Pravin Patil 14-09-21

Stat quiz ISNO:-1

Q. 16

given Ages - soccer match.

1. Sort the array

1	14	18	12	13	15	19	18	17	15	17
2	20	27	22	23	29	23	27	23	29	20
3	21	27	38	27	18	38				
4	35	23	37	35	42					
5	40	40	45	49						
6	53	65								

Sorted data:-

12, 13, 14, 15, 15, 17, 17, 18, 18, 19
20, 20, 21, 22, 23, 23, 23, 27, 27, 29, 29
31, 35, 35, 37, 37, 38, 38
40, 40, 42, 45, 49
53, 65
65

1009

140 ✓
254
213
216
111
65

(a) mean = $\frac{\text{total sum}}{\text{total NO}} = \frac{1007}{35} = \boxed{28.177}$

median:- Since 35 is odd

$= \left(\frac{35}{2}\right) + 1 = 18^{th}$ element

$\boxed{\text{median} = 27}$

$\boxed{\text{mod} = 23}$ (occuring 3 times)

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(b) Find Q1

Since 1st half contains 18 element.

Avg. $\left(\frac{n}{2}\right)$ and $\left(\frac{n}{2}+1\right)$

$= \frac{36}{2}, \left(\frac{36}{2}+1\right) = (18^{th}, 19^{th})$

$(9^{th} + 10^{th}$ element$)/2$

$Q1 = \frac{18+19}{2} = 18.5$

$Q3 \Rightarrow n = 17$ (2nd half)

$\Rightarrow \left(\frac{17}{2}\right) + 1 = 9$

$Q3 \Rightarrow 38$

Ans:- five number summary

min = 12	Q1 = 18.5
max = 65	Q3 = 38
mean = 28.177	mode = 23
median = 27	

Std. dev = $\sqrt{\sum_{n=p}^{n} \left(\frac{x_i - \bar{x}}{n-1}\right)}$

1304 = 15 14 13 12 12 10 10 9 9 8
215 7 7 6 5 4 4 4 0 0 22
536 4 8 8 10 10 11 11
1371 13 13 15 18 22
676 26
1444 38

$= \sqrt{164.5}$

Std. dev = 12.82

Stats Quiz

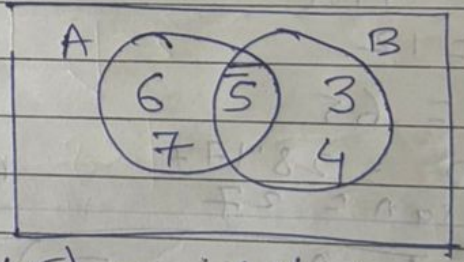
Q.17 Probability

(a) $P(4)$ = more than 4 day
$= P(5) + P(6) + P(7)$
$= 0.41 + 0.20 + 0.07$
$\boxed{P(A) = 0.68}$

(b) $P(B)$ = less than 6 days
$= P(3) + P(4) + P(5)$
$= 0.08 + 0.24 + 0.41$
$P(B) = 0.73$

(c) $P(A^c) = 1 - P(A)$
$= 1 - 0.68$
$P(A^c) = 0.32$

(d) $P(A \cap B) =$



$P(A \cap B) = P(5) = 0.41$

(e) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
$= 0.68 + 0.73 - 0.41$
$\boxed{P(A \cup B) = 1}$ ⇒ entire Sample Space.

Q.18 Stem & leaf plot

n = 20

1.	0
2.	3 4 6 8 8 9
3.	0 5 6 8 6 9
4.	4 5 8
5.	0 2 5
6	2 7

Q.19 Chebyshev's

Mean = 75

Variance = 25

Std. dev = $\sqrt{25} = 5$

Range :- |65 85|

$$= \frac{(65-75)}{5} = \frac{10}{5} = 2$$

As per chebyshev's

if $k \leq \frac{1}{k^2} = \frac{1}{2^2} = \frac{1}{4} = 0.25$

Ans :- 0.25

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Q. 20

Gilati Pizzeria

Sorted data

6 7 8 9 10 11 11 12 13 14

minimum = 6

max = 14

median :- n = 10 is even

avg of $\left(\frac{n}{2}\right)$ & $\left(\frac{n}{2}\right)+1$ = ~~6th element~~

= 5th and 6th element

$= \frac{10+11}{2} = \frac{21}{2} = 10.5$

First half

$Q1 = \left(\frac{n}{4}\right)+1 = \left(\frac{10}{2}\right)+1 = 3^{rd}$ elem

$Q1 = 8$

Second half

$Q3 = \left(\frac{n}{4}\right)^{rd} = 12$

$IQR = Q3 - Q1$

$= 12 - 8$

$IQR = 4$

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Q. 20

$mean = \frac{\sum_{i=1}^{n} y_i}{n}$

$= \frac{6+7+8+9+10+11+11+12+13+14}{10}$

mean = 10.1

Final ans :-

minimum = 6	$Q_1 = 8$
maximum = 14	$Q_3 = 12$
median = 10.5	IQR = 4
mean = 10.1	mode = 11

Box plot