System of linear Equation #L1.3

eq) $8x + 8y + 4z = 1960$ ⇒ Buyer A → div by 2 = $4x + 4y + 2z = 980$

$- \; 12x + 5y + 7z = 2216$ ⇒ Buyer B ← $12x + 12y + 6z = 2940$ (↳ × 3)

$- \; 3x + 2y + 5z = 1135$ ⇒ Buyer C

Subtract from,

$7y - z = 725$

... (Solve the rest during revision)

- linear eqⁿ is an eqⁿ of the form,

$$a_1x_1 + a_2x_2 + \ldots + a_nx_n = b$$

(b ↳ real no.)

x_1, x_2 are the variables.

a_1, a_2 are the coefficients.

- A system of linear eqⁿ is the collection of more linear eqⁿ with same set of variables.
- The solⁿ is the group of values to the variables such that all the eqⁿ are simultaneously satisfied...
- System of linear eqⁿ is equivalent to a matrix eqⁿ of form

$$Ax = b$$

A → coefficient matrix $\begin{bmatrix} a_1 & a_{12} & \ldots \\ \vdots & & \end{bmatrix}$

x → column matrix $\begin{bmatrix} x_1 \\ x_2 \\ \vdots \end{bmatrix}$

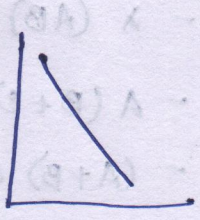
- There are 3 possibilities for the solⁿ of linear system of eqⁿ.
  - ∞ solⁿ
  - 1 unique solⁿ
  - no solⁿ

- ∞ solⁿ ⇒ $2x + 4y = 215$

  $4x + 2y = 430$

  (LHS = RHS ratio $\frac{1}{2}, \frac{1}{2}$)

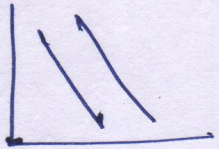
both the equaⁿ represent the same straight line in $\mathbb{R}^2$



- no soln ⇒ $(2x+y = 215) \times 2$

$4x+2y = 400$

$430 \neq 400$.



both the eqn have parallel line

- unique soln ⇒ $2x+y =$ sth...

$3x+y =$ sth...