

S.3 Resolviendo Ecuaciones
Lineales 2

$$S.12) 8t + 9 = 6s$$

$$(a) 8t = 6s - 9$$

$$(b) t = \frac{6s - 9}{8} = \frac{s}{2} - \frac{9}{8}$$

$$S.13) 7j - 4 + 3j = 6 + 2j - 4j - 8$$

$$10j - 4 = -2j - 2$$

$$12j = 2$$

$$j = \frac{1}{6}$$

Comprobación.

$$7\left(\frac{1}{6}\right) - 4 + 3\left(\frac{1}{6}\right) = 6 + 2\left(\frac{1}{6}\right) - 4\left(\frac{1}{6}\right) - 8$$

$$-4 + \frac{10}{6} = -2 - \frac{2}{6}$$

$$\frac{-4 - 24 + 10}{6} = \frac{-12 - 2}{6}$$

$$\frac{-14}{6} = -\frac{14}{6} \quad \checkmark$$

$$S.14)$$

$$(a) 8k - 13\frac{2}{5} = -12\frac{1}{2s}$$

$$(b) 4(t-7) = 3(2t+3)$$

$$4t - 28 = 6t + 9$$

$$8k = 13 + \frac{2}{5} - 12 - \frac{1}{2s}$$

$$-3t = 2t$$

$$8k = (13 - 12) + \left(\frac{10}{2s} - \frac{1}{2s}\right)$$

$$-\frac{3t}{2} = t$$

$$8k = 1 + \frac{9}{2s}$$

$$8k = \frac{34}{2s}$$

$$(c) \frac{2r-7}{9} = 3$$

$$k = \frac{\frac{34}{2s}}{2s} = \frac{17}{100}$$

$$2r - 7 = 27$$

$$(d) \frac{3x+4}{s} = \frac{2x-8}{7}$$

$$2r = 34$$

$$r = 17$$

$$7(3x+4) = s(2x-8)$$

$$21x + 28 = 10s - 8s$$

$$11x = -68 \quad x = -\frac{68}{11}$$

$$S.15) \quad (a) \frac{9}{5} - \frac{2x}{3} = \frac{6x}{5} + \frac{7}{3}$$

$$\frac{9}{5} - \frac{7}{3} = \frac{6}{5}x + \frac{2}{3}x$$

$$\frac{27-35}{15} = \frac{18+10}{15}x$$

$$-\frac{8}{15} = \frac{28}{15}x$$

$$-8 = 28x$$

$$-\frac{8}{28} = x$$

$$-\frac{2}{7} = x$$

$$(a) \frac{4-7t}{6} = \frac{t}{8} + 2$$

$$4-7t = 6\left(\frac{t}{8} + 2\right)$$

$$4-7t = \frac{3}{4}t + 12$$

$$-7t - \frac{3}{4}t = 8$$

$$-\frac{28}{4}t - \frac{3}{4}t = 8$$

$$-\frac{31}{4}t = 8$$

$$t = \frac{-8 \cdot 4}{31}$$

$$t = -\frac{32}{31}$$

$$S.16) \quad (a) 5w+3-2w = w-8+2w-3$$

$$5w-2w-w-2w = -8-3-3$$

$$0 = -14 \quad \text{CONTRADICIÓN.}$$

La ecuación (a) NO tiene solución.

$$(b) 2z-8-5z = 2-3z-10$$

$$2z-5z+3z = 2-10+8$$

$$0 = 0 \quad (b) \text{ Tiene infinitas soluciones.}$$

Imp. En una ecuación lineal, cuando se llegue a $0=0$ (las constantes dan 0 y las variables dan 0), tiene infinitas soluciones.

Si se llega a $0=\alpha$, con $\alpha \neq 0$, la ecuación no tiene soluciones.

$$S.17) 2y - s = 17 \quad y - cy - 8 = 36$$

$$y = \frac{22}{2}$$

$$cy = 44$$

$$y = 11$$

$$y = \frac{44}{c}$$

$$c = 4$$

Exercises

$$S.3.1) (a) 2x + s = 11$$

$$2x = 5$$

$$x = \boxed{2}$$

$$(b) \frac{1}{3} = -1\frac{1}{2} - 6a$$

$$6a = -1 - \frac{1}{2} - \frac{1}{3}$$

$$6a = -\frac{6}{8} - \frac{3}{8} - \frac{2}{6}$$

$$6a = -\frac{11}{6}$$

$$a = \boxed{-\frac{11}{36}}$$

$$(c) -7t + 19 = 61$$

$$-7t = 42$$

$$t = \boxed{-6}$$

$$S.3.2) (a) 3y + 9 = 2y + 1$$

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

$$(b) 5x - 3 - x = 14 - 3x + 11$$

$$7x = 28$$

$$x = \boxed{4}$$

$$(c) 1000a + 210 = 998a + 232$$

$$2a = 14$$

$$a = \boxed{7}$$

$$S.3.3) 3x - 2 = 11$$

$$3x = 13$$

$$x = \frac{13}{3}$$

$$\frac{2}{6} \left(\frac{13}{3} \right) + s = \boxed{31}$$

$$S.3.4) (a) \frac{2}{3}t + \frac{4}{5} = -\frac{1}{2}$$

$$\frac{2}{3}t = -\frac{1}{2} - \frac{4}{5}$$

$$\frac{2}{3}t = \frac{-5 - 8}{10}$$

$$\frac{2}{3}t = -\frac{13}{10}$$

$$t = -\frac{13 \cdot 3}{10 \cdot 2} = \boxed{-\frac{39}{20}}$$

$$(b) \frac{1}{2}(z+3) = \frac{1}{3}(z-7)$$

$$3(z+3) = 2(z-7)$$

$$3z + 9 = 2z - 14$$

$$z = -14 - 9$$

$$z = \boxed{-23}$$

$$(c) \frac{4x}{7} - \frac{1}{2} = -\frac{3}{4} - \frac{2x}{5}$$

$$\frac{4}{7}x + \frac{2}{5}x = -\frac{3}{4} + \frac{2}{4}$$

$$\frac{20+14}{35}x = -\frac{1}{4}$$

$$\frac{34}{35}x = -\frac{1}{4}$$

$$x = -\frac{35}{34 \cdot 4} = -\frac{35}{136}$$

5.3.5)

$$\frac{2x+7}{5} = -\frac{1-3x}{8}$$

$$8(2x+7) = -5(1-3x)$$

$$16x+56 = -5 + 15x$$

$$x = -61$$

$$5.3.6) (a) 2(z+3) - 5(6-z) = 8(3z+3) - 4(1-2z)$$

$$2z+6 - 30 + 5z = 24z + 24 - 4 + 8z$$

$$2z + 5z - 24z - 8z = 24 - 4 - 5 + 30$$

$$-25z = 44$$

$$z = -\frac{44}{25}$$

$$(b) \frac{m+11}{3} + \frac{m-2}{6} = \frac{2m-1}{12}$$

$$\frac{2(m+11)}{6} + \frac{m-2}{6} = \frac{2m-1}{12}$$

$$\frac{2m+22+m-2}{6} = \frac{2m-1}{12}$$

$$4m+44+2m-4 = 2m-1$$

$$4m+2m-2m = -1+4-44$$

$$4m = -41$$

$$m = -\frac{41}{4}$$

$$(c) \frac{p-2}{4} = \frac{2p-3}{8}$$

$$\frac{2p-4}{8} = \frac{2p-3}{8}$$

$$2p-4 = 2p-3$$

$0 = 1$. No hay soluciones

(5.5.5)

S.4 Problemas con Palabras

Para resolver problemas con contexto, usualmente basta con seguir los pasos:

- 1) Leer el problema cuidadosamente
- 2) Convertir las palabras a Números
- 3) Resolver la matemática
- 4) Convertir la solución a palabras
- 5) Revisar la respuesta.

Problemas (Individual)

S.18

$$2x + 7 = 35$$

$$2x = 28$$

$$x = 14$$

S.19

$$6 + \frac{1}{2}x = 4 + \frac{1}{3}x$$

$$\frac{1}{2}x - \frac{1}{3}x = -2$$

$$\frac{1}{6}x = -2$$

$$x = -12$$

S.20

$$\frac{x+12}{13} = \frac{x-13}{12}$$

$$12x + 144 = 13x - 169$$

$$313 = x$$

$$S.21 \quad x + x + 4s = 299$$

$$2x = 254$$

$$x = 127$$

S.22.

$$\frac{1}{4}(x) = \frac{1}{10}(x+9)$$

Donde x es la cantidad
de quarters.

$$\frac{1}{4}x - \frac{1}{10}x = \frac{9}{10}$$

$$\frac{10-4}{40}x = \frac{9}{10}$$

$$x = 6$$

$$x = \frac{3}{8} \text{ doler}$$