

AIML- Section 2

Name: Pushkar Kumar Verma.
 Section: Section 2
 BITS Id: 2022 AC 05272

Q.1 To determine mean, median, mode and five point- data.

Let's arrange the data in ascending order.

4, 5, 6, 6, 7, 7, 8, 10, 11, 11, 11, 12, 13, 13, 14, 15, 19, 20, 24, 29.

Total No. of elements = 20

$$\text{Mean} = \frac{(4+5+6+6+7+7+8+10+11+11+11+12+13+13+14+15+19+20+24+29)}{20}$$

$$= \frac{258}{20}$$

Mean = 12.9

$$= \frac{245}{20}$$

Mean = 12.5

$$\text{Median} = \frac{\left(\frac{n}{2}\right)^{\text{th}} + \left(\frac{n}{2} + 1\right)^{\text{th}} \text{ observation}}{2}$$

$$= \frac{11 + 11}{2} = 11$$

$$\boxed{\text{Median} = 11}$$

$$\boxed{\text{Mode} = 11 \text{ (Most frequent)}}$$

(iii). Minimum = 4
 Max = 29
 Median = 11

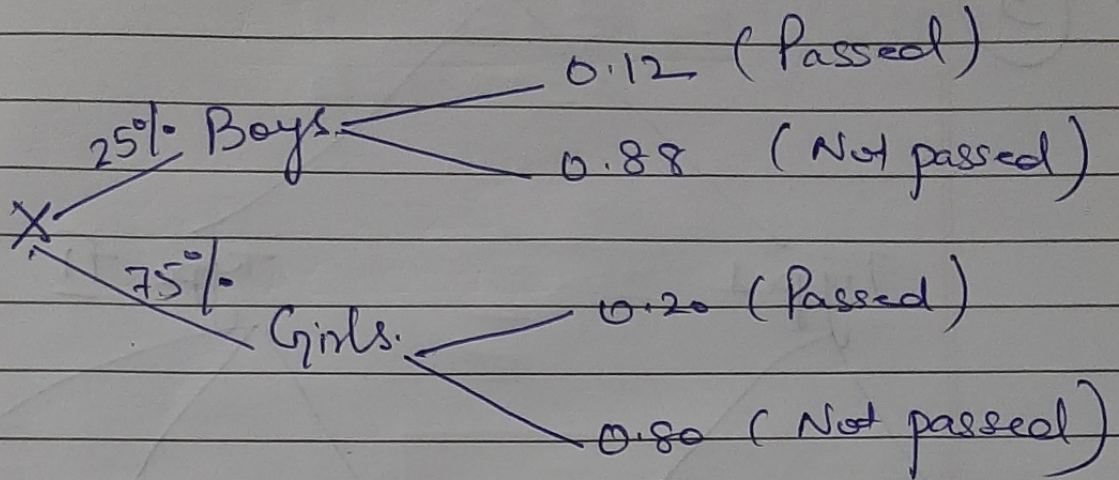
$$\begin{aligned} \text{Position of } Q_1 &= \frac{1(n+1)}{4} \\ &= \frac{1(20+1)}{4} = 5.25 \end{aligned}$$

$$\begin{aligned} Q_1 &= 7 \times 0.75 + 7 \times 0.25 \\ Q_1 &= 7 \end{aligned}$$

$$\text{Position of } Q_3 = \frac{3(n+1)}{4} = 15.75$$

$$\begin{aligned} Q_3 &= 14 \times 0.25 + 15 \times 0.75 \\ Q_3 &= 14.75 \end{aligned}$$

(2)



Prob. of student getting passed.

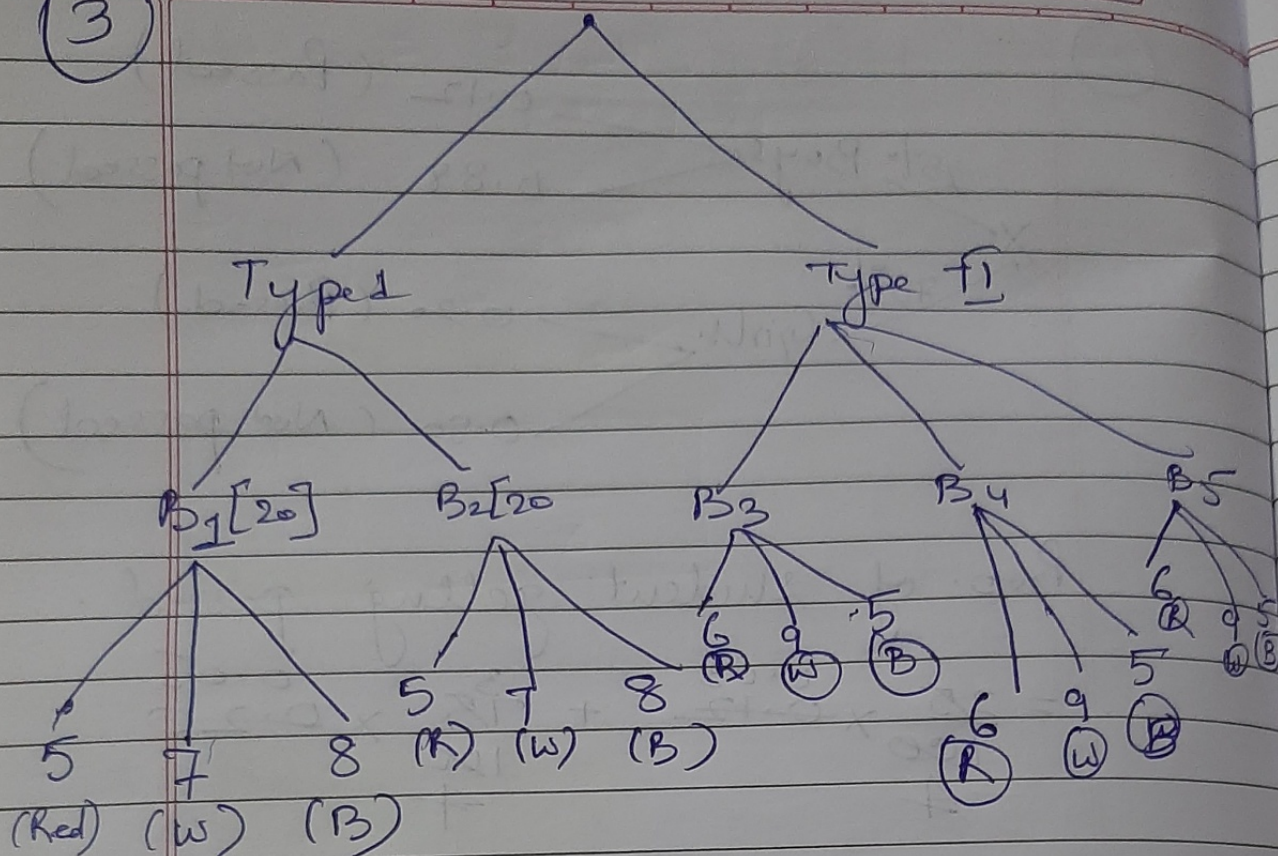
$$= \frac{25}{100} \times \frac{0.03}{4} + \frac{75}{100} \times \frac{0.05}{4}$$

$$= 0.03 + 0.15$$

$$= 0.18$$

Total probability = 0.18
of student getting
passed in the exam

(3)



Total probability =

$$\frac{2}{5} \times \frac{7}{20} + \frac{3}{5} \times \frac{9}{20}$$

$$\text{Total probability} = \frac{14 + 27}{100}$$

$$\text{Total probability} = \frac{41}{100}$$

Applying Baye's theorem in order to find $P(A/B)$

$$P(A|B) = \frac{(P(A) \times P(B|A))}{P(B)}$$

$$= \left(\frac{2}{5} \times \frac{7}{20} \right) / \frac{41}{100}$$

$$= \frac{14}{100} \times \frac{100}{41}$$

$$P(A|B) = \frac{14}{41}$$

The probability that the ball came from the first kind of box (B) is $\frac{14}{41}$

(4)

$$P(\text{Truck}) = \frac{3}{4}$$

$$P(4) = \frac{1}{6}$$

$$P\left(\frac{4}{T}\right) = \frac{\frac{3}{4} \times \frac{1}{6}}{\frac{3}{4} \times \frac{1}{6} + \frac{1}{4} \times \frac{5}{6}}$$

$$= \frac{3/24}{(3+5)/24}$$

$$P\left(\frac{4}{T}\right) = \frac{3}{24 \times 8}$$

$$P\left(\frac{4}{T}\right) = \frac{3}{8}$$

The probability that number obtained is actually a four is $3/8$