Unit 12: Basic Statistics

SSC-II Mathematics (Federal Board, National Book Foundation) | 51 MCQs

Choose the correct answer. The correct option is shown in **bold**. Each question carries one mark.

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1. The cumulative frequency of a class is

A. the class mark of that class

B. the sum of the frequencies of that class and all earlier classes

C. the frequency of that class only

D. the difference of two frequencies

2. The graph of a cumulative frequency distribution is called an

A. frequency polygon

B. bar chart

C. histogram

D. ogive

3. The last cumulative frequency in a cumulative frequency table equals

A. the total frequency

B. the range

C. the mean

D. the highest class mark

4. An ogive is plotted by taking

A. class marks against frequencies

B. lower class limits against frequencies

C. upper class boundaries against cumulative frequencies

D. class widths against frequencies

5. The median of a grouped data set is read from the ogive at the position

A. N/4

B. N/2

C. 3N/4

D. N

6. The first quartile Q_1 is read from the ogive at the position

A. 3N/4

B. N/2

C. N/4

D. N/10

7. The third quartile Q_3 is read from the ogive at the position

A. 3N/4

B. N

C. N/4

D. N/2

8. Quartiles divide a data set into

A. hundred equal parts

B. two equal parts

C. ten equal parts

D. four equal parts

9. Deciles divide a data set into

A. ten equal parts

B. five equal parts

C. four equal parts

D. hundred equal parts

10. Percentiles divide a data set into

A. four equal parts

B. twenty equal parts

C. ten equal parts

D. hundred equal parts

11. The fifth decile D_5 is equal to the

A. third quartile
B. median
C. first quartile
D. mode

12. The 50th percentile P_{50} is equal to the

A. mode
B. range
C. median
D. mean

13. The 25th percentile P_{25} is equal to the

A. third quartile
B. first decile
C. median
D. first quartile

14. The inter-quartile range (IQR) is

A. $Q_3 - Q_1$
B. $(Q_3 + Q_1)/2$
C. $Q_1 - Q_3$
D. $Q_3 + Q_1$

15. If $Q_1 = 12$ and $Q_3 = 30$, then the inter-quartile range is

A. 42
B. 9
C. 18
D. 21

16. If $Q_1 = 12$ and $Q_3 = 30$, then the semi-interquartile range is

A. 21
B. 9
C. 18
D. 42

17. A box-and-whisker plot is drawn using the

A. mean and mode only
B. range only
C. five-number summary
D. standard deviation only

18. The five-number summary consists of

A. minimum, Q_1, median, Q_3, maximum
B. minimum, mean, mode, maximum, range
C. Q_1, Q_2, Q_3, Q_4, Q_5
D. mean, median, mode, range, variance

19. The range of the data 5, 8, 12, 20 is

A. 25
B. 15
C. 12
D. 5

20. The range of a data set is

A. largest value + smallest value
B. mean − median
C. $Q_3 - Q_1$
D. largest value − smallest value

21. If the variance of a data set is 25, its standard deviation is

A. 625
B. 12.5
C. 5
D. 50

22. The standard deviation is the

A. positive square root of the variance
B. square of the variance
C. difference of mean and median
D. half of the variance

23. The variance of grouped data is given by

A. $\Sigma f(x - \bar{x})^2 / \Sigma fx$ **B. $\Sigma f(x - \bar{x})^2 / \Sigma f$**

C. $\Sigma f(x - \bar{x}) / \Sigma f$ D. $\Sigma(x - \bar{x}) / \Sigma f$

24. The mean of the data 2, 4, 4, 4, 5, 5, 7, 9 is

A. 4.5 B. 4

C. 6 **D. 5**

25. The standard deviation of the data 2, 4, 4, 4, 5, 5, 7, 9 is

A. $\sqrt{5}$ **B. 2**

C. 4 D. 5

26. A larger standard deviation indicates that the data are

A. more spread out B. all equal

C. closer to the mean D. always negative

27. When comparing two data sets, the set with the smaller standard deviation is

A. less consistent B. always larger in mean

C. more consistent D. always larger in range

28. A scatter diagram is used to show

A. the frequency of one variable B. the median of the data

C. the percentage of data in classes **D. the relationship between two variables**

29. If both variables increase together on a scatter diagram, the correlation is

A. positive B. zero

C. negative D. undefined

30. If one variable decreases as the other increases, the correlation is

A. positive B. perfect positive

C. negative D. zero

31. If the points of a scatter diagram are scattered randomly, there is

A. strong positive correlation **B. no correlation**

C. perfect negative correlation D. perfect positive correlation

32. The line of best fit on a scatter diagram

A. joins the first and the last points B. is always horizontal

C. passes through the origin always **D. passes as close as possible to all the points**

33. The height and weight of students are most likely to show

A. negative correlation B. zero variance

C. positive correlation D. no correlation

34. The sample space when a fair coin is tossed once is

A. {HH, TT} B. {T}

C. {H} **D. {H, T}**

35. When two coins are tossed together, the number of outcomes in the sample space is

A. 4 B. 8

C. 3 D. 2

36. When three coins are tossed together, the number of outcomes in the sample space is

A. 3 **B. 8**

C. 9 D. 6

37. The probability of getting an even number on a fair die is

A. 1/2 B. 1/3

C. 1/6 D. 2/3

38. The probability of getting a number greater than 4 on a fair die is

A. 1/6 B. 1/2

C. 1/3 D. 2/3

39. The probability of an impossible event is

A. 1 B. −1

C. 1/2 **D. 0**

40. The probability of a sure event is

A. 0 **B. 1**

C. 100 D. 1/2

41. The probability of any event always lies between

A. −1 and 1 B. 0 and 100

C. 1 and 2 **D. 0 and 1**

42. If P(A) = 0.4, then P(not A) equals

A. 1.4 B. 0.4

C. 0.6 D. 0.04

43. Two events A and B that cannot occur together are called

A. mutually exclusive events B. independent events

C. dependent events D. sure events

44. For mutually exclusive events A and B, P(A or B) equals

A. P(A) − P(B) **B. P(A) + P(B)**

C. P(A)/P(B) D. P(A) × P(B)

45. If A and B are mutually exclusive, P(A) = 0.3 and P(B) = 0.5, then P(A or B) is

A. 0.2 B. 0.15

C. 0.8 D. 0.35

46. For independent events A and B, P(A and B) equals

A. P(A) − P(B) B. P(A)/P(B)

C. P(A) + P(B) **D. P(A) × P(B)**

47. The probability of getting two heads when two fair coins are tossed is

A. 1/2 **B. 1/4**

C. 1/3 D. 3/4

48. The probability that the sum of two numbers on two fair dice is 7 is

A. 1/6 B. 1/12

C. 7/36 D. 1/7

49. Drawing two cards one after the other without replacement gives

A. mutually exclusive events only **B. dependent events**

C. independent events D. impossible events

50. A bag has 3 red and 2 blue balls. Two balls are drawn without replacement. The probability that both are red is

A. 3/5 B. 6/25

C. 3/10 D. 9/25

51. A tree diagram for the tossing of three coins shows

A. 6 outcomes B. 3 outcomes

C. 9 outcomes **D. 8 outcomes**