Aptitude Assignment 2

Sol 1 $2:3$ to $4:11$

$$40 : 3w = 40 : (11(w+x)/4)$$
$$w = 11x$$

i.e, initial amount of water was $11x$ ltr.

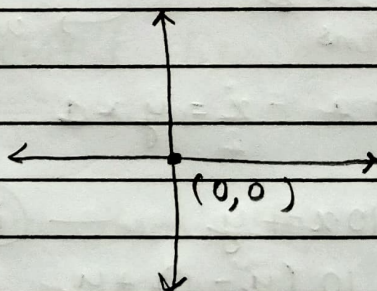$$1.5 \times 40 = 11x$$
$$x = 6$$
$$440 + 4y = 11 \times 40$$
$$y = 20 \text{ ltr} \quad \underleftarrow{Ans}$$

Sol 2. $2x + 3y = 0$
$$x = 0, \ y = 0$$

$(0,0)$

Sol 3 $a^2 - b^2 = 19$
$$(a+b)(a-b) = 19$$
$\because$ 19 is prime no only 2 factors 19×1

Case 1 : $a+b = 19$
$$a - b = 1 \qquad \text{Then, } a = 10, \ b = 9$$

Case 2 : $a + b = 1 \qquad\qquad a - b = 19$
$$a = 10$$
$$b = -9$$

$\therefore$ b can't be +ve Hence sol. is $a = 10, b = 9$

$\curvearrowright Ans$

Sol 4 $(a+b+c)^2 = a^2+b^2+c^2 + 2(ab+bc+ca)$

$$5^2 = 10 + 2(ab+bc+ac)$$

$$ab+bc+ac = 7.5 \quad - \quad \text{①}$$

Now, $(a+b+c)(a^2+b^2+c^2-ab-bc-ac) = a^3+b^3+c^3-3abc$

$$5(10-7.5) = a^3+b^3+c^3-3abc$$

$\therefore$ $a^3+b^3+c^3-3abc = 12.5$ Ans ←

Sol 5 x & y are the digits

$\underset{tens}{x}$ & $\underset{\rightarrow unit}{y}$

$$x = y-1$$

$$\Rightarrow \quad 10x+y \quad - \quad \text{①}$$
$$\Rightarrow \quad 10(y-1)+y \quad \Rightarrow \quad 11y-10$$

reversed $\quad 10y+x \quad - \quad \text{②}$

eq ① + ② $\qquad (11y-10)+(10y+x) = 21y+x-10$

$\therefore$ above ① + ② (sum) is perfect square

$$21y + x - 10 = K^2$$

$\therefore$ x & y are between $[0,9]$

when $y=2$
$32 + x = K^2$

$\therefore$ 2 digit nos are 23 & 32 then, $\sqrt{32+23} = \sqrt{55}$ Ans