PROBLEMAS DE NÚMEROS

01

N° 1°: x

N° 2°: y

$$\left.\begin{array}{l} x+y=15 \\ x^2-y^2=15 \end{array}\right\} \rightarrow y=15-x$$

$$x^2-(15-x)^2=15$$

$$x^2-(225-30x+x^2)=15$$

$$x^2-225+30x-x^2=15$$

$$30x=15+225$$

$$30x=240$$

$$\boxed{x=\frac{240}{30}=8}$$

$$\boxed{y=15-8=7}$$

Sol: Los números son 7 y 8

02

N° 1°: x

N° 2°: y

$$\left.\begin{array}{l} x+y=23 \\ x\cdot y=130 \end{array}\right\} \rightarrow y=23-x$$

$$x(23-x)=130$$

$$23x-x^2=130$$

$$x^2-23x+130=0$$

$$x=\frac{23\pm\sqrt{529-520}}{2}=\frac{23\pm 3}{2}$$

$$\begin{array}{l} 13 \\ 10 \end{array}$$

- $\boxed{x_1=13} \rightarrow \boxed{y_1=23-13=10}$
- $\boxed{x_2=10} \rightarrow \boxed{y_2=23-10=13}$

Sol: Los números son 10 y 13

(45)

Fracción: $\frac{x}{y}$

No cambia es que es equivalente

$$\left.\begin{array}{l} \frac{x+15}{y+18} = \frac{x}{y} \\ \frac{x+55}{y+6} = 3\cdot\frac{x}{y} \end{array}\right\}$$

$$\left.\begin{array}{l} \text{I)}\ (x+15)y = x(y+18) \\ \text{II)}\ (x+55)y = 3x(y+6) \end{array}\right\} \begin{array}{l} \cancel{xy}+15y = \cancel{xy}+18x \\ xy+55y = 3xy+18x \end{array}$$

$$\left.\begin{array}{l} 15y = 18x \\ 2xy+18x-55y = 0 \end{array}\right\} \longrightarrow y = \frac{18x}{15} = \frac{6x}{5}$$

$$2x\frac{6x}{5} + 18x - \cancel{55}^{11}\cdot\frac{6x}{\cancel{5}} = 0$$

$$\frac{12x^2}{5} + 18x - 66x = 0$$

$$\frac{12x^2}{5} - 48x = 0$$

$$x\left(\frac{12x}{5} - 48\right) = 0$$

$x = 0$ $\qquad$ $\frac{12x}{5} - 48 = 0$

- $x_1 = 0 \rightarrow \cancel{y_1 = 0}$

Cauf $\frac{0}{0}$ no puede ser ↓ No es solución.

$$\frac{12x}{5} = 48$$

$$x = \frac{5\cdot\cancel{48}^{4}}{\cancel{12}} = 20$$

- $x_2 = 20 \rightarrow y_2 = \frac{6\cdot 20}{5} = 24$

Sol: La fracción es $\frac{20}{24} = \frac{5}{6}$

Cauf I) $\frac{20+15}{24+18} = \frac{35}{42} = \frac{5}{6} = \frac{20}{24}$ SI

II) $\frac{20+55}{24+6} = \frac{75}{30} = \frac{15}{6} = \frac{5}{2}$ $\qquad 3\cdot\frac{20}{24} = \frac{20}{8} = \frac{5}{2}$ SI

(63)

Nº1: x

Nº2: y

$$\left.\begin{array}{l} x+y=16 \\ \frac{1}{x}+\frac{1}{y}=\frac{1}{3} \end{array}\right\} \rightarrow y=16-x$$

$$\downarrow$$

$$\frac{1}{x}+\frac{1}{16-x}=\frac{1}{3}$$

$$\frac{3(16-x)}{3x(16-x)}+\frac{3x}{3x(16-x)}=\frac{x(16-x)}{3x(16-x)}$$

$$48-3x+3x=16x-x^2$$

$$x^2-16x+48=0$$

$$x=\frac{16\pm\sqrt{256-192}}{2}=\frac{16\pm 8}{2}\begin{array}{l}\nearrow 12\\ \searrow 4\end{array}$$

- $x_1=12 \rightarrow y_1=16-12=4$
- $x_2=4 \rightarrow y_2=16-4=12$

$\rightarrow$ **Sol: Un nº es 4 y el otro, 12**

(70)

Nº1: x ← mayor

Nº2: y ← menor

$$\left.\begin{array}{l} \frac{x}{3}+\frac{y}{2}=y-1 \\ \sqrt{x+2y}=5 \end{array}\right\}$$

I) $\frac{2x}{6}+\frac{3y}{6}=\frac{6y}{6}-\frac{6}{6}$ $\Rightarrow 2x+3y=6y-6$

II) $\left(\sqrt{x+2y}\right)^2=5^2$ $\Rightarrow x+2y=25$

$$\left.\begin{array}{l} 2x-3y=-6 \\ x+2y=25 \end{array}\right\} \cdot(-2) \rightarrow \left.\begin{array}{l} 2x-3y=-6 \\ -2x-4y=-50 \end{array}\right\}$$

$$-7y=-56$$

$$y=8 \rightarrow x=25-2\cdot 8$$

$$x=9$$

Sol: Los nº son 9 y 8