* Random Variable

↳ A set of possible values from a random experiment. $\begin{cases} x=3 \\ x=5 \end{cases}$

* Tossing a coin → Experiment is random, outcomes will be random

↳ H, T.

↳ Quantify these random values

$$X = \begin{cases} H \\ T \end{cases}, \qquad X = \begin{cases} 0 \longrightarrow \text{tail (T)} \\ 1 \longrightarrow \text{Head (H)} \end{cases}$$

$X = \{0, 1\}$

↓

random variable.

⇓

It can take any value from the set of values.

* We have an experiment (tossing a coin)
* quantify each event (0,1)
* This value is random variable.

$x + 5 = 10$

$x = 10 - 5$

$x = 5$

⇓

In Algebra, the value of the variable is fixed → deterministic

Another example

→ throwing a dice

$$X = \{1, 2, 3, 4, 5, 6\}$$

↳ sample space.

$$P(X=1) = \frac{\text{No of Possible Outcomes}}{\text{Total no of outcomes}} = \frac{1}{6}$$

$P(X=6) = \frac{1}{6}$

toss a coin $\{H, T\}$

$P(X=H) = 1/2$