

Statistics

Assertion & Reason Type Questions

Directions : In the following questions, a statement of Assertion (A) is followed by a statement of a Reason (R). Choose the correct option:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- b. Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
- c. Assertion (A) is true but Reason (R) is false.
- d. Assertion (A) is false but Reason (R) is true.

Q1. Assertion (A): The range of the first 5 multiples of 5 is 10.

Reason (R): Range is equal to the difference of maximum and minimum value.

Answer : (d) Assertion (A): The first five multiples of 5 are 5, 10, 15, 20, 25

Here minimum value = 5 and maximum value = 25

$\therefore$ Range = Maximum value – Minimum value

$= 25 - 5 = 20$

So, Assertion (A) is false.

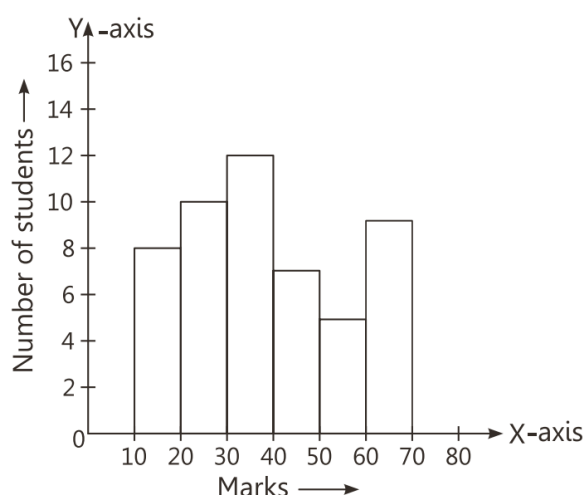
Reason (R): It is true to say that range is equal to the difference of maximum and minimum value.

Hence, Assertion (A) is false but Reason (R) is true.

Q2. Assertion (A): The following frequency distribution:

Marks	10-20	20-30	30-40	40-50	50-60	60-70
Number of students	8	10	12	7	5	9

is represented by histogram as shown below.



Reason (R): In a histogram there is no gap between any two consecutive rectangles.

Answer : (a) Here both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

Q3. The marks of different students are given below:

Marks	Number of Students
0-10	8
10-30	12
30-45	15
45-50	10
50-60	5

Assertion (A): The adjusted frequency of class interval 45-50 is 10.

Reason (R): The adjusted frequency of any class can be determined by the formula
Adjusted frequency of a class

$$= \frac{\text{Minimum class size}}{\text{Class size}} \times \text{Frequency of the class}$$

Answer : (a) Assertion (A): The minimum class size of given class-interval is 5.

Here class size of 45 - 50 is 5.

$$\therefore \text{Adjusted frequency of a class 45 - 50 is } \frac{5}{5} \times 10 = 10$$

So, Assertion (A) is true.

Reason (R): It is also true.

Hence, both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

Q4. The daily earning of 40 drug stores in the following table:

Daily earning (in ₹)	Number of Stores
200-300	12
300-400	14
400-500	8
500-600	6

Assertion (A): To draw the frequency polygon of the given data, firstly we plot the points (250, 12), (350, 14), (450, 8) and (550, 6) on a graph paper and join these points through a line segment.

Reason (R): Frequency Polygon curve can be constructed only when given data is continuous.

Answer : (a) Here both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).