GRIFFITH COLLEGE DUBLIN

Assignment Cover Sheet

Student name:	**Saujanya Bohara**		
Student number:	**2892141**		
Faculty:	**Computing Science**		
Course:		**Stage/ year:**	**2**
Subject:	**Probability and Stat**		
Study Mode:	Full time **YES**	Part-time	
Lecturer Name:	**Paddhy Fahy**		
Assignment Title:	**Assignment1**		
No. of pages:	**7**		
Disk included?	Yes	No	
Additional Information:	(ie. number of pieces submitted, size of assignment, A2, A3 etc)		
Date due:			
Date submitted:	**05/10/2016**		

1. (a) **What is the probability that the result will be an even number on a throw of a six-sided die?**

   (b) **If the probability of winning a game is 0.6, what is the probability of losing?**

   Answer(a):

   Total outcomes   = 6   As we know it's a six faced die.

   Possible outcomes = 3   As we know there are three odd and three even faces.

   So, P(odd) = Possible outcomes /Total outcomes

   $$= 3 / 6$$
   $$= ½$$

   Hence, the probability of getting an odd number is ½

   Answer (b):

   We know that the total probability is always 1.

   Probability of winning game is 0.6

Probability of losing game = 1 – 0.6 (Total probability – Winning probability)

= 0.4

2. **What is the probability that on two throws of a die the result each time will be an even number?**

Answer:

The probability of getting an even number is

3 out of 6

As we know total Total outcomes is 6 and we have 3 even faces.

Probability of getting even number in two throws will be
P(2E) = (3/6 * 3/6)
= (1/2 * 1/2)
= ¼
So, the probability of getting even number on two throws will be ¼.

3. **What is the probability of throwing a 2 followed by an even number greater than 2 with a six-sided die?**

Answer:

Total outcomes = 6

Probability of throwing 2 = 1/6

Probability of throwing even number greater than 2 = 2/6

(Even number greater than 2 are 4 and 6)

Now,

P (2 F by even number >2) = (1/6 * 2/6)

= 1/18
So, the probability of getting 2 followed by an even number greater than 2 is 1/18.

4. **What is the probability of drawing a club or a king from a well-shuffled pack of 52 cards?**

Answer:

Probability of drawing a club = 13/52

(As we know there are 13 cards in each sets)

Probability of drawing a king = 4/52

(As there are 4 kings)

P (C or K) = 4/52 + 13/52

        = 17/52

But since we are drawing club as well we must minus 1 so

P (C or K) = 17/52 – 1/52

        = 16/52

So, the probability of drawing a club or a king is 16/52.

5. **What is the probability of drawing a red picture card from a well-shuffled pack?**

    Answer:

    As, we know there are 12 pictured cards.

    Total cards = 52

    Total pictured cards = 12

    No, of red pictured cards = 6

    So, p(RP) = 6/52

6. **Show clearly how to calculate the probability of drawing a red card followed by an ace from a well-shuffled pack?**

    Answer:

Number of red cards = 26

Number of Aces = 04

Total Cards in a well shuffled pack = 52

1st draw

P (Red cards) = Number of red cards/ Total cards = 26/52

Hence, Probability of drawing a red card from a well shuffled pack of cards is 26/52.

2nd draw

As we took one card in our first draw. So, the total number of cards remaining are 51.

There is possibility of drawing a red ace on first draw.

   **** If the red Ace is drawn on first draw.

   P (Ace on 2nd Draw) = Remaining Aces / Total Remaining Cards = 3 / 51
   P (R card followed A) = (26/52) X (3/51) = 1/34

   So, Probability of drawing a red card followed by an ace card if a red ace is drawn on first draw is 1/34.

*****If the red Ace is not drawn on first draw.

   P(Ace on 2nd Draw) = No. Of Aces / Total Cards Remaining = 4 / 51
   P (R followed by A) = (26/52) X (4/51) = 2/51

   So, Probability of drawing a red card followed by an ace if the ace is not drawn on first draw is 2/51.

There can be two different outcomes that we might draw an ace On first draw or we might not.

So, Probability of drawing a red card followed by an ace =

P (if ace is drawn on first draws) + P(if ace is drawn on 2nd draw only)

= (1/34) + (2/51)

 = 7/102

7. **On a roll of two dice, what is the probability that the sum of the numbers on the upper faces is:**

   (a) 3

   Answer:

   We can get the sum 3 by only two ways that is getting 1 on the first and 2 on the second or vice versa.

   Total outcomes = 36

   Possible outcomes = 2

Hence, the probability of getting 3 = Possible Outcomes / Total outcomes

= 2/36

(b) 7

We can get the sum 7 by ways that is getting (4,3), (6,1), (5,2) on the second or vice versa.

Total outcomes = 36

Possible outcomes = 3

Hence, the probability of getting 3 = Possible Outcomes / Total outcomes

= 3/36

8. **A coin is thrown three times in succession. What is the probability heads? Of getting two**

   Answer:

   The possible outcomes when tossing a coin three times in succession are

   H-H-H, T-H-T, H-T-H, H-H-T, T-H-T, T-T-H, H-T-T, T-T-T
   Total outcomes: 8
   Possible outcomes: 3
   As we can see above outcomes so we can say the probability of getting two heads Is 3/8

9. **A coin is thrown three times in succession. What is the probability of getting tails at least once?**

   Answer:
   H-H-H, T-H-T, H-T-H, H-H-T, T-H-T, T-T-H, H-T-T, T-T-T
   The probability of getting tails at least once is 7/8
   As, Total outcomes = 8
   Possible outcomes = 7

10.On a throw of four fair coins, what is the probability of getting two heads and two tails?
Answer:

The possible outcomes we can get by throwing coins 4 times are:
HHHH, HHHT, HHTH, HHTT, HTHH, HTHT, HTTH, HTTT, THHH, THHT, THTH, THTT, TTHH, TTHT, TTTH, TTTT

Total outcomes = 16
Possible outcomes = 6
Hence, the probability of getting two heads and two tails is 6/16