$(X, \mathcal{B}, \mu)$

set — $\sigma$-algebra of measurable set — measure, $\mu : \mathcal{B} \to \mathbb{R}^n$

If $\mu(X) = 1$, $(X, \mathcal{B}, \mu)$ is a probability space → $\int pdf = 1$ – Axiom of probability

Given $A \in \mathcal{B}$, $0 \leq \mu(A) \leq 1$

"the probability of $A$ occuring"

$T : (X, \mathcal{B}, \mu) \to (X, \mathcal{B}, \mu)$ is measure-preserving if:

$\forall A \in \mathcal{B}$, $\mu(A) = \mu(\underset{\text{preimage}}{T^{-1}}(A))$

(for $T$ bijective/invertible, $\mu(A) = \mu(T(A))$)