Logic and Problem Solving Tutorial 2 week- 20
Islington College
Module: MA4001NI

In each of the following problems, compute the probability using the formula or table (given in lecture) explaining:
What makes up a trial? What is a success? What is a failure?
What are the values of n, p, and q.

1. Ten unbiased coins are tossed simultaneously. Find the probability of obtaining

(i) Exactly 6 heads

Ans: 105/512

(ii) At least 8 heads

Ans: 7/128

(iii) No head

Ans: 1/1024

(iv) At least one head

Ans: 1023/1024

(v) No more than three heads

Ans:11/64

(vi) At least 4 heads

Ans: 53/64

2. Four coins are thrown simultaneously. What is the probability of getting:

(i) 2 heads and 2 tails

Ans: 3/8

(ii) At least two heads, and

Ans: 11/16

(iii) At least one head

Ans: 15/16

3. The probability that a campus student will graduate is 0.4. Determine the probability that out of 5 students

(i) None will be graduate

Ans: 0.08

(ii) One will be graduate

Ans: 0.26

(iii) At least one will be graduate

Ans: 0.95

4. The average percentage of failures in a certain examination is 40. What is the probability that out of a group of 6 candidates, at least 4 passed in the examination.

Ans: 0.54432

5. Sociologists say that 90% of married women claim that their husband's mother is the biggest bone of contention in their marriages. Suppose that six married women are having coffee together one morning. What is the probability that

(i) All of them dislike their mother-in-law?

Ans:0.531

(ii) None of them dislike their mother-in-law?

Ans: 0.000001

(ii)At least four of them dislike their mother- in –law ?

Ans:0.983

(iii) No more than three of them dislike their mother-in-law?

Ans: 0.017

6. It is reported that 85% of trained prison inmates were able to pass the polygraph examination even when guilty of a crime. Suppose that a random sample of nine students are told a secret and then given instructions on how to pass the polygraph examination without revealing their knowledge of the secret. What is the probability that

(i) All the students are able to pass the polygraph examination?

Ans: 0.232

(ii) More than half the students are able to pass the polygraph examination?

Ans: 0.995

(iii) No more than four of the students are able to pass the polygraph examination? All the students fail the polygraph examination?

Ans: 0.00563 and 0