

MATHEMATICS

Chapter 3: Data Handling



Important Questions

Multiple Choice Questions :

Question 1. The difference between the upper and lower limit is called

- (a) group
- (b) class size
- (c) class interval
- (d) class mark

Question 2. A process which results in some well defined outcome is known as :

- (a) outcome
- (b) event
- (c) experiment
- (d) frequency

Question 3. What is the median of the data 46, 64, 87, 41, 58, 77, 35, 90, 55, 33, 92?

- (a) 87
- (b) 77
- (c) 58
- (d) 60.2

Question 4. In a bar chart, a bar of length 4 cm is drawn. If 1 cm = 1.5 l, what will 4 cm be ?

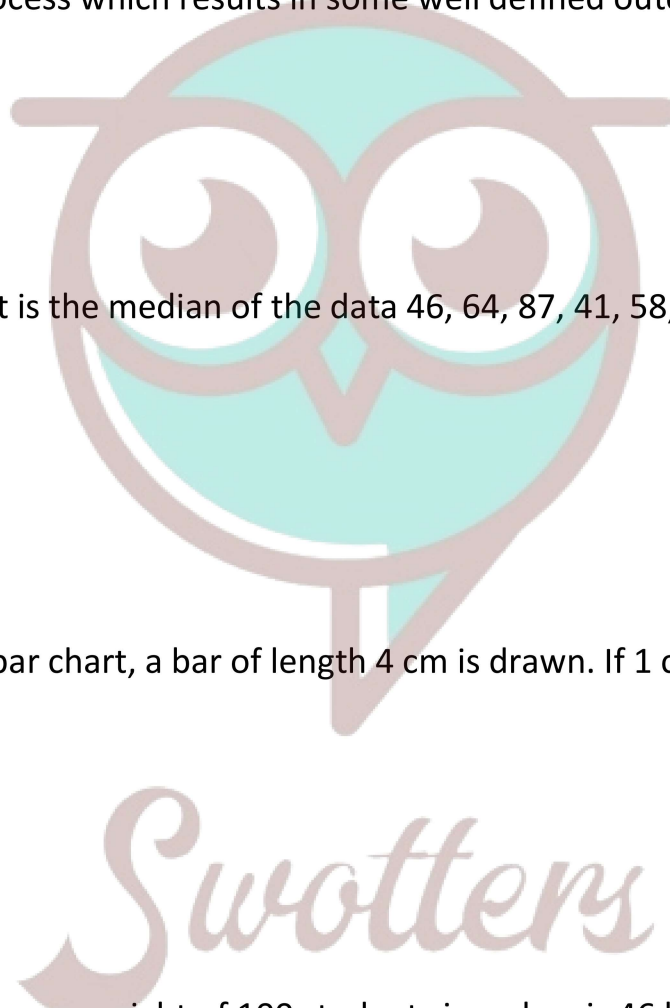
- (a) 3 l
- (b) 6 l
- (c) 5 l
- (d) 9 l

Question 5. The mean weight of 100 students in a class is 46 kg. The mean weight of boys is 50 and of girls is 40 kg. Therefore, the number of boys is:

- (a) 50
- (b) 60
- (c) 70
- (d) 65

Question 6. The probability of an experiment cannot be greater than :

- (a) 0
- (b) 0.5



(c) 1

(d) 2

Question 7. The number of times an observation occurs in a data is called its:

(a) Range

(b) Raw data

(c) Interval

(d) Frequency

Question 8. When a coin is thrown, total number of possible outcomes is _____.

(a) 5

(b) 2

(c) 6

(d) None of these

Question 9. The mean of 6, y , 7, x and 14 is 8. Which of the following is true?

(a) $x + y = 13$

(b) $x - y = 13$

(c) $2x + 3y = 13$

(d) $x^2 + y = 15$

Question 10. If 1 cm = 15 students, what will be the length of line for 90 students ?

(a) 4 cm

(b) 6 cm

(c) 6 students

(d) 9 cm

Question 11. The mean of five numbers is 27. If one of the numbers is excluded, the mean gets reduced by 2. What is the excluded number?

(a) 35

(b) 27

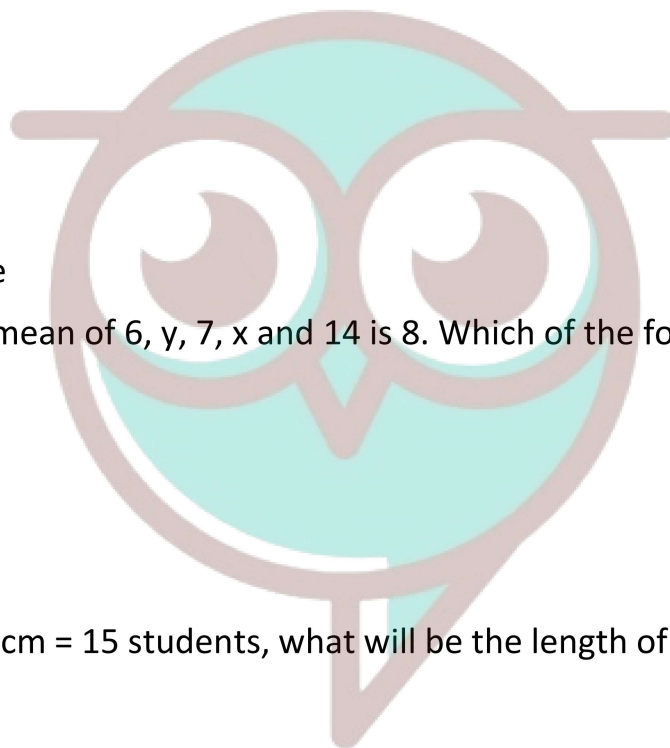
(c) 25

(d) 40

Question 12. Find the mean if the sum of 18 observations is 90.

(a) 5

(b) 4



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- (c) 6
- (d) 9

Question 13. The arithmetic mean of five given numbers is 85. What is their sum?

- (a) 425
- (b) 85
- (c) A number between 85 and 425.
- (d) A number greater than 500.

Question 14. Two dice are thrown, find and number of outcomes.

- (a) 12
- (b) 6
- (c) 36
- (d) None of these

Question 15. How many possible outcomes can we get if we toss a coin and throw a dice respectively?

- (a) 6, 2
- (b) 2, 6
- (c) 1, 3
- (d) 3, 1

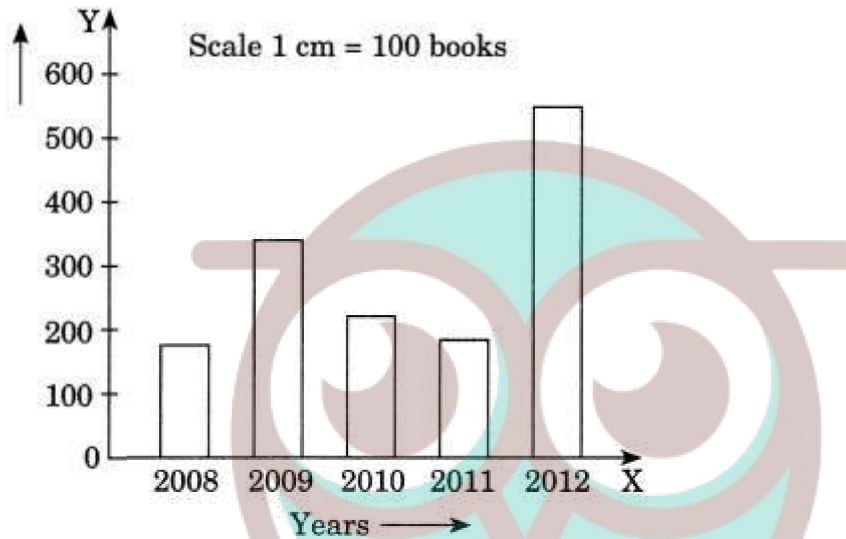
Very Short Questions :

1. Find the range of the following data:
21, 16, 30, 15, 16, 18, 10, 24, 26, 2
2. Find the mode of the following data:
24, 26, 23, 26, 22, 25, 26, 28
3. Find the average of the numbers 8, 13, 15.
4. Find the median of the following data:
8, 6, 10, 12, 14
5. Find the median of the following data:
20, 14, 6, 25, 18, 13, 19, 10, 9, 1
6. A fair die is rolled, find the probability of getting a prime number.
7. If the averages of the given data 6, 10, 12, x, 16 is 14, find the value of x.
8. Find the mean of the first 5 multiples of 3.

Short Questions :

1. The following bar graph shows the number of books sold by a publisher during the five consecutive years. Read the bar graph and answer the following questions:

- (i) About how many books were sold in 2008, 2009 and 2012 years?
- (ii) In which years were 575 books were sold?
- (iii) In which years were the minimum number of books sold?



- 2. Find the mean and median of first five prime numbers.
- 3. The marks obtained (out of 10) by 80 students in a class test are given below:

Marks obtained	1	2	3	4	5	6	7	8	9	10
Number of students	3	5	8	10	9	15	20	16	12	2

Find the mode of the above data.

- 4. A bag contains 5 white and 9 red balls. One ball is drawn at random from the bag. Find the probability of getting
 - (a) a white ball
 - (b) a red ball
- 5. A dice is tossed once. Find the probability of getting
 - (i) a number 5
 - (ii) a number greater than 5
 - (iii) a number less than 5
 - (iv) an odd number
 - (v) an even number
 - (vi) a number greater than 6

Long Questions :

- The data given below shows the production of motorbikes in a factory for some months of two consecutive years.

Months	2008	2007
February	2700	2800
May	3200	4500
August	6000	4800
October	5000	4800
December	4200	5200

Study the table given above and the answer the following questions:

- Draw a double bar graph using an appropriate scale to depict the above information and compare them.
 - In which year was the total output maximum?
 - Find the mean production for the year 2007.
 - For which month was the difference between the production for the two years is the maximum?
 - In which month for the year 2008, the production was the maximum?
 - In which month for the year 2007, the production was the least?
- A coin and a die are tossed once together. Find the total number of outcomes.
 - Find the range of heights of any ten students of your class.
 - Find the mean of the first five whole numbers.
 - The marks (out of 100) obtained by a group of students in a science test are 85, 76, 90, 85, 39, 48, 56, 95, 81 and 75. Find the:
 - Highest and the lowest marks obtained by the students.
 - Range of the marks obtained.
 - Mean marks obtained by the group.

Assertion and Reason Questions:

1) Assertion: The mean of the numbers 10,20, 30 and 40 is 25.

Reason: Mean = $10+20+30+40/4 = 100/4 = 25$.

- Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
- Both Assertion and Reason are correct and Reason is not the correct

explanation for Assertion.

c.) assertion is true but the reason is false.

d.) both assertion and reason are false.

2) Assertion: The middle most observation of a data series is called the median of the series.

Reason: medians divides the total frequency into 2 equal parts.

a.) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion

b.) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.

c.) assertion is true but the reason is false.

d.) both assertion and reason are false.

ANSWER KEY -

Multiple Choice questions :

1. (b) class size
2. (c) experiment
3. (c) 58
4. (b) 6 l
5. (b) 60
6. (c) 1
7. (d) Frequency
8. (b) 2
9. (a) $x + y = 13$
10. (b) 6 cm
11. (a) 35
12. (a) 5
13. (a) 425
14. (c) 36
15. (b) 2, 6

Very Short Answer :

1. Greatest number 30
Smallest number = 10
Range = $30 - 10 = 20$

2. Arranging the given data with the same value together, we get
22, 23, 24, 25, 26, 26, 26, 28

Here, 26 occurs the greatest number of times i.e. 3 times

Thus, the required mode = 26.

3.

$$\text{Average} = \frac{\text{Sum of the numbers}}{\text{Total number of terms}}$$

$$= \frac{8 + 13 + 15}{3} = \frac{36}{3} = 12$$

Thus, the required average = 12.

4. Let us arrange the given data in increasing order,
6, 8, 10, 12, 14

$n = 5$ (odd)

$$\text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ term} = 3^{\text{rd}} \text{ term} = 10$$

5. Thus, the required median = 10.

Arranging the given data in increasing order, we get

6, 9, 10, 12, 13, 14, 18, 19, 20, 25

$n = 10$ (even)

$$\text{Median} = \frac{\frac{n}{2}^{\text{th}} \text{ term} + \left(\frac{n}{2} + 1\right)^{\text{th}} \text{ term}}{2}$$

$$= \frac{\frac{10}{2}^{\text{th}} \text{ term} + \left(\frac{10}{2} + 1\right)^{\text{th}} \text{ term}}{2}$$

$$= \frac{5^{\text{th}} \text{ term} + 6^{\text{th}} \text{ term}}{2}$$

$$= \frac{13 + 14}{2} = \frac{27}{2} = 13.5$$

Thus, the required median = 13.5

6. Number on a die = 1, 2, 3, 4, 5, 6

$n(S) = 6$

Prime numbers = 2, 3, 5

$n(E) = 3$

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{3}{6} = \frac{1}{2}$$

Thus the required probability = $\frac{1}{2}$.

7. Average of the given numbers

$$= \frac{6 + 10 + 12 + x + 16}{5} = \frac{44 + x}{5}$$

$$\frac{44 + x}{5} = 14$$

$$\Rightarrow 44 + x = 14 \times 5$$

$$\Rightarrow 44 + x = 70$$

$$\therefore x = 70 - 44 = 26$$

Thus, the required value of x is 26.

8. Five multiples of 3 are 3, 6, 9, 12 and 15

$$\text{Mean} = \frac{3 + 6 + 9 + 12 + 15}{5} = \frac{45}{5} = 9$$

Hence, the required mean = 9.

Short Answer :

1.

(i)

Years	Sold books
2008	150
2009	360
2012	575

(ii) In the year of 2012, maximum number of books i.e. 575 were sold.

(iii) Minimum number of books i.e. 150 were sold in the year 2008.

2. First five prime numbers are: 2, 3, 5, 7 and 11

$$\text{Mean} = \frac{2 + 3 + 5 + 7 + 11}{5} = \frac{28}{5} = 5.6$$

Here, n = 5

Median is the middle term, i.e., 5.

3. In the given frequency distribution table, we find that the observation 7 has maximum frequency, i.e., 20

Hence, the required mode = 7.

4. Total number of balls = 5 + 9 = 14 balls

n(S) = 14

(i) Number of white ball = 5

$$n(E) = 5$$

$$\text{Probability of getting white ball} = \frac{n(E)}{n(S)} = \frac{5}{14}$$

(ii) Number of red balls = 9

$$n(E) = 9$$

$$\text{Probability of getting white ball} = \frac{n(E)}{n(S)} = \frac{9}{14}$$

5. Total number of outcomes = 6

$$n(S) = 6$$

(i) An event of getting a number 5

$$n(E) = 1$$

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{1}{6}$$

(ii) An event of getting a number 5 greater than 5, i.e., 6

$$n(E) = 1$$

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{1}{6}$$

(iii) An event of getting a number less than 5, i.e., 1, 2, 3 and 4.

$$n(E) = 4$$

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{4}{6} = \frac{2}{3}$$

(iv) An event of getting an odd number, i.e., 1, 3 and 5.

$$n(E) = 3$$

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{3}{6} = \frac{1}{2}$$

(v) An event of getting an even number, i.e., 2, 4 and 6.

$$n(E) = 3$$

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{3}{6} = \frac{1}{2}$$

(vi) An event of getting a number greater than 6, i.e., Nil.

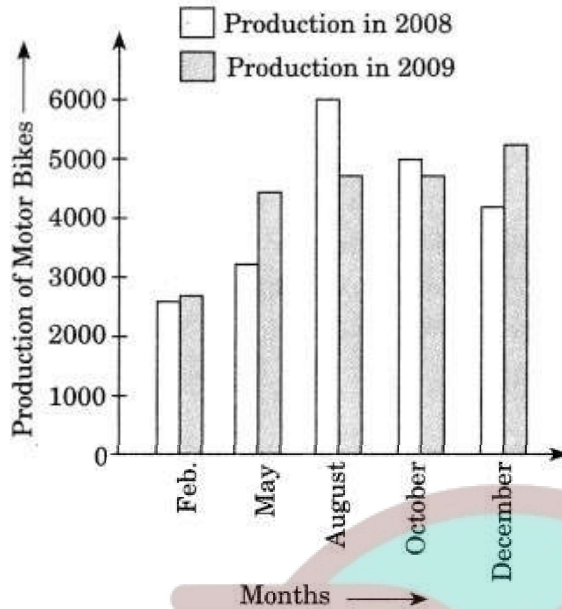
$$n(E) = 0$$

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{0}{6} = 0$$

Long Answer :

1. (a) Double bar graph

Scale : 1 cm = 100 Motor Bikes



The above bar graph depicts the total production of motorbikes in two consecutive years.

Total production in 2007 was 22100 whereas in 2008 it was 21100.

(b) In the year 2007, the total production was maximum (22100)

(c) Mean production in the year 2007 is

$$\begin{aligned}
 &= \frac{2800 + 4500 + 4800 + 4800 + 5200}{5} \\
 &= \frac{22100}{5} = 4420
 \end{aligned}$$

(d) Production of motorbikes in the May 2007 = 4500 and in May 2008 = 3200

Difference = 4500 – 3200 = 1300 which is the maximum

(e) In the month of August 2008, production was maximum i.e., 6000

(f) In the month of Feb. 2007 the production was least i.e., 2800.

2. A coin has two faces, Head (H) and Tail (T)

A die has six faces marked with numbers 1, 2, 3, 4, 5, 6

Possible outcomes are:

H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6

Total number of outcomes = 2 × 6 = 12.

3. Let the heights (in cm) of 10 students of our class be

125, 127, 132, 133, 134, 136, 138, 141, 144, 146

Highest value among these observations = 146

Lowest value among these observations = 125

Range = Highest value – Lowest value

$$= (146 - 125) \text{ cm}$$

$$= 21 \text{ cm}$$

4. First five whole numbers are 0, 1, 2, 3, and 4.

$$\text{Mean} = \frac{0+1+2+3+4}{5} = \frac{10}{5} = 2$$

Therefore, the mean of first five whole numbers is 2.

5. The marks obtained by the group of students in a science test can be arranged in an ascending order as follows.

39, 48, 56, 75, 76, 81, 85, 85, 90, 95

(i) Highest marks = 95

Lowest marks = 39

(ii) Range = 95 - 39

$$= 56$$

(iii) Mean marks = $\frac{(85+76+90+85+39+48+56+95+81+75)}{10}$

$$= \frac{730}{10} = 73$$

Assertion and Reason Answers:

- 1) a.) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
- 2) b.) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.

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