① $x = \frac{1}{12}$ $y = \frac{1}{16}$ $z = \frac{1}{18}$ $\frac{3}{12} + \frac{4}{16} + \frac{x}{18} = 1$ $\frac{3}{12} + \frac{4}{16} - \frac{1}{1} = -\frac{x}{18}$

$\frac{12 + 12 - 48}{48} = \frac{-24}{48} = -\frac{x}{18} = -\frac{1}{2}$ $x = \frac{-18}{-2} = +9$ $\boxed{x = 9}$

② $\frac{4\times10^{130}\left(2\times10^{200} - 10^{201}\right)^2}{1.6\times10^{535}} = \frac{4\times10^{130}\left(2\times10^{200} - 10\times10^{201}\right)^2}{1.6\times10^{535}} = \frac{\left(-8\times10^{200}\right)^2 4\times10^{130}}{1.6\times10^{535}}$

$\frac{64\times10^{400}\cdot 4\times10^{130}}{1.6\times10^{535}} = \frac{256\times10^{530}}{1.6\times10^{535}} = \frac{256\times10^{532}}{1.6\times10^{535}} = 1.6\times10^{532-535} = \boxed{1.6\times10^{-3}}$

③

un auto | $x + x\cdot.03 = x + 2235$ ? $x(1+0.03) = x + 2235$

$x + x\cdot.03 - x = 2235$ $.03x = 2235$

$x = 2235/0.03 = 74\,500$

④ Efectue las operaciones y simplifica

$(3x-2)(3x+1) + (4-x)^2 - (2x+1)(2x-1) =$

$9x^2 + 3x - 6x - 2 + (16 - 8x + x^2) - (4x^2 - 1) =$

$9x^2 + x^2 - 4x^2 + 3x - 6x - 8x - 2 + 16 + 1$

$6x^2 - 11x + 15$

$(6x)^2 - 11(6x) + 90$

| | |
|---|---|
| 90 | 2 |
| 45 | 3 |
| 15 | 3 |
| 5 | 5 |
| 1 | |

$-6\times15 = 9$
$3\times30 = 27$
$2\times45$
$5\times18 = 13$
$9\times10 =$

⑤ 1200 mezcladas con 55% azucar

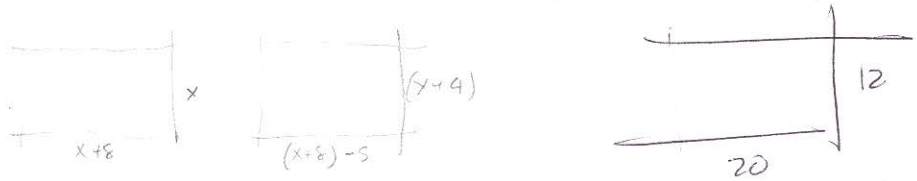
$x + y = 1200$

$x(.30) + y(.70) = (.55)(1200)$

$30x + 70y = 55(1200) = 66\,000$
$x + y = 1200$ $\times(-30)$
$-30x - 30y = -36\,000$
$40y = 30\,000$ $y = \frac{30\,000}{40} = 750$

mezcladas de 70% azucar = 750 litros
mezcladas de 30% azucar = $x + 750 = 1200$ ∴ $x = 1200 - 750 = 450$ lts

⑥




$x(x+8)$
$x^2 + 8x$

$(x+4)\times(x+8-5)$
$(x+4)\times(x+3)$
$x^2 + 3x + 4x + 12$

$x^2 + 8x = x^2 + 7x + 12$
$x^2 - x^2 + 8x - 7x = 12 = 0$
$\boxed{x = +12}$

⑦ $\frac{3x^2 + 7x - 6}{6x^2 - 4x + 3x - 2} = \frac{(3x)^2 + 7(3x) - 18}{6x^2 + 3x - 4x - 2} = \frac{(3x+9)(3x-2)}{3 \quad 1} = \frac{(x+3)(3x-2)}{(3x-2)(2x+1)} = \boxed{\frac{x+3}{2x+1}}$

$2x(3x-2) + (3x-2)$
$(3x-2)(2x+1)$

Examen "A"

Ximena $\frac{1}{x}$ $\qquad \frac{1}{x} + \frac{1}{x+5} = \frac{1}{6}$

(8) Cecilia $\frac{1}{x+5}$ $\qquad \frac{1}{6} - \frac{1}{x} = \frac{1}{(x+5)} \therefore \frac{x-6}{6x} = \frac{1}{x+5}$ $\qquad (x-6)(x+5) = 6x$

$x^2 + 5x - 6x - 30 = 6x$ ó $x^2 - x - 30 = 6x \therefore x^2 - x - 6x = 30$

$x^2 - 7x = 30$ $\qquad x^2 - 7x + \left(\frac{7}{2}\right)^2 = 30 + \left(\frac{7}{2}\right)^2$ $\qquad \left(x - \frac{7}{2}\right)^2 = 30 + \frac{49}{4} = \frac{120+49}{4} = \frac{169}{4}$

$\left(x - \frac{7}{2}\right)^2 = \frac{169}{4} \therefore x - \frac{7}{2} = \pm\sqrt{\frac{169}{4}} = \pm\frac{13}{2}$ $\qquad \boxed{x_1 = \frac{7}{2} + \frac{13}{2} = \frac{20}{2} = 10}$ ✓

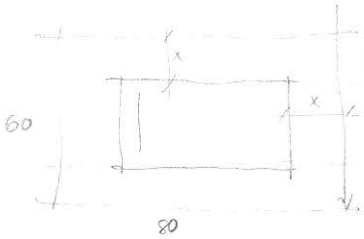
$x_2 = \frac{7}{2} - \frac{13}{2} = -\frac{6}{2} = -3$ ✓

Ximena = 10 hrs ✓

Cecilia = 15 hrs ✓

$\frac{1}{10} + \frac{1}{15} = \frac{1}{6}$

(9)




$2(80x) + x(60-2x)2 = (60-2x)(80-2x) = 2400$

$160x + 120x - 4x^2 = 2400 - 120x - 160x + 4x^2 = 2400$

$280x - 4x^2 = 2400$

$140x - 2x^2 = 1200$

$70x - x^2 = 600$

$x^2 - 70x = -600$

$x^2 - 70x + 600 = 0$

$a = 1$

$b = -70$

$c = 600$

Sol de $x = \frac{-(-70)^2 \pm \sqrt{(-70)^2 - 4(1)(600)}}{2(1)}$

$x = \frac{+70 \pm \sqrt{4900 - 2400}}{2} = \frac{+70 \pm \sqrt{2500}}{2}$

$x = \frac{70 \pm 50}{2}$

$\boxed{x_1 = 70 + 50 = \frac{120}{2} = 60 \qquad x_2 = 70 - 50 = \frac{20}{2} = 10}$