

Probabilistic sample(or random sample, sample):  
 One realizable phenomenon from the probabilistic problem you want to solve  
 Or one sampled case

Sample space  $\Omega$ :  
 Set which contains all possible samples

Task of defining sample sapce:  
 Define which phenomenon is possible to occur  
 and which phenomenon is impossible to occur

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Sample space when you toss the coin  
 $\Omega = \{H, T\}$

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Some cases has set of entire real numbers as sample space  
 $\Omega = \mathbf{R}$

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Possible events: possible sub sets of sample space  $\Omega$

Sample space  $\Omega = \{H, T\}$   
 Possible events:  $\phi, \{H\}, \{T\}, \{H, T\}$

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Probability is function which takes all events  
 and which outputs number

$P(A) = 0.1$   
 $P()$  is function P  
 A is event  
 0.1 is probability value

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Kolmogorov's axioms

1.  $P(\text{all events}) \geq 0$
2.  $P(\Omega) = 1$
3. If  $A \cap B = \phi$ , then  $P(A \cup B) = P(A) + P(B)$

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Interpretion about probability value:

1. Frequentist
2. Baysian

