

# Lecture - ①

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①

## SC222: Probability, Statistics and Information Theory

### Attendance Policy

% attendance	Penalty
75 - 100	None
50 - 74	One grade
< 50	2 grades

A first course in ②  
Probability by Sheldon Ross

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Elements of Information  
Theory by Thomas & Cover

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Pre-requisites

Permutations & Combinations

Recurrence Relations

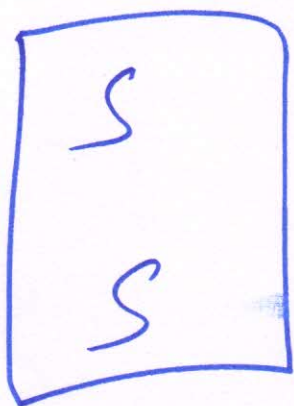
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Evaluation

25	+	25	+	50
insem		insem		endsem
1		2		

## Example

③



- i) choose a box randomly
- ii) From the chosen box, choose a coin at random
- iii) It turns out to be a Gold coin
- iv) what is the probability that the other coin in the same box is also a gold coin?

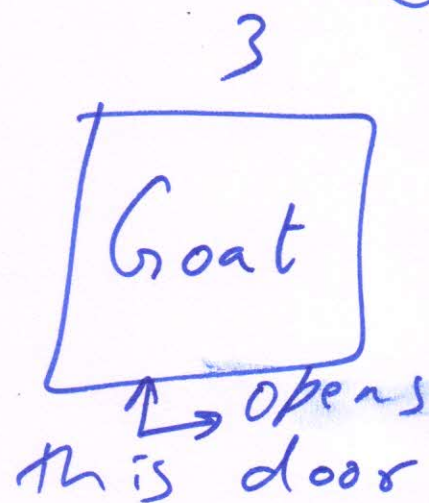
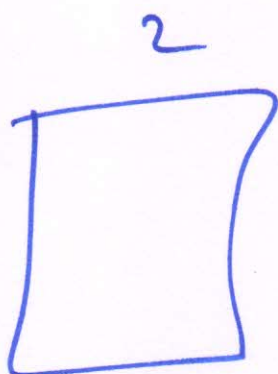
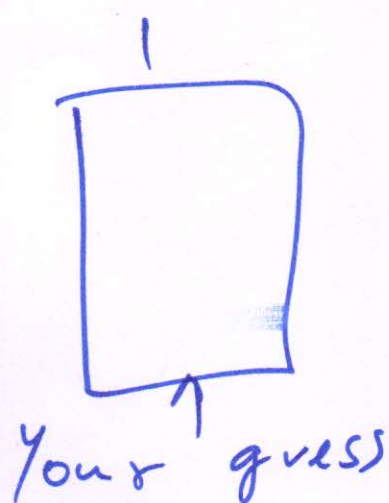
$$\frac{1}{2} - 20$$

$$\frac{2}{3} - 17$$



# Monty Hall Problem

④



Behind 2 doors, there is a goat.

Behind 1 door, there is a car.

Probability that there is  
a car behind

door 1 =  $\frac{1}{3}$

door 2 =  $\frac{2}{3}$

5  
A king makes this  
rule that as soon as  
a woman has the first  
boy, she is forbidden to  
have any more children.

Will this increase the  
number of girls in his  
kingdom? Assuming that the  
probability of a baby being  
boy or girl is the same  $\frac{1}{2}$ .