

Assignment on Probability

031-335
Friday 31

①

$$P(6) + P(10)$$

$$= \frac{1}{36} + \frac{1}{36}$$

$$= \frac{2}{36}$$

$$= \frac{1}{18} \quad (\text{Total is 8 on 10})$$

$$= \frac{1}{9}$$

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

$$\textcircled{2} \quad P(\text{Sum is } < 7) = \frac{5+4+3+2+1}{36}$$

$$= \frac{15}{36} = \frac{5}{12}$$

032-334
Saturday 1

$$\textcircled{3} \quad P(2H/1H) = \frac{4/8}{7/8} = \frac{4}{7}$$

033-333
Sunday 2

④

- BB
- BB
- GB
- GG

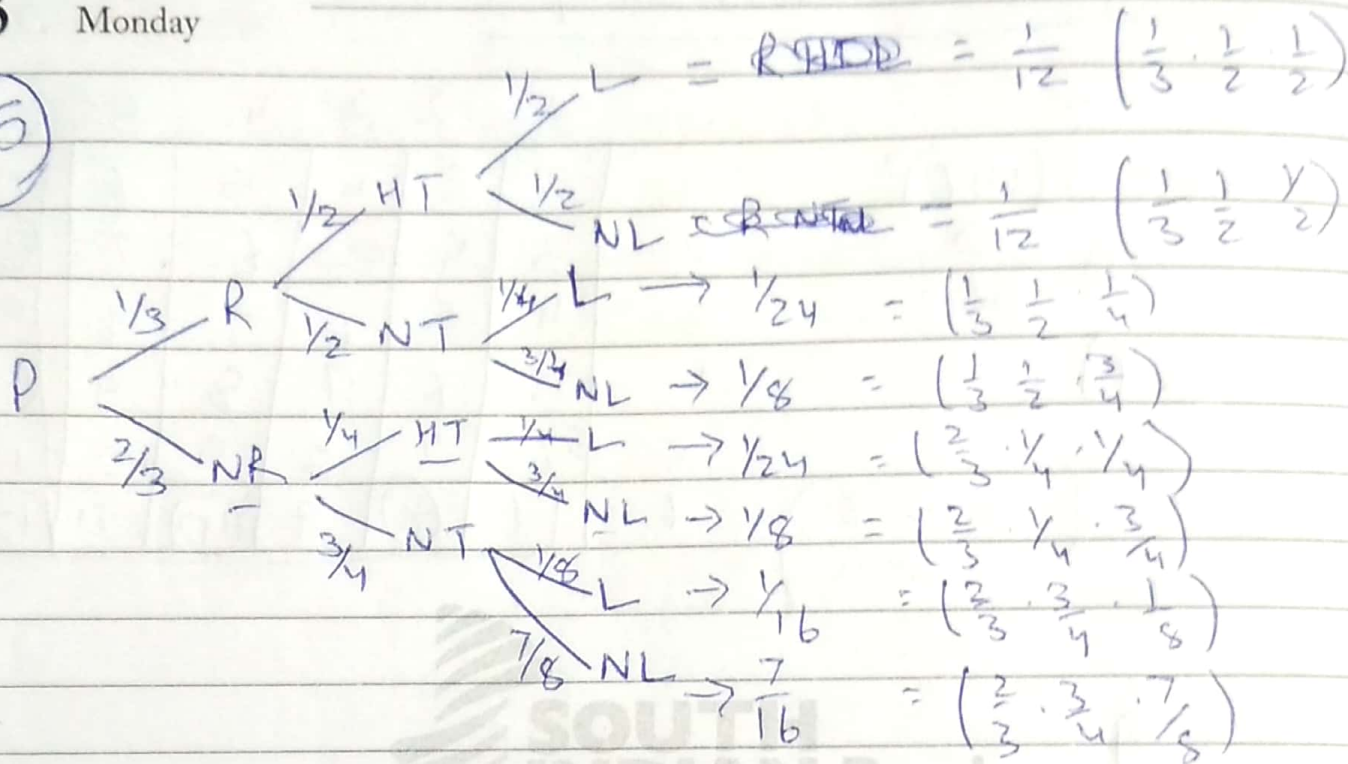
One is a G
So 3 possibilities remain
 $P(OG) = \frac{1}{3}$

3

034-332

Monday

5



4

035-331

Tuesday

a) $\frac{1}{8}$

b) $\frac{1}{12} + \frac{1}{24} + \frac{1}{24} + \frac{1}{16}$

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

$= \frac{1}{6} + \frac{1}{16}$

$= \frac{11}{48}$

c) $P(R/L) = \frac{P(R \cap L)}{P(L)} = \frac{\frac{1}{8}}{\frac{1}{48}} = \frac{48}{8} = 6$

Joint: (conditional)
x Marginal

$P(R \cap L) = \frac{1}{12} + \frac{1}{24} = \frac{2}{24} = \frac{1}{8}$

(6)

$$C1 \begin{cases} \frac{1}{2} H \\ \frac{1}{2} T \end{cases}$$

$$C2 \begin{cases} \frac{1}{2} H \\ \frac{1}{2} T \end{cases}$$

$$C3 \begin{cases} \frac{1}{2} H \\ \frac{1}{2} H \end{cases}$$

a) Probability of heads = $\frac{1}{3} \left(\frac{1}{2} + \frac{1}{2} + 1 \right) = \frac{2}{3}$

b) $\frac{1}{2}$

(50%)

(7)

$$C0 = 0.7$$

$$CA = 0.4$$

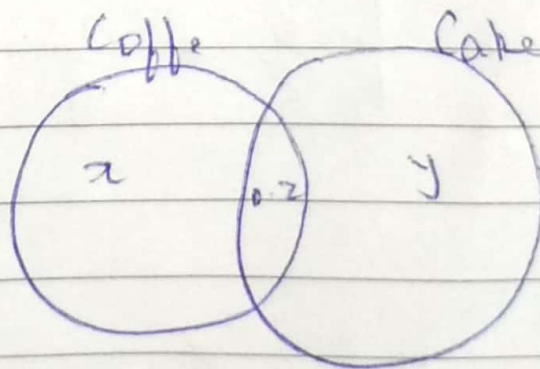
$$C0 \cap CA = 0.2$$

$$x + 0.2 = 0.7$$

$$y + 0.2 = 0.4$$

$$x = 0.5$$

$$y = 0.2$$

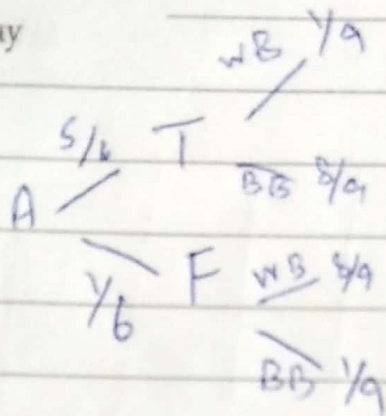


$$(\text{cake}) = 0.2 + 0.2 = 0.4$$

$$P(C0|CA) = \frac{P(CA \cap C0)}{P(CA)} = \frac{0.2}{0.4} = \frac{2}{4} = \frac{1}{2}$$

7 Friday

(8)

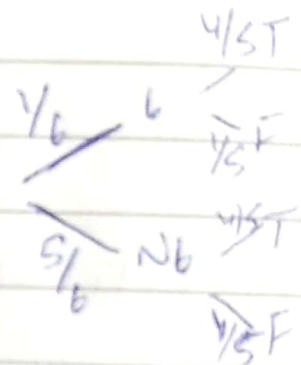


$$P(WB) = \frac{1}{9}$$

$$P(BB) = \frac{8}{9}$$

$$P(WB) = \frac{5}{6} \cdot \frac{1}{9} + \frac{1}{6} \cdot \frac{1}{9}$$

$$= \frac{1}{9}$$



(9)

$$P(T) = \frac{4}{5}$$

$$P(BB) = \frac{1}{6}$$

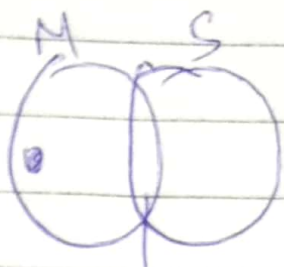
$$P(G) = \frac{1}{6} \cdot \frac{4}{5} + \frac{1}{6} \cdot \frac{1}{5}$$

$$=$$

8 Saturday

Sunday

10



$$M \cap S = 0.4$$

041-325
Monday

10

$$P(S/M) = \frac{P(S \cap M)}{P(M)} = \frac{0.4}{0.6} = \frac{4}{6} = \frac{2}{3}$$

11

	G	PG	T
M	19	41	60
F	12	28	40
T	31	69	100

042-324
Tuesday

11

a) $\frac{19}{100}$ Joint

b) $\frac{6}{10}$

c) $\frac{31}{100}$ Marginal

d)
$$P(F/PG) = \frac{P(F \cap PG)}{P(PG)} = \frac{\frac{28}{100}}{\frac{69}{100}} = \frac{28}{69}$$

Conditional