Equation of the hyperplane :-

Eq^n of line is $y = ax + b$. However although hyperplane is line, its eq^n is

$$w^T x = 0$$

where w and x are the vectors and $w^T x$ is the computation of dot product of two vectors.

Given two vectors

$$w = \begin{pmatrix} -b \\ -a \\ 1 \end{pmatrix} \quad \text{and} \quad x = \begin{pmatrix} 1 \\ x \\ y \end{pmatrix}$$

$$w^T x = y - ax - b$$

→ The Hyperplane eq^n $w^T x$ is used in place of $y = ax + b$ because it is easier to work ~~with~~ in more dimension with this notation.

→ and vector w will always be normal to the *** hyperplane .