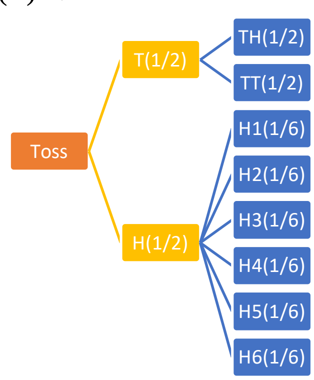
WORKSHEET-1 ANSWER KEYS

STATISTICS AND PROBABILITY

1. (B) 0.135
   Solution: P(6) = No. of times 6 appeared/Total no. of outcomes = 190/(1402) = **0.1355**
2. (D) 0.53
   Solution: P(Odd Numbers) = Sum of frequencies of odd numbers/total number of records
   = (52+44+20+56+40)/400 = **0.53**
3. (C) 0.745
   Solution: P(>9000) = No. of tyres lasting more than 9000 miles/total no. of tyres
   = (375+445)/1100 = **0.745**
4. (B) 0.577
   Solution: P(4000-14000) = No. of tyres lasting from 4000 to 14000 miles/total no. of tyres
   = (260+375)/1100 = **0.577**
5. (C) 0.6
   Solution: P1(no. is greater than 4) = No. of favorable outcomes/No. of total outcomes = 5/10 = 1/2
   P2(no. is odd ∩ no. is greater than 4) = 3/10
   P(P2|P1) = (3/10) ÷ (5/10) = 3/5 = **0.6**
6. (A) 0.33
   Solution: P1(no. is less than 4) = No. of favorable outcomes/No. of total outcomes = 3/8
   P2(even ∩ less than 4) = 1/8
   P(P2|P1) = (1/8) ÷ (3/8) = 1/3 = **0.33**
7. (C) 0.33
   Solution: Let, **E =** Sum of nos. is 7, **F =** 6 appears on at least one die
   P(E) = No. of favorable outcomes/No. of total outcomes = 6/36 = 1/6
   P(E∩F) = 2/36 = 1/18
   P(F|E) = P(E∩F) ÷ P(E) = (1/18) ÷ (1/6) = 1/3 = **0.33**
8. (B) 0.22

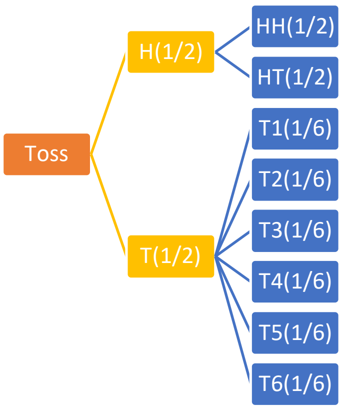


Let,
E = Event that die shows a number greater than 4
F = Event that there is at least one head
P(E∩F) = P(H5, H6) = P(H5) + P(H6) = (1/2)*(1/6) + (1/2)*(1/6) = 1/6
P(F) = P(H1, H2, H3, H4, H5, H6, TH) = 6*(1/2 * 1/6) + (1/2 * 1/2) = 3/4
P(E|F) = P(E∩F)/P(F) = (1/6) ÷ (3/4) = 2/9 = **0.22**

9. (A) 0.66
   Total No. of ways of standing of three people = 3! = 6
   Total No. of ways of standing if Ross is at one end = 2! + 2! = 4
   P(Ross is at one of the ends) = 4/6 = **0.66**
10. (A) 0.33
   Sample space, **S** = {GG, GB, BG, BB}
   E = Event that at least one of the two children is girl
   F = Event that both the children are girls
   P(E) = P(GG, GB, BG) = 3/4
   P(E∩F) = P(GG) = 1/4
   P(F|E) = P(E∩F)/P(E) = (1/4) ÷ (3/4) = 1/3 = **0.33**
11. (C) 0.5
   Sample space, **S** = {GG, GB, BG, BB}
   E = Event that elder child is boy

F = Event that both the children are boys
P(E) = P(BB, BG) = 2/4 = 1/2
P(E∩F) = P(BB) = 1/4
P(F|E) = P(E∩F)/P(E) = (1/4) ÷ (1/2) = 1/2 = **0.5**

12. (A) 0.166



Sample Space, **S =** {HH, HT, T1, T2, T3, T4, T5, T6}
P(getting a no. greater than 4 on die) = P(T5, T6)
= P(T5) + P(T6)
= (1/2 * 1/6) + (1/2 *1/6)
= 1/6
= **0.166**

13. (D) 0.25
Refer the figure and sample space of Q 12.
P(getting an odd no. on the die) = P(T1, T3, T5)
= P(T1) + P(T3) + P(T5)
= (1/2 * 1/6) + (1/2 * 1/6) + (1/2 * 1/6)
= 1/4
= **0.25**

14. (D) 0.06
Sample Space, **S =** {11, 12, 13, 14, 15, 16,
21, 22, 23, 24, 25, 26,
31, 32, 33, 34, 35, 36,
41, 42, 43, 44, 45, 46,
51, 52, 53, 54, 55, 56,
61, 62, 63, 64, 65, 66}
E = Event that two numbers on dice are different
F = Sum of nos. on two dice is less than 4
P(E) = 30/36 = 5/6
P(E∩F) = No. of outcomes whose sum is less than 4 and nos. on two dice are different/Total no. of outcomes
= 2/36 = 1/18
P(F|E) = P(E∩F) ÷ P(E) = (1/18) ÷ (5/6) = 1/15 = **0.06**

15. (B) 2/3
Let C1 be the event that you choose a regular coin, and let C2 be the event that you choose the two-headed coin. Note that C1 and C2 form a partition of the sample space. We already know that
P(H|C1) = 0.5
P(H|C2) = 1
Thus, we can use the law of total probability to write
P(H) = P(H|C1).P(C1) + P(H|C2).P(C2) = 1/2 * 2/3 + 1 * 1/3 = **2/3**