt{1024 \times 10^{\quad}} = 32 \times 10^{\quad} = 3.2 \times 10^{\quad}$$

$$\sqrt{4840 \times 10^{-21}} = \sqrt{484 \times 10^{\quad}} = \quad \times 10^{\quad} = \quad \times 10^{\quad}$$

$$\sqrt{22.5 \times 10^{17}} = \sqrt{225 \times 10^{\quad}} = \quad \times 10^{\quad} = \quad \times 10^{\quad}$$

$$\sqrt{160 \times 10^{-9}} = \sqrt{1600 \times 10^{\quad}} = \quad \times 10^{\quad} = \quad \times 10^{\quad}$$

$$\sqrt{129.6 \times 10^{-31}} = \sqrt{1296 \times 10^{\quad}} = \quad \times 10^{\quad} = \quad \times 10^{\quad}$$

En raíz, los exponentes se dividen:

$$\sqrt[n]{x^m} = x^{m/n}$$

Para que quede entero el exponente final, se debe volverse par.



OPERACIONES COMBINADAS

F)

$$\frac{(8 \times 10^{-22})(-5 \times 10^6)}{(-2 \times 10^{-12})^2} = \frac{40 \times 10^{\quad}}{4 \times 10^{\quad}} = 10 \times 10^{\quad} = 1 \times 10^{\quad}$$

$$\frac{(-6 \times 10^{-7})^3}{2\sqrt{16 \times 10^{18}}} = \frac{-216 \times 10^{\quad}}{2(4 \times 10^{\quad})} = \frac{-216 \times 10^{\quad}}{8 \times 10^{\quad}} = -27 \times 10^{\quad}$$

Listo!
Ya terminamos!

