

Advanced Probability Terminologies and Notes

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1 Measure Theory

1.1. Probability Spaces		
Outcome	ω	
Sample space	Ω	the set of outcomes
Event		the sub-set of sample space
Field/Algebra	F	closed under finite operations
σ -field/algebra	σ -field/algebra, F	closed under countable operations
countable		finite or countably infinite
Measurable space	(Ω, F)	it is a space on which we can put a measure.
Measure	μ	a nonnegative countably additive set function; that is, a function $\mu : F \rightarrow \mathbb{R}$ if $\mu(\Omega) = 1, F \rightarrow [0, 1]$ is a function that assigns probabilities to events
Probability measure	P	
Probability space	(Ω, F, P)	
	A	a collection of subsets of Ω
σ -field generated by A	$\sigma(A)$	