Probability Assignment

1) 2 Dices

D1 \ D2						
	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

Sum of No. being even and one die shows 6

Total out Comes = 36

Even & Atleast one 6 = 5 $\Rightarrow$ 5/36

(2) Sum of No. less than 7

= 15/36

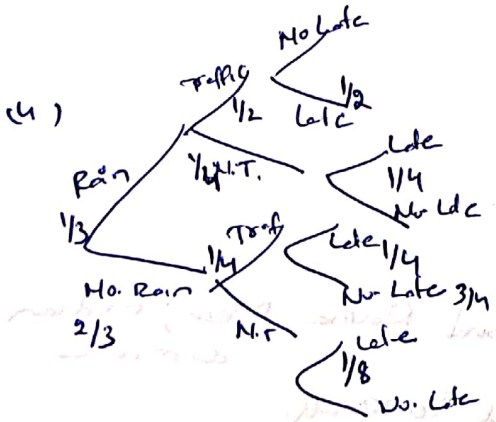
(3) Coin - 3 times = (H,H,H), (H,T,H), (H,T,T) (T,H,H) (T,T,H) (T,T,T), (T,H,T) (H,H,T)

Atleast one head = $1 - \frac{1}{8} = 7/8$

Atleast two heads = 4/8

$P(\text{2 head} / \text{one head}) = \frac{4/8}{7/8} = 4/7.$

(4)



(a) Not Rain + heavy traffic + No Late

$\Rightarrow \frac{2}{3} \times \frac{1}{4_2} \times \frac{3}{4}$

$= 1/8$

(b) Greatly Late

$\Rightarrow \frac{1}{3} \times \frac{1}{2} \times \frac{1}{2} + \frac{1}{3} \times \frac{1}{2} \times \frac{1}{4} + \frac{2}{3} \times \frac{1}{4_2} \times \frac{1}{4} + \frac{2}{3} \times \frac{3}{4_2} \times \frac{1}{8}$

$= \frac{1}{12} + \frac{1}{24} + \frac{1}{24} + \frac{1}{16}$

$= \frac{4+2+2+3}{48} = 11/48$

(c) Late & it rained

⇒ Late = 11/48 (from b)

Rain & Late = $\frac{1}{3}\times\frac{1}{2}\times\frac{1}{2} + \frac{1}{3}\times\frac{1}{2}\times\frac{1}{4}$

$= \frac{1}{12} + \frac{1}{24} = \frac{2+1}{24} = 3/24 = 1/8.$

2	12, 24
2	6, 12
3	3, 6
2	1, 2
	1, 1

(5) 3 Coins

2 Good + 1 Fake ⇒

(a) Always head =

Coin 1 = 1/2, Coin 2 = 1/2, Coin 3 = 1 (only head)

$P(H) = \frac{1}{2}\times(1-1/3) + 1\times\frac{1}{3}$

$= \frac{1}{2}\times\frac{2}{3} + 1/3 = 2/3$

only two are valid tosses

So remove 1 from 3

tosses = 2/3 is

Valid.

(b) $P(H/\text{Coin2}) = \frac{1\times\frac{1}{3}}{\frac{1}{2}\times 2/3 + \frac{1}{2}\times\frac{3}{3}} = \frac{1/3}{\frac{1}{3}+\frac{1}{3}} = \frac{1/3}{2/3}$

$= 1/2.$

(6) Coffee = $\frac{70}{100} = 0.7$

Coke = $\frac{40}{100} = 0.4$

Both = $\frac{20}{100} = 0.2$

$P(\text{Coffee}) = \frac{\text{Both}}{\text{Coke}} = \frac{0.2}{0.4} = 1/2$

(7), (8), (9), (10) → Need to check and Revise Mean, median & mode

Need to verify.

(11)

8 black, 1 white

Total 9 balls

P(B) = 8/9, P(W) = 1/9

P(T) = 5/6

P(Truth / Not white) = 1 − 5/6 = 1/6

$$P(\text{White} \mid \text{Truth}) = \frac{\frac{5}{6} \times \frac{1}{9}}{\frac{5}{6} \times \frac{1}{9} + \frac{1}{6} \times \frac{8}{9}}$$

$$= 5/13$$

(12) P(T) = 4/5

P(6) = 1/6

P(T / Not 6) = 1/5

$$P(6/T) = \frac{\frac{1}{6} \times \frac{4}{5}}{\frac{1}{6} \times \frac{4}{5} + \frac{5}{6} \times \frac{1}{5}}$$

$$= \frac{4}{9}$$