

# **Data Handling**

## MATHEMATICAL REASONING

**DIRECTIONS (1 - 2):** Study the following table which shows the production of three different types of cars over the years.

Years	Production	Production	Production
	of Car P	of Car Q	of Car R
2001	76	59	28
2002	82	62	36
2003	65	47	42
2004	70	54	31
2005	85	57	49
2006	80	68	38

- The average production of which of the following types of cars was maximum?
   (a) Q
   (b) P
   (c) R
   (d) All are equal
- The difference between the total production of three cars in the year 2004 and 2006 is
  (a) 11
  (b) 43
  (c) 31
  (d) 28
- **3.** The heights of 10 students were measured in cm and the results are as follows: 147, 139, 135, 136, 149, 166, 152, 163, 155, 144.
  - (i) What is the range of the data?

(ii) What is the mean height of the students?(iii) How many students are there whose height is more than the mean height?

	(i)	(ii)	(iii)
(a)	30	100.5	3
(b)	31	148.6	5
(c)	32	149	5
(d)	28	148.6	4

**4.** The mode and median of the following data 21, 23, 25. 23, 21, 24, 22, 20, 23 respectively, are

(a) 23, 23	(b) 21, 23
(c) 25, 21	(d) 23, 21

5. Mean of 9 observations was found to be 35. Later on, it was detected that an observation 81 was misread as 18, then the correct mean of the observations is

(a) 40
(b) 41

(a) <del>4</del> 0	(0) 41
(c) 42	(d) 43

- 6. If the mean of 6, 8, 5, x and 4 is 7, then the value of x is \_\_\_\_\_.
  (a) 11 (b) 12
  (c) 13 (d) 14
- **7.** The mode of the following distribution is

Size	2	3	4	5	6	7	8
Frequency	10	12	25	20	25	15	11

(a) 2	(b) 8
(c) Both 4 and 6	(d) 5

**8.** The mean of 5 numbers is 20. If one number is excluded, mean of the remaining numbers becomes 23, then the excluded number is

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(a) 4	(b) 92
(c) 100	(d) 8

**9.** The median value of the given data is 98, 75, 96, 180, 270, 102, 94, 100, 610, 200, 75, 80 (a) 100 (b) 98 (c) 97 (d) 99

**DIRECTIONS (10 - 13):** The given bar graph shows the marks obtained by a student in different subjects. The maximum marks of each subject is 100.



**10.** In which subject did the student score highest marks?

(a) English	(b) Mathematics
(c) Science	(d) S. St

What is the average marks obtained by the student?(a) 57(b) 63

(c) 80 (d) 48
(0) 00 (0) 10

- What is the percentage of marks obtained by the student?
  (a) 80%
  (b) 63%
  (c) 57%
  (d) 90%
- **13.** What is the ratio of the highest marks to the lowest marks obtained by the student?
  - (a) 2:11 (b) 9:2
  - (c) 2:9 (d) 11:2
- **14.** The given bar graph shows the production of Rice and Wheat in five states.



Which of the following states is the largest producer of wheat?

(a) M.P.	(b) Haryana
(c) Maharashtra	(d) U.P.

**15.** Which of the following statements is INCORRECT?

(a) Mean, Median and Mode may be same for some data.

(b) The probability of getting an ace out of a deck of cards is less than 1.

(c) Mean of the data is always from the given data.

(d) Median of the data may or may not be from the given data.

### **EVERY DAY MATHEMATICS**

- 16. The choices of the fruits of 42 students in a class are as follows:
  A, O, B, M, A, G, B, G, A, G, B, M, A, G, M, A, B, G, M, B, A, O, M, O, G, B, O, M, G, A, A, B, M, O, M, G, B, A, M, O, M, O, where A, B, G, M and O stands for Apple, Banana, Grapes, Mango and Orange respectively.
  Which two fruits are liked by an equal number of students?
  (a) Apple and Mango
  (b) Mango and Banana
  (c) Banana and Orange
  (d) Banana and Grapes
- **17.** Garima collected the data regarding weights of students of her class and prepared the following table:

Weight (in ka)	44 – 49	50 – 55	56 – 61	62 – 67
Number of students	8	15	25	17

A student is to be selected randomly from her class for some competition. The probability of selection of the student is highest whose weight (in kg) is in the interval \_\_\_\_.

- (a) 44 49
- (b) 56 61
- (c) 50 55
- (d) 62 67
- **18.** Soni has digit cards 1, 4 and 7. She makes 2digit number using each card only once. The probability that a 2-digit number chosen at random is divisible by 2 Is:
  - (a)  $\frac{1}{3}$ (b)  $\frac{2}{3}$ (c) 0
  - (d)  $\frac{1}{2}$

**19.** A bag contains red, white and blue pencils. The probability of selecting a red pencil is  $\frac{2}{13}$ 

and that of selecting a blue pencil is  $\frac{4}{13}$ .

Find the probability of selecting a white pencil.

(a) $\frac{6}{13}$	(b) $\frac{7}{13}$
(c) $\frac{3}{5}$	(d) $\frac{2}{5}$

**20.** A fair dice has faces numbered 0, 1, 7, 3, 5 and 9. If it is thrown, the probability of getting an odd number is

(a) 1	(b) $\frac{2}{3}$
(c) $\frac{5}{6}$	(d) $\frac{1}{6}$

## **ACHIEVERS SECTION (HOTS)**

**21.** The line graph shows the number of storybooks Armaan read in the last 4 months of a year.



The number of storybooks that he read in October as a fraction of the total number of storybooks read is

(a) 
$$\frac{1}{12}$$
  
(b)  $\frac{3}{4}$   
(c)  $\frac{1}{2}$   
(d)  $\frac{5}{12}$ 

- 22. If weights of 9 students (in kg) of a particular class are:
  34, 35, 36, 40, 35, 35, 40, 45, 39,
  Which of the following is in the order from the least to the greatest?
  (a) Mean, Mode, Median
  (b) Mean, Median, Mode
  (c) Mode, Median, Mean
  (d) Mode, Mean, Median
  - **23.** The given line graph shows the number of toy bikes sold by Robin over 5 days.



If the cost of 1 toy bike is Rs. 33.60, then how much did he earn in 5 days?

- (a) Rs. 9408
- (b) Rs. 9240
- (c) Rs. 8400
- (d) Rs. 8408
- **24.** The given bar graph shows the demand and production of colour TVs of five companies.



In which standard is the result of the girls more than the average result of the boys from the school?

- (a) IX
- (b) VIII
- (c) VI
- (d) X

**25.** The given bar graph shows the result of annual examination in a school from class V to class X.



What is the difference between average demand and average production of the five companies taken together?

(a) 1400	(b) 400
(c) 280	(d) 138

ANSWER KEY									
1.	В	2.	С	3.	В	4.	А	5.	С
6.	В	7.	С	8.	D	9.	D	10.	В
11.	А	12.	С	13.	В	14.	D	15.	С
16.	D	17.	В	18.	А	19.	В	20.	С
21.	A	22.	С	23.	A	24.	A	25.	С

#### SOLUTION

1.	(b): Average production of Car P
	$= \frac{Sum of production of Car P in each year}{$
	Total number of years
	$-\frac{76+82+65+70+85+80}{-458}-\frac{458}{-76}$
	6 6 70.55
	Average production of Car Q
	_ 59+62+47+54+57+68 _ 347 _ 57.83
	6
	Average production of Car R
	_ 28+36+42+31+49+38 _ 224 _ 37 33
	6
	Clearly, average production of Car P is
	greater than Car Q and Car R.
	Hence, average production of Car P is
	maximum.

2. (c): Total production of cars in year 2004 = 70+54+31=155Total production of cars in year 2006 = 80+68+38=186 Hence, difference between the total production of three cars in the year 2004 and 2006 = 186 - 155 = 31

3. (b): (i) Range == Maximum value-Minimum  
value =166-135 = 31  
(ii) Mean height of students  
= 
$$\frac{Total \ height \ of \ students}{Number \ of \ students}$$
  
=  $\frac{147 + 139 + 135 + 136 + 149 + 166 + 152}{10}$   
=  $\frac{+163 + 155 + 144}{10}$   
=  $\frac{1486}{10} = 148.6$ 

(iii) Height of students more than the mean height are 149, 166, 152, 163, 155.

i.e., 5 student's height is more than mean height.

(a): Here 23 occurs most frequently.
∴ Mode=23
On arranging terms in ascending order, we get 20, 21, 21, 22, 23, 23, 23, 24, 25 Total number of terms = 9

$$\therefore \text{ Median } = \left(\frac{9+1}{2}\right)^{th} term = 5^{th} term = 23$$

5. (c): Incorrect mean of 9 observations = 35 Incorrect sum of 9 observations  $= 35 \times 9 = 315$ 

Since, 81 is misread as 18. So, correct sum of observations = 315-18+81=378 $\therefore$  Correct mean =  $\frac{378}{9} = 42$ 

- 6. (b): Mean = 7, i.e.  $\frac{6+8+5+x+4}{5} = 7$  $\Rightarrow x+23=35 \Rightarrow x=12$
- (c): Mode is that observation which have highest frequency. Since, both 4 and 6 have highest frequency.
  ∴ Option (c) is correct.
- **8.** (d): Let the excluded number be x.

Sum of 5 numbers  $= 20 \times 5 = 100$ After excluding x, Sum of 4 numbers  $= 4 \times 23 = 92$ .  $\therefore x = 100 - 92 \implies x = 8$ 

9. (d): Arranging the given numbers in ascending order, we get 75.75.80, 94, 96, 98, 100, 102,180,200, 270, 610 Now, number of terms = 12, which is even.  $\therefore$  Median = Average of  $\left(\frac{12}{2}\right)^{th}$  and

$$\left(\frac{12}{2}+1\right)^{th} \text{ term}$$
  
= Average of 6th and 7th term  
=  $\left(\frac{98+100}{2}\right) = \frac{198}{2} = 99$ 

**10.** (b):

- 11. (a): Average marks = $\left(\frac{55+90+40+80+20}{5}\right) = \frac{285}{5} = 57$
- 12. (c): Percentage =  $\frac{Marks \ obtained}{Total \ marks} \times 100$ =  $\left(\frac{55+90+40+80+20}{500}\right) \times 100$ =  $\frac{285}{500} \times 100 = 57\%$
- **13.** (b): Highest marks obtained by student = 90 Lowest marks obtained by student = 20  $\therefore$  Ratio = 90: 20 = 9: 2
- **14.** (d):
- **15.** (c): Option (c) is incorrect because the mean of the data may or may not be from the given data.
- 16. (d): Number of students like Apple = 9 Number of students like Orange = 7 Number of students like Banana = 8 Number of students like Grapes = 8 Number of students like Mango = 10

So, Banana and Grapes are liked by equal number of students.

- **17.** (b): Since, number of student is greatest in the interval 56-61. So, the probability of selection of the student is highest in the interval 56-61.
- 18. (a): Two digit numbers using the digits 1, 4 and 7 are: 14, 17, 41, 71, 47 and 74. Total number of two digit numbers = 6 Number of two digit even numbers = 2 Required probability  $=\frac{2}{6}=\frac{1}{3}$ 19. (b): P (white pencil) = Total probability - [P(red pencil) + P(blue pencil)]

$$=1 - \left[\frac{2}{13} + \frac{4}{13}\right] = 1 - \frac{6}{13} = \frac{7}{13}$$

**20.** (c): Since 1, 3, 5, 7, 9 are odd numbers.  $\therefore$  Number of favorable outcomes = 5 So, probability of getting an odd number  $=\frac{Favourable \ outcomes}{Total \ number \ of \ possible \ outcomes} = \frac{5}{6}$ 

- 21. (a): Total number of storybooks read = 4+2+10+8=24 Number of storybooks read in October = 2 ∴ Required fraction =  $\frac{2}{24} = \frac{1}{12}$
- 22. (c): Arrangement of weights (in kg) of 9 students in ascending order is: 34, 35, 35, 35, 36, 39, 40, 40, 45 Sum of weights (in kg) of all students = 339 Mean =  $\frac{Sum \ of \ weights \ of \ all \ students}{Number \ of \ students}$

$$=\frac{339}{9}=37.67$$

Since, number of students is 9, which is odd.

$$\therefore \text{ Median } = \left(\frac{9+1}{2}\right)^{th} \quad \text{term } = 5\text{th term } =$$

36

Since, 35 occurs most number of times.

 $\therefore$  Mode = 35. Hence, Mode < Median < Mean.

- 23. (a): Total number of toy bikes sold in 5 days = 30+80+40+60+70=280Cost of 1 toy bike = Rs.33.60∴ Cost of 280 toy bikes =  $Rs.(33.60 \times 280) = Rs.9408$
- **24.** (a): Average result of boys =  $\frac{1}{6}(80+80+40+90+70+70) = 71.67\%$

Clearly, in IX standard the result of girls is more than the average result of boys.

**25.** (c): Average demand of companies

$$=\frac{1}{5}(3000+600+2500+1200+3300)=2120$$

Average production of companies

$$= \frac{1}{5}(1500 + 1800 + 1000 + 2700 + 2200)$$
$$= \frac{9200}{5} = 1840$$

 $\therefore$  Required difference = 2120-1840 = 280