

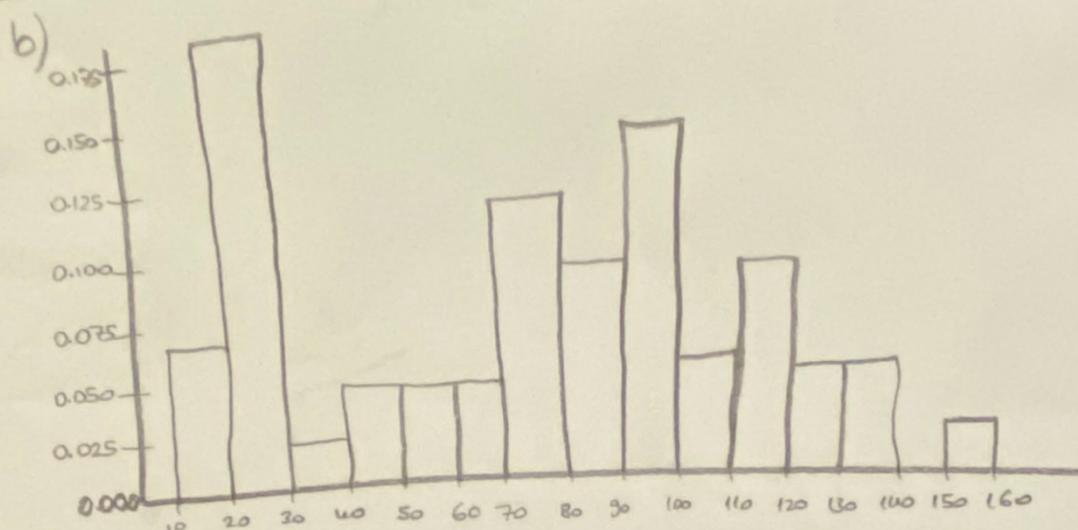
## Q1)

- a) sayıları topladım, toplamı sayı adedine bölgerek ortalamayı hesapladım.  
b) 2. Slaytta her türlü ayrıntı var. 10 10 class'lara böldüm. min-max'ları belirledim. Sıklıkları belirttim.  
c) 3. Slaytta normal distribution anlatılıyor zaten. Bu grafiğimizin normal distribution ile alakası yok.

Q1)

a) sum of numbers : 3211  
count of numbers : 44  
average :  $\frac{3211}{44} \approx \underline{\underline{72.98}}$

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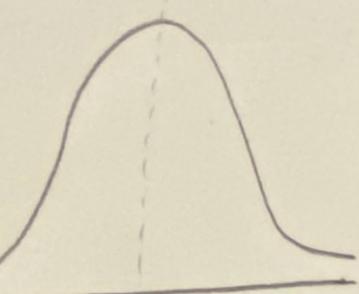


c)

the distribution is not like  
a normal distribution.

if the weights were normally  
distributed, we would  
expect symmetrical histogram.

So I think tourists love  
street foods a lot.



normal  
distribution

**Q2)** normalde değerler küçük olsa çok basit direkt binomial dist. İle yaparız ancak değerler büyük Z table kullanmamız lazım. Z formulünu uyguladım. Değerleri buldum. Çıkan değerleri grafiği çizerken kullandım.

$$2) \mu_B : 14000$$

$$\sigma_B : 2000$$

$$\mu_D : 13000$$

$$\sigma_D : 1000$$

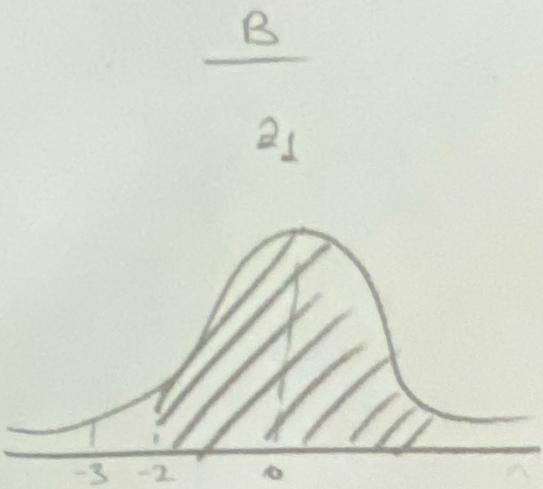
$$P(X > 10000) \quad \leftarrow \text{we need this!}$$

$\rightarrow P(X, n, p) \Rightarrow \binom{n}{x} \cdot p^x \cdot q^{n-x} \rightarrow 1 - [P(0) + P(1) + \dots + P(9999)]$   
 n is so large, so we can use z tables.

$$z = \frac{x - \mu}{\sigma}$$

$$z_1 = \frac{10000 - 14000}{2000} = -2$$

$$z_2 = \frac{10000 - 13000}{1000} = -3$$

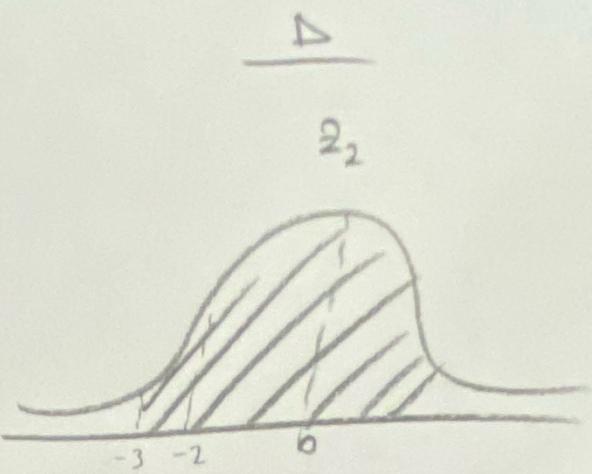


$$P(z_1 > -2)$$

$$0.9772$$

I used  
z table



$$P(z_2 > -3)$$

$$0.9987$$

$$P(z_1 < -2)$$

$$0.0228$$

$$P(z_2 < -3)$$

$$0.0013$$

So, D is more suitable than B.

The company has to decide the D manufacture.

**Q3)** mean ve standart sapmayı vermiş. Bu konu da direkt 4. Slaytta var. Değerleri yerine yazınca zaten çıkıyor.

$$3) \quad M = 540 \text{ TL}$$

$$\sigma = 50 \text{ TL}$$

blogger 1 : 32  
airport

blogger 2 : 50  
airport

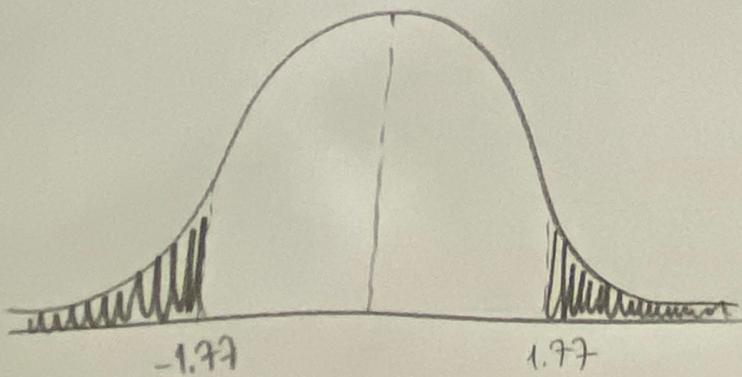
a) difference between two mean  $\Rightarrow Z = \frac{(\bar{x}_1 - \bar{x}_2) - (M_1 - M_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$

$$P(|\bar{x}_1 - \bar{x}_2| \geq 20) = ? \rightarrow P(\bar{x}_1 - \bar{x}_2 > 20) + P(\bar{x}_1 - \bar{x}_2 < -20)$$

$$Z = \frac{20 - (540 - 540)}{\sqrt{\frac{50^2}{32} + \frac{50^2}{50}}} \approx 1.77$$

$$P(Z > 1.77) \approx 0.0386$$

$$P(Z < -1.77) \approx 0.0386$$



$$\begin{array}{c} 0.0772 \\ \hline \swarrow \searrow \\ 1.772 \end{array}$$

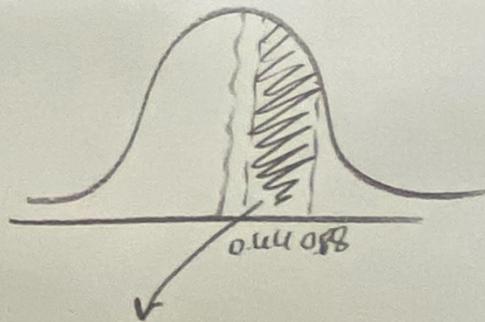
b)  $P(5 < |\bar{x}_1 - \bar{x}_2| < 10) = ?$

$$5 \rightarrow z_1 = \frac{5 - (5u_0 - 5u_0)}{\sqrt{\frac{50^2}{32} + \frac{50^2}{50}}} \approx 0.44$$

$$10 \rightarrow z_2 = \frac{10 - (5u_0 - 5u_0)}{\sqrt{\frac{50^2}{32} + \frac{50^2}{50}}} \approx 0.88$$

$$P(z_1 < 0.44) = 0.67$$

$$P(z_2 < 0.88) = 0.81$$



$$\frac{z_2 - z_1}{\sqrt{\frac{50^2}{32} + \frac{50^2}{50}}} = \frac{0.14}{\sqrt{1.14}}$$

**Q4)** box plot 2. Slaytta çok güzel anlatılmış zaten. median, q1,q3, buldum. IQR'ı buldum. Whisker var mı diye kontrol ettim. Mantık ve grafik basit. Sadece çok fazla input var orada zorlandım. Konuya hakimim sadece input sayısı fazla diye işlem hatası yapmış olabilirim.

4) dataset :  $[1.84, 2.05, 2.10 \dots \dots \dots 3.79, 3.85]$

$$\text{median} : \frac{2.83 + 2.89}{2} \Rightarrow \underline{\underline{2.86}}$$

$$\text{lower quartile} : 2.52$$

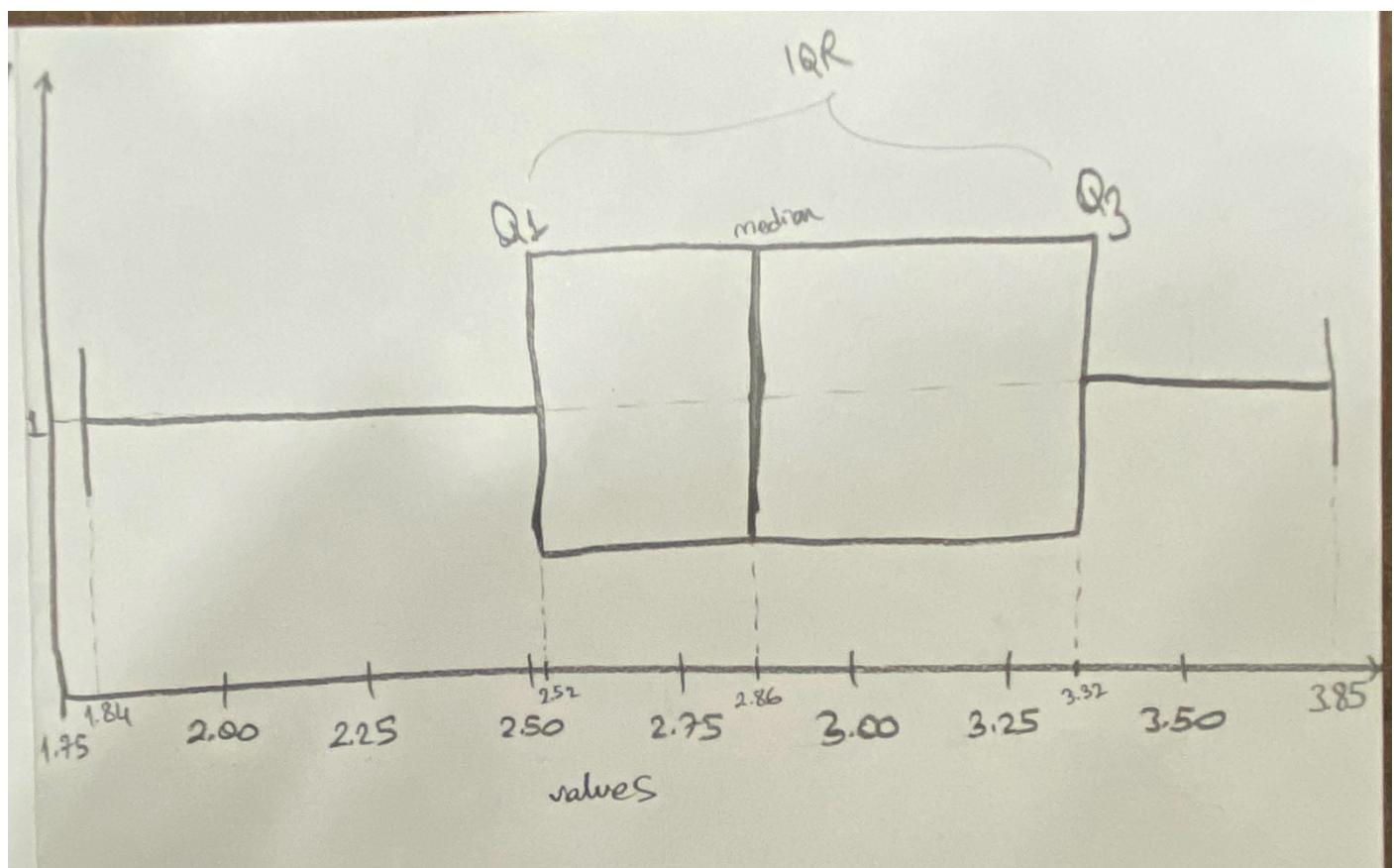
$$\text{upper quartile} : 3.32$$

$$\text{IQR} : Q_3 - Q_1 = 0.80$$

$$w_1 : Q_1 - 1.5 \cdot \text{IQR} = 2.52 - 1.5 \cdot 0.80 = 1.32$$

$$w_2 : Q_3 + 1.5 \cdot \text{IQR} = 3.32 + 1.5 \cdot 0.80 = 4.52$$

there is no whisker because  
min value (1.84) > w<sub>1</sub> (1.32)  
max value (3.85) < w<sub>2</sub> (4.52)



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