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21/481767/TK/53170

Tugas 1

1.17. (a) Find the sample mean for each group

- Sample mean for smokers : $\sum_{i=1}^{12} \frac{x_i}{12} = 43,7$
- Sample mean for Non smokers : $\sum_{i=1}^{15} \frac{x_i}{15} = 30,32$

(b) Find the sample standard deviation for each group

- Sample standard deviation for smokers

If using Bias Teoriem

$$\sqrt{\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n-1}} = 16.927$$

If using normal Sample standard deviation

$$\sqrt{\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n}} = 16,207$$

- Sample standard deviation for non smokers

If using Bias Teorem

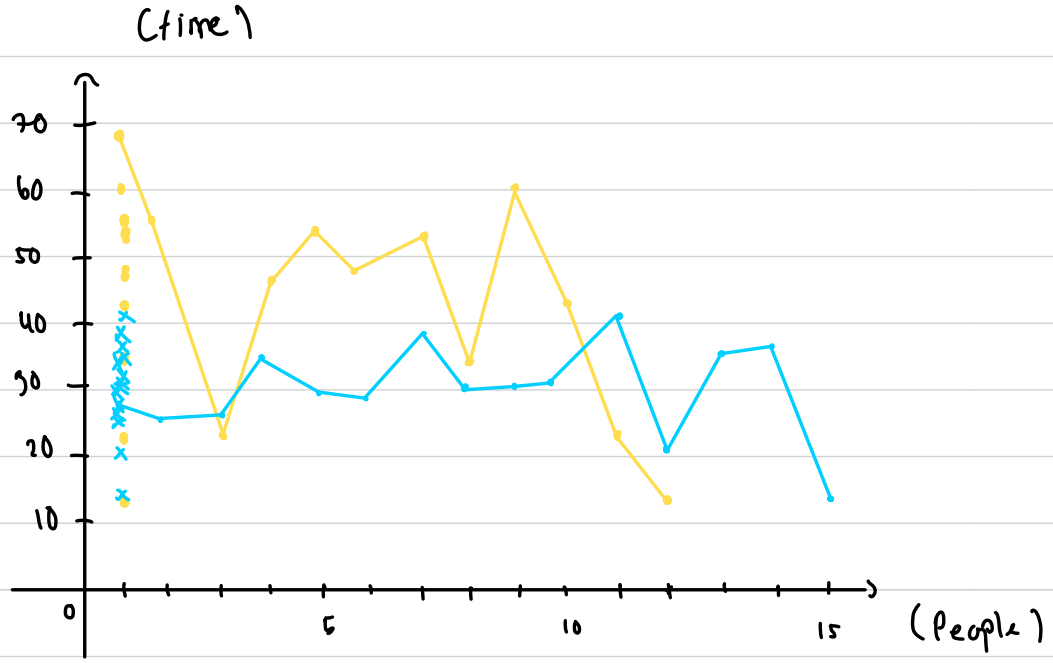
$$\sqrt{\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n-1}} = 7,127$$

If using normal Sample standard deviation

$$\sqrt{\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n-1}} = 6,88$$

[c] Make a dot plot of the data sets A and B on the same line.

Line diggram and Graptic Diagram



[d] The impact that the smokers feel bake on the required time to fall asleep is the smokers seems to have longer time for them to fall asleep with the average time of 43.7 minute. Compared to non smokers, they only take 30.32 minute to fall asleep. The pattern from the smokers also seems to have greater error about 16.277 minute wich indicate that the smokers suffering from irregularity of sleeping. Compare to the non smokers with only 7.127, wich indicate they have consitence sleeping pattern that will resulting healthier body.

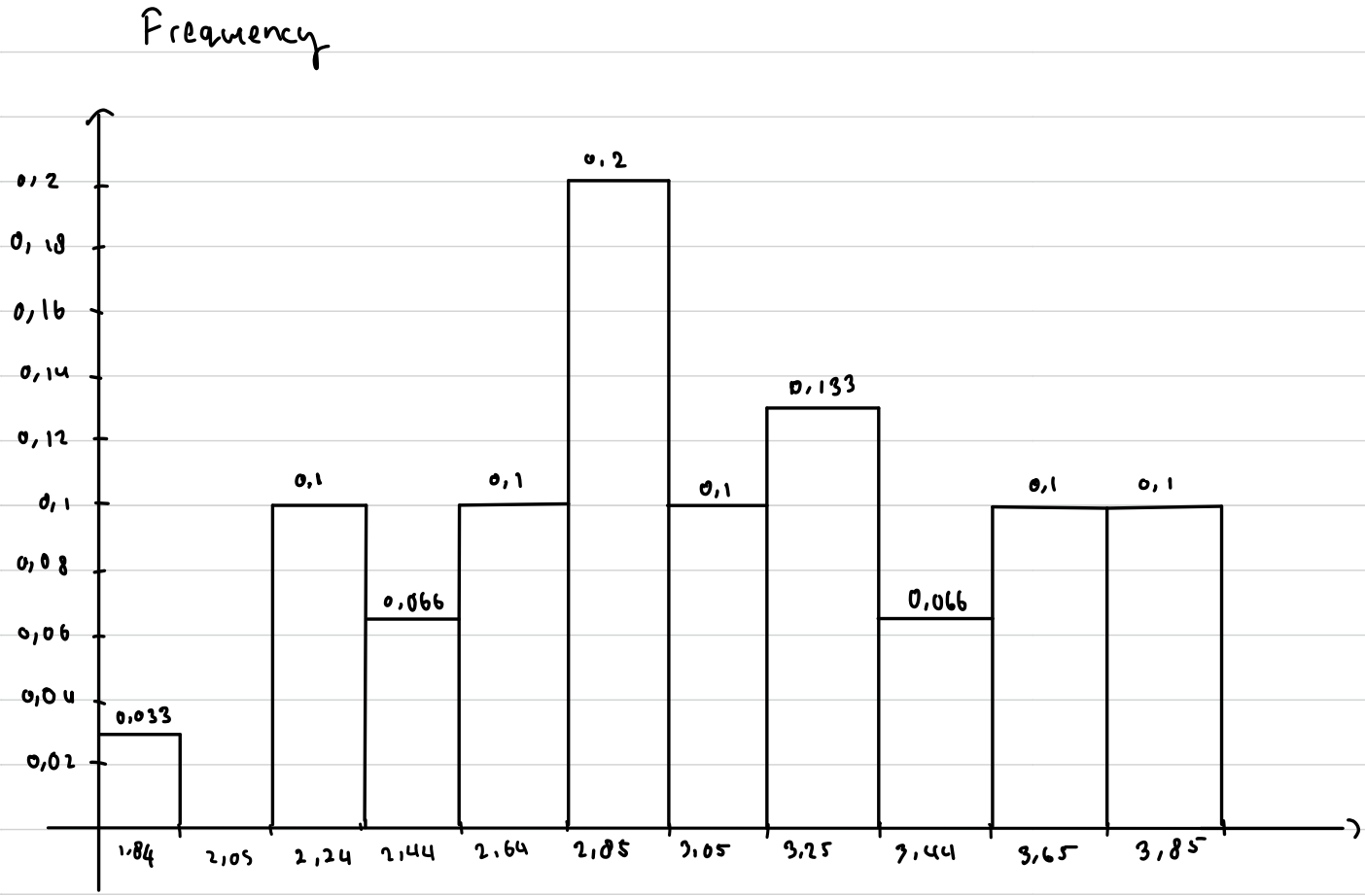
1.24 [a] Compute the sample mean and sample standard deviation.

i) Sample mean : $\sum_{i=1}^{n} \frac{x_i}{n} = 2,89733$

ii) Sample standard deviation : $\sqrt{\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n-1}} = 0,541517$

Sample standard deviation without Bias Theorem = $\sqrt{\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n}} = 0,532415$

[b] Construct a relative frequency histogram of the data.



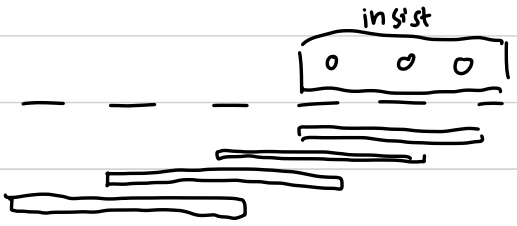
[c] Stem and leaf diagram:

Stem	Leaf
1	(84)
2	(05) (10) (14) (37) (44) (45) (52) (52) (67) (68) (71) (75) (77)
	(83) (89) (91) (99)
3	(10) (13) (14) (22) (36) (37) (51) (54) (57) (71) (79) (85)

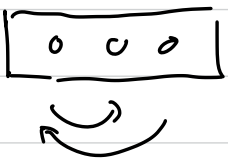
2.32 [a] How many ways can 6 people be lined up to get on a bus?

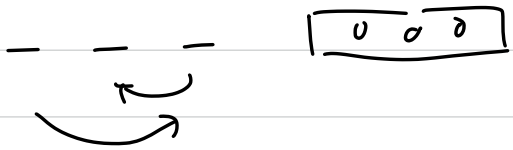
The only answer is $6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$ ways.

[b] If 3 specific person, among 6, insist on following each other, how many ways are possible?

•) 

4 ways

•)  $3! = 6$ ways

•)  $3! = 6$ ways

$4 \times 6 \times 6 = 144$ ways in total

[c] If 2 specific persons, among 6, refuse to follow each other, how many ways are possible?

•) _ _ _ _ [o o] = 5 ways to refuse

↻ = 2! = 2 ways to refuse

_ _ _ _ [o o] = 4! = 24

24 × 5 × 2 = 240 ways to refuse.

•) All ways = 6! = 720 ways

So, the allowed ways to follow are 720 − 240 = 480 ways

2.36 [a] How many three digit numbers can be formed from the digits 0, 1, 2, 3, 4, 5, 6 if each digit can be used only once?

$\underline{6}\ \underline{6}\ \underline{5} = 180$ ways

↓

cannot have zero "0"

[b] How many of these are odd numbers?

$\underline{5}\ \underline{5}\ \underline{3} = 75$ ways

↓ ↓

cannot have "0" and reduce by one $\{1, 2, 3\}$

[C] How many are greater than 330 ?

We can solve the problem by counting 34x, 35x, 36x, 4xx, 5xx, 6xx and sum the result.

- 34_ = 5 ways
- 35_ = 5 ways
- 36_ = 5 ways

15 ways +

- 4__ = 6×5 = 30 ways
- 5__ = 6×5 = 30 ways
- 6__ = 6×5 = 30 ways

90 ways +

90 + 15 ways = 105 ways. //