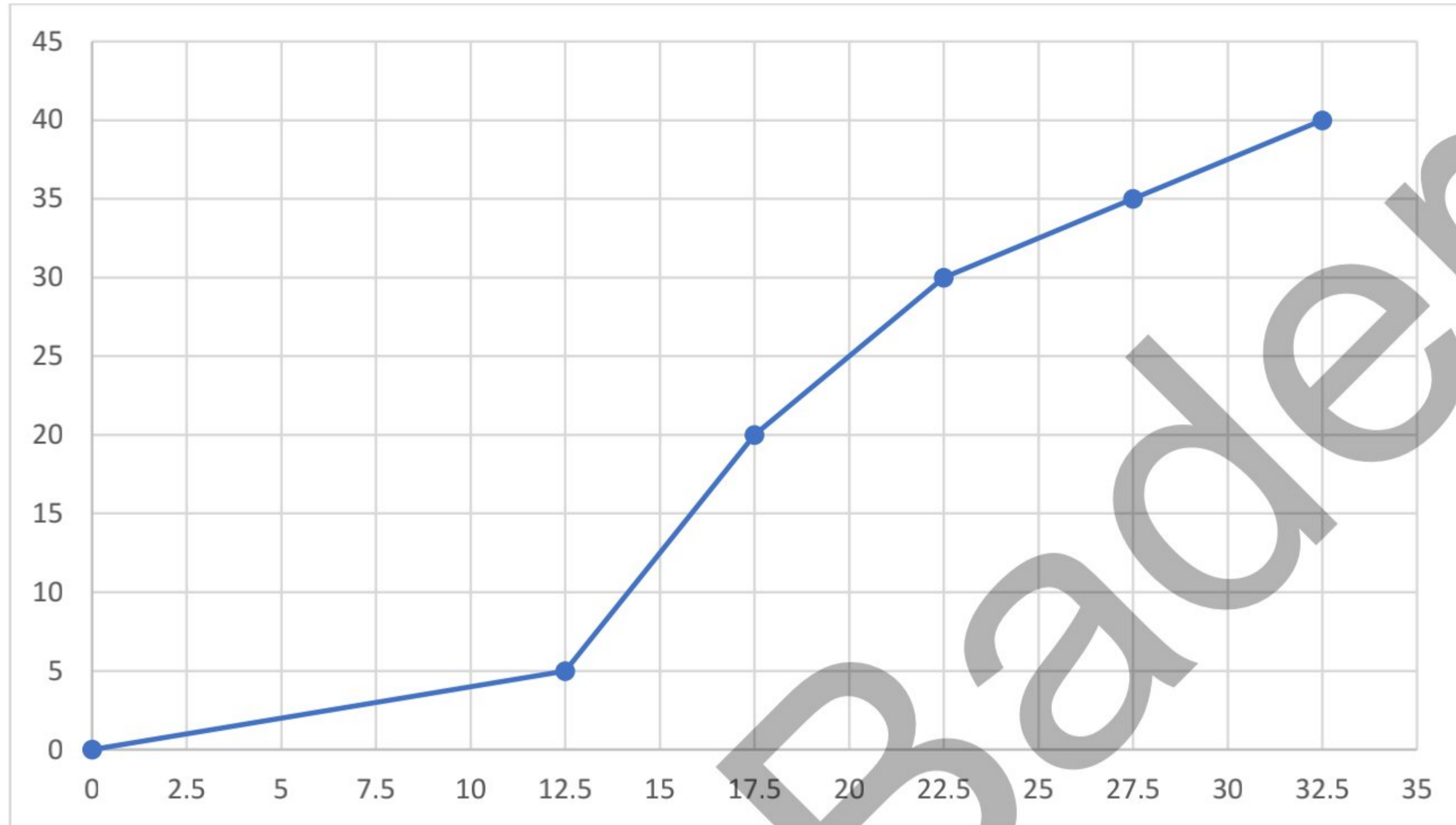


Arwa's Exam

Q1 The ogive below represents the cumulative frequency distribution for SAT scores of college-bound students in a recent year. What score represents the median is?



- A) 17.5 B) 20 C) 13 D) None

Q2 Inferential statistics involves using a population to draw a conclusion about a corresponding sample.

- A) True B) False

Q3 A company that has 200 employees chooses a committee of 5 to represent employee retirement issues. Find the probability when the committee is formed, none of the 56 minority employees are selected.

- A) 0.065 B) 0.007 C) 481 D) None

Q4 When an event is almost certain to happen, its complement will be an impossible event.

- A) True B) False

Q5 The table shows the numbers of male and female students in Jordan who play football in JU.

	Play football	Don't play football	Total
Male	90	10	100
Female	20	80	100
Total	110	90	200

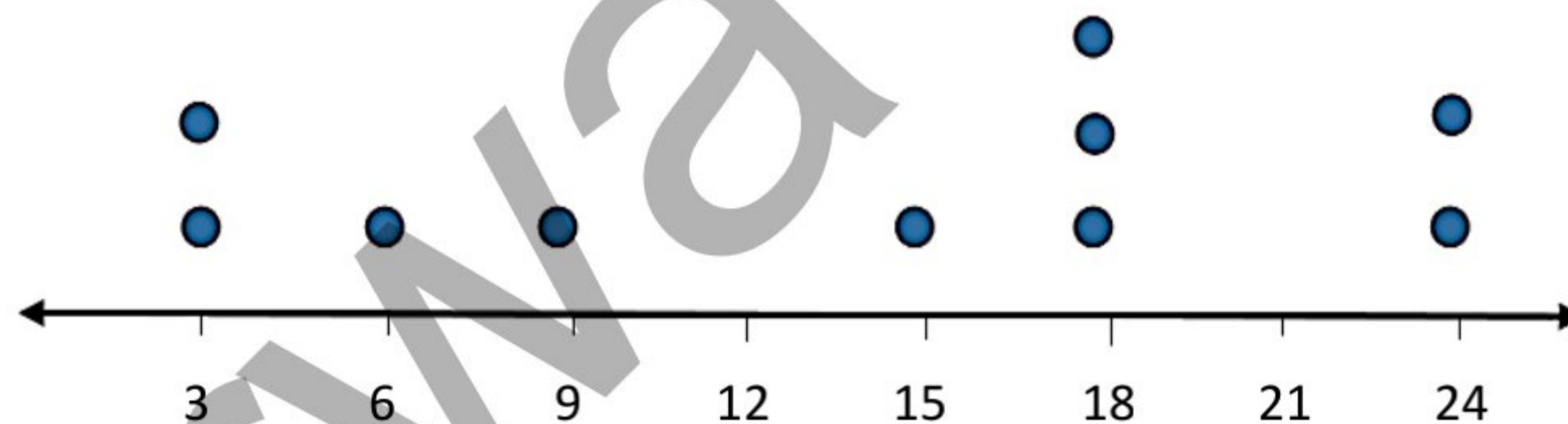
Find the probability that a randomly selected student is male, given that he doesn't play football.

- A) 0.90 B) 0.89 C) 0.001 D) 0.111

Q6 You are conducting a survey on the number of people per house in your region. From a sample with $n = 60$, the mean number of people per house is 3 and the standard deviation is 1 person. Using Chebyshev's Theorem, determine at most how many of the households have 0 to 6 people.

- A) 54 B) 6.66 C) 6 D) 53.6

Q7 Given the following dot plot, find the mean?



- A) 4.3 B) 5 C) 13.8 D) 12.3

Q8 More types of calculations can be performed with data at the nominal level than with data at the interval level.

- A) True B) False

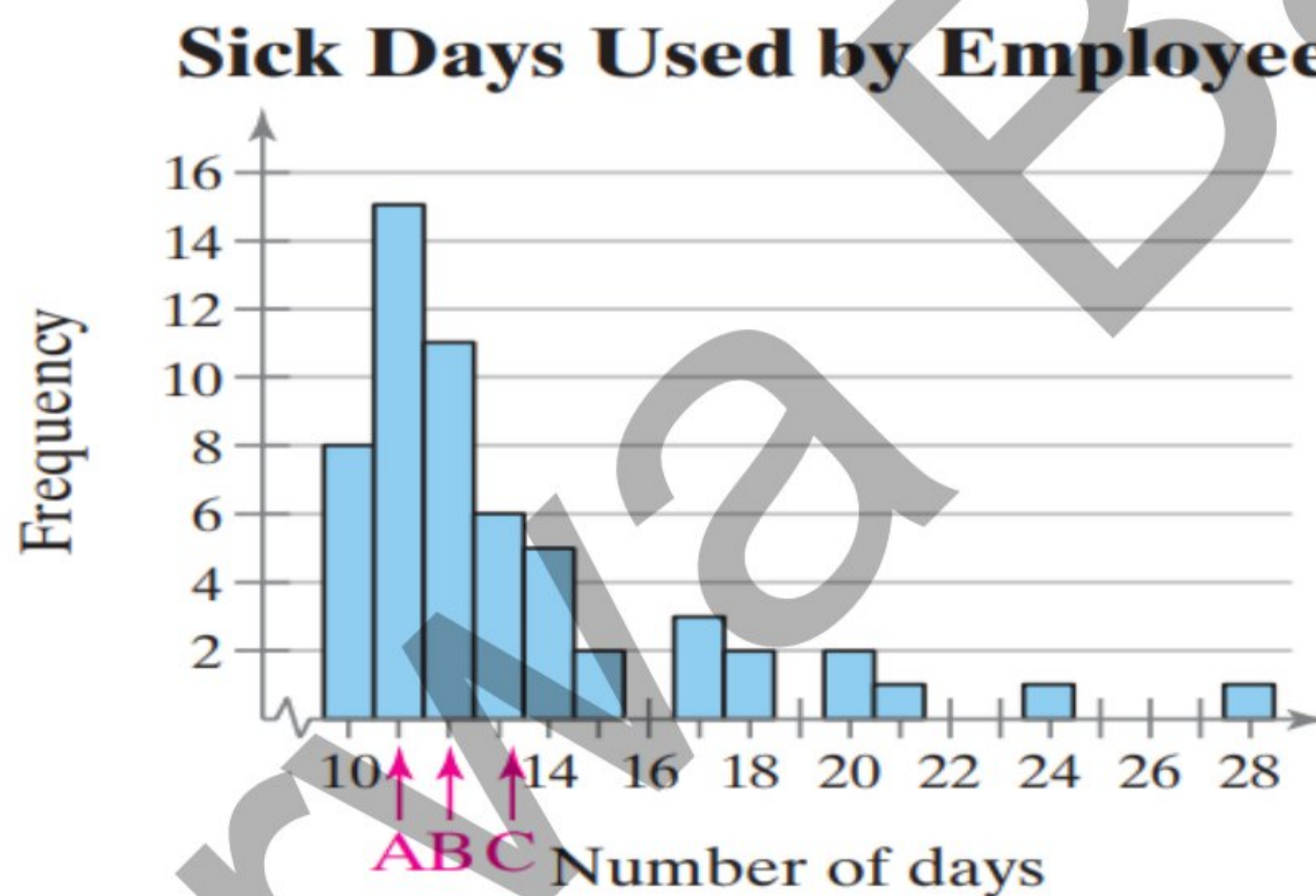
Q9 A virus infects two in every 200 people. Arwa's test is used to detect the virus in a person is positive 80% of the time when the person has the virus and 5% of the time when the person does not have the virus. (This 5% result is called a false positive.) When a person tests negative, find the probability that the person is infected.

- A) $\frac{4}{1885}$ B) $\frac{2}{200}$ C) $\frac{1}{198}$ D) None

Q10 Suppose the scores on an exam have a mean of 70 with a standard deviation of 10. If one student has a test result with a z-score of -1.8 and a second student has a test result with a z-score of 0.7, what are the real scores the first and second student got?

- A) 52, 45 B) 60,90 C) 70,10 D) 52, 77

Q11 The letters A, B, and C are marked on the horizontal axis, determine which one represent A, B and C and what's the shape of data?



- A) A=mode, B=median, C=mean, skewed to right.
 B) A=mean, B=median, C=mode, skewed to right.
 C) A=mode, B= median, C= mean, skewed to left.

Q12 Find the class width for the following data if we wish to construct a frequency distribution table (Grouped) with 5 classes:

167, 162, 127, 130, 180, 160, 167, 221, 145, 137, 194, 207, 150, 254, 297, 137, 204, 180.

- A) 35 B) 34 C) 23 D) 27

Q13 A building contractor is planning to develop a subdivision. The subdivision is to consist of 6 one-story houses, 4 two-story houses, and 2 split-level houses. In how many ways can the houses be arranged?

- A) 479001600 B) 68310 C) 263144 D) 13860

Q14 The access code for a car's security system consists of four digits. Each digit can be any number from 0 through 9. How many access codes are possible when each digit can be repeated but the first digit should be a multiple of 4 and the last digit must be 5 or 7?

- A) 200 B) 10^4 C) 400 D) 300

Q15 the scores and their percentages of the final grade for a statistics exam are shown below, what is the student's mean score?

	Score	Percent of final grade
Assignment	75	10%
Class participation	60	25%
Practical	90	25%
Theory exam	85	40%

- A) 79 B) 80 C) 72 D) 23 E) None

Q16 In a survey, 510 U.S. adults were asked whether they drive a pickup truck and whether they drive a Ford. The results showed that three in ten adults surveyed drive a Ford. Of the adults surveyed that drive Fords, two in nine drive a pickup truck. Find the probability that a randomly selected adult drives a Ford and drives a pickup truck.

- A) 0.079 B) 0.067 C) 0.222 D) 0.3

Q17 for the following stem and leaf data, find the IQR:

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

Key 3|0 means 30

- A) 40.5 B) 12 C) 28.5 D) 29

Q18 Suppose that a set of data has the following info: $\bar{X} = 2.3$, $Q_2 = 4$, $S = 2.1$, then the coefficient of skewness P and shape of data are, respectively:

- A) 2.43, skewed to right B) -2.43, skewed to right C) -2.43, skewed to left
D) -0.81, skewed to left. E) 0.81, skewed to right

Q19 The ranks that China secured at the Summer Olympics in different years are listed. 4, 11, 4, 3, 4, 2. The level of measurement and type of data are:

- A) Qualitative, Ratio B) Qualitative, Interval
C) Qualitative, Nominal D) Qualitative, Ordinal

Q20 An HR consultant gives an applicant a 75% chance of getting a job after registering with his agency. If the applicant gets a job, then there is a 60% possibility that he would be satisfied and would not resign within a year. Find the probability that the applicant gets the job and does not resign within a year.

- A) 0.75 B) 0.45 C) 0.60 D) 0.3

Q21 for the following set of data, calculate the population standard deviation: 3,8,2,4,1,0

- A) 4 B) 3.2 C) 2.1 D) 2.582

Q22 Use the information below.

- The probability that an airplane flight departs on time is 0.89.
- The probability that a flight arrives on time is 0.87.
- The probability that a flight departs and arrives on time is 0.83.

Find the probability that a flight departed on time given that it's not arriving on time.

- A) 0.462 B) 0.06 C) 0.13 D) 0.87

Question	Answer
1	A
2	B
3	B
4	A
5	D
6	C
7	C
8	B
9	A
10	D
11	A
12	B
13	D
14	C
15	A
16	B
17	C
18	C
19	D
20	B
21	D
22	A

Arwa

Arwa's Exam solutions:-

Q₁

c.f	5	20	30	35	40.
URB	12.5	17.5	22.5	27.5	32.5

$$Q_2 = \frac{n}{2} = \frac{40}{2} = 20^{\text{th}} \text{ value.}$$

$$\therefore \boxed{Q_2 = 17.5} \rightarrow \boxed{A}$$

Q₂ False, using sample to draw conclusions about populations

$\rightarrow \boxed{B}$

Q₃

Minority	not minority	5
56	144	

200 Emp.

$$\frac{\binom{144}{5} \binom{56}{0}}{\binom{200}{5}} \approx 0.007.$$

$\rightarrow \boxed{B}$

Q₄ $P(\text{of certain}) = 1. \rightarrow P(\text{complement}) = 0. \rightarrow$ complement is an impossible event \rightarrow True $\rightarrow \boxed{A}$

Q₅ $P(M | OP) = \frac{P(M \cap OP)}{P(OP)} = \frac{\frac{10}{200}}{\frac{90}{200}} = 0.111 \rightarrow \boxed{D}$

Q₆ $n = 60, \bar{x} = 3, S = 1$, no. of obs at most (0, 6)

$$0 = \bar{x} - k \cdot s \rightarrow 0 = 3 - k(1) \rightarrow \boxed{k = 3}$$

$$\text{at most } \frac{1}{k^2} = \frac{1}{(3)^2} = \frac{1}{9}.$$

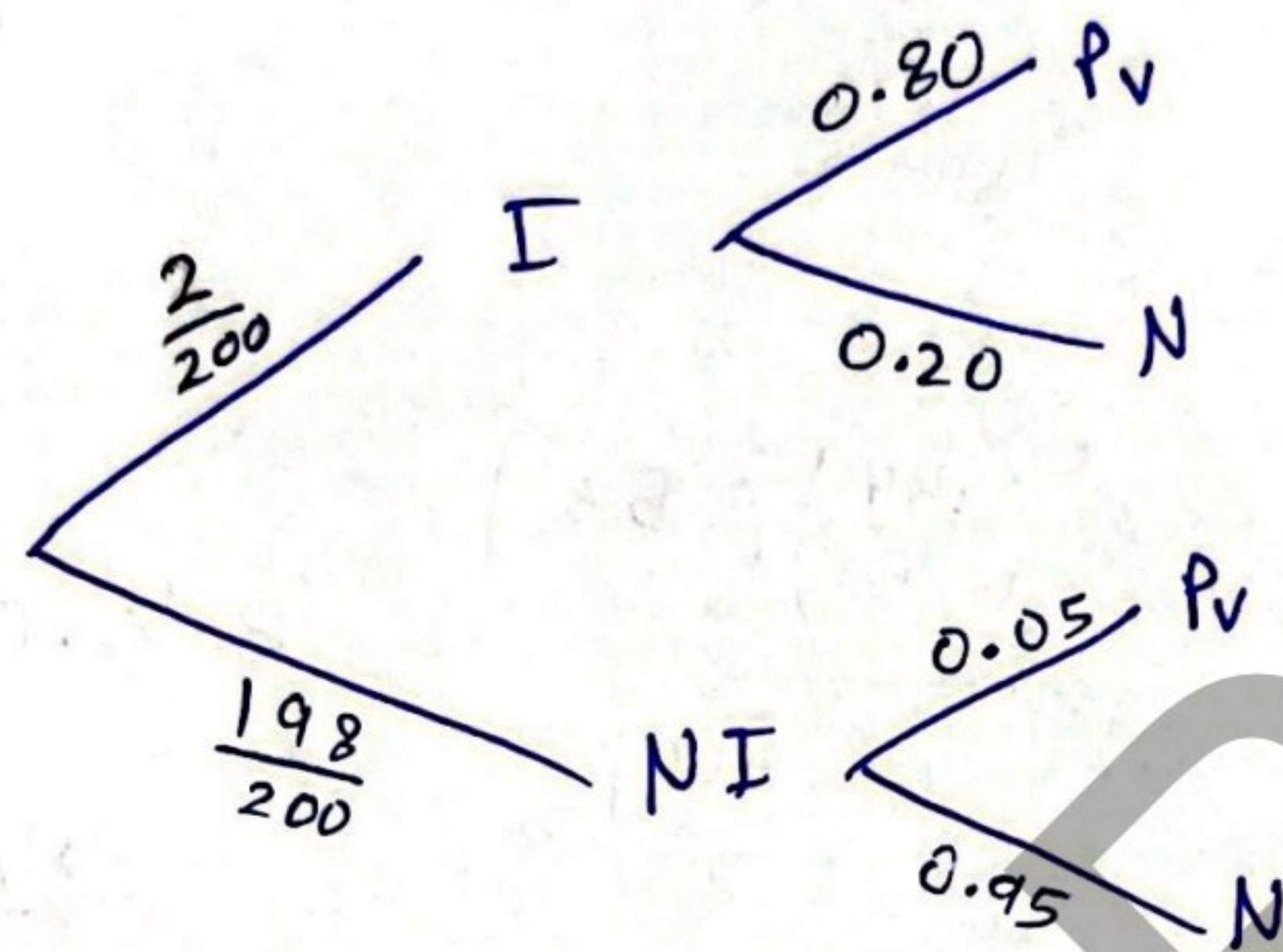
$$\# \text{ of obs} = \text{per} * n = \frac{1}{9} * 60 = 6.66 \approx \underline{6} \rightarrow \boxed{C}$$

Q7 3, 3, 6, 9, 15, 18, 18, 18, 24, 24.

$$\bar{x} = \frac{\sum x_i}{n} = \frac{3+3+6+9+15+18+18+18+24+24}{10}$$
$$= 13.8 \rightarrow \boxed{C}$$

Q8 False. $\rightarrow \boxed{B}$

Q9



$$P(I|N) = \frac{P(I \cap N)}{P(N)} = \frac{\frac{2}{200} * 0.20}{\frac{2}{200} * 0.2 + \frac{198}{200} * 0.95} = \frac{4}{1885}$$
$$\rightarrow \boxed{A}$$

Q10

$$z = \frac{x - \bar{x}}{s}$$

First

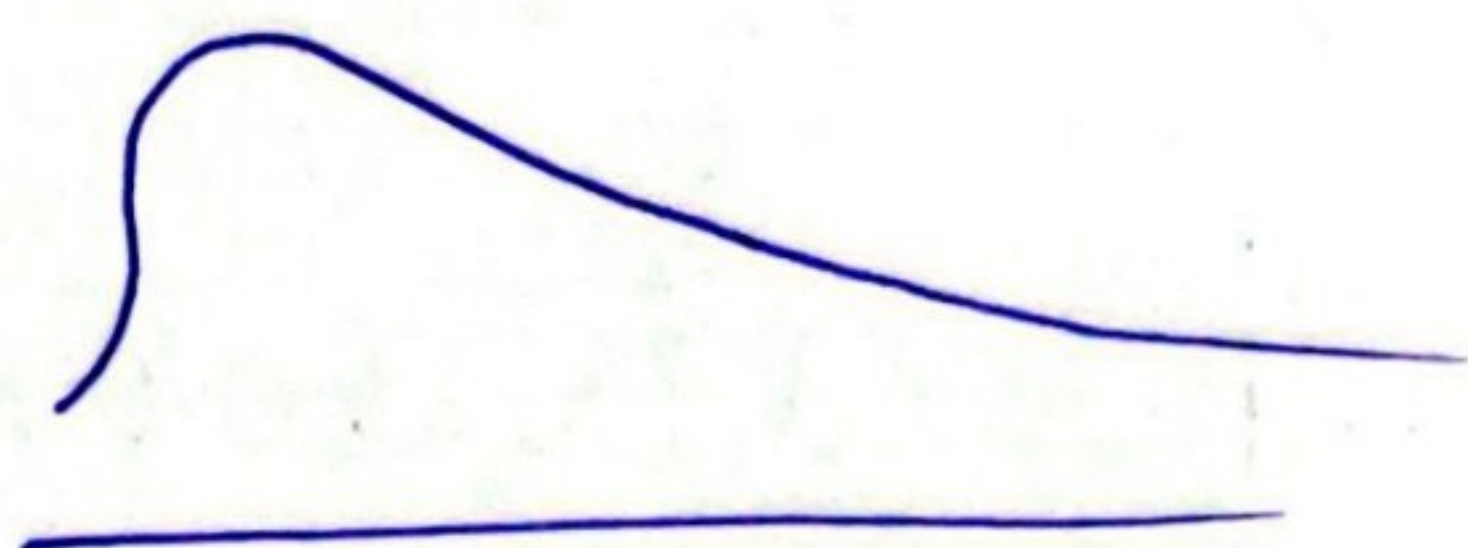
$$-1.8 = \frac{x - 70}{10} \rightarrow \boxed{x = 52}$$

Second

$$0.7 = \frac{x - 70}{10} \rightarrow \boxed{x = 77}$$

$\rightarrow \boxed{D}$

Q11 highest frequency \rightarrow mode \rightarrow A = mode
 in the middle \rightarrow median \rightarrow B = median.
 \rightarrow C = mean.



\rightarrow A

skewed to right.

Q12 Range = Max - Min = 297 - 127 = 170.

class width = $\frac{\text{Range}}{\text{no. of classes}} = \frac{170}{5} = 34. \rightarrow$ B

Q13 6 \rightarrow one-story
 4 \rightarrow two-story
 2 \rightarrow split-level.

$P = \frac{12!}{6! * 4! * 2!} = 13860 \rightarrow$ D

Q14 $\frac{2}{4,8} \cdot \frac{10}{10} \cdot \frac{10}{10} \cdot \frac{2}{5,7} = 400 \rightarrow$ C

Q15

X	W	X.W
75	0.10	7.5
60	0.25	15
90	0.25	22.5
85	0.40	34

$\bar{X} = \frac{\sum X.W}{\sum W}$
 $= \frac{7.5 + 15 + 22.5 + 34}{1} = 79 \rightarrow$ A

$$Q_{16} \quad P(F) = \frac{3}{10}$$

$$P(T|F) = \frac{2}{9} \quad , P(T \cap F) = ??$$

$$P(T|F) = \frac{P(T \cap F)}{P(F)} \rightarrow \frac{2}{9} = \frac{P(T \cap F)}{\frac{3}{10}}$$

$$\therefore P(T \cap F) = 0.067 \rightarrow \boxed{B}$$

$$Q_{17} \quad \underbrace{5, 8, 10, 11, 13, 21, 23, 23}_{\text{left}}, \overset{23.5}{\uparrow} 24, 26, 37, 40, 41, 43, 46, 48 \underbrace{\hspace{1cm}}_{\text{right}}$$

$$Q_2 = \frac{n}{2} = \frac{16}{2} = 8 \text{ (w.no)} \rightarrow \frac{8^{\text{th}} + 9^{\text{th}}}{2}$$

$$= \frac{23 + 24}{2} = 23.5$$

$$5, 8, 10, \boxed{11, 13}, 21, 23, 23 \rightarrow Q_1 = \frac{11 + 13}{2} = 12$$

$$24, 26, 37, \boxed{40, 41}, 43, 46, 48 \rightarrow Q_3 = \frac{40 + 41}{2} = 40.5$$

$$\therefore IQR = Q_3 - Q_1 = 40.5 - 12 = 28.5 \rightarrow \boxed{C}$$

$$Q_{18} \quad P = \frac{3(\bar{x} - Q_2)}{s} = \frac{3(2.3 - 4)}{2.1} = -2.43$$

\therefore skewed to left.

$\rightarrow \boxed{C}$

Q₁₉ ranks \rightarrow 1st, 2nd, 3rd

\rightarrow ordinal & qualitative $\rightarrow \boxed{D}$

$$Q_{20} \quad P(G \cap E) = 0.75.$$

$$P(\text{Not } R | G \cap E) = 0.60. \quad , P(\text{Not } R \cap G).$$

$$P(\text{Not } R | G \cap E) = \frac{P(\text{Not } R \cap G)}{P(G)}$$

$$0.60 = \frac{P(\text{Not } R \cap G)}{0.75}$$

$$\therefore P(\text{Not } R \cap G) = 0.45 \rightarrow \boxed{B}$$

$$Q_{21} \quad \sigma^2 = \frac{\sum (x_i - \mu)^2}{N} \quad , \quad 3, 8, 2, 4, 1, 0.$$

$$\mu = \frac{\sum x_i}{N} = \frac{3+8+2+4+1+0}{6} = 3.$$

$x_i - \mu$	0	5	-1	1	-2	-3
$(x_i - \mu)^2$	0	25	1	1	4	9

$$\sigma^2 = \frac{0+25+1+1+4+9}{6} = 6.667.$$

$$\sigma = \sqrt{6.667} = 2.582 \rightarrow \boxed{D}$$

$$Q_{22} \quad P(D) = 0.89, \quad P(A) = 0.87, \quad P(D \cap A) = 0.83$$

$$P(D | \bar{A}) = \frac{P(D \cap \bar{A})}{P(\bar{A})} = \frac{0.06}{0.13} = 0.462 \rightarrow \boxed{A}$$

$$P(D \cap \bar{A}) = P(D) - P(D \cap A) = 0.89 - 0.83 = 0.06$$

$$P(\bar{A}) = 1 - P(A) = 1 - 0.87 = 0.13$$