

### Exercise - 8.3

① The monthly salary of 10 employees in a factory are given below: ₹ 5000, ₹ 7000, ₹ 5000, ₹ 7000, ₹ 8000, ₹ 7000, ₹ 7000, ₹ 8000, ₹ 7000, ₹ 5000. Find the mean, median and mode.

→ Sum of all salary of 10 employees.

$$= 5000 + 7000 + 5000 + 7000 + 8000 + 7000 + 7000 + 8000 + 7000 + 5000$$

$$= 66000$$

∴ mean of monthly salary of 10 employees

$$= \frac{\text{sum of all salary}}{\text{number of all employees}}$$

$$= \frac{66000}{10}$$

$$= 6600$$

Let us arrange the monthly salary of 10 employees in descending order.

₹ 8000, ₹ 8000, ₹ 8000, ₹ 7000, ₹ 7000, ₹ 7000, ₹ 7000, ₹ 7000, ₹ 5000, ₹ 5000

The number of employees = 10 [which is even]

$$\text{median} = \left(\frac{10}{2}\right)^{\text{th}} \text{ salary}$$

$$= 5^{\text{th}} \text{ salary}$$

$$= 7000$$

Now, mean = 6600 and median = 7000

~~we know that~~

$$\text{mode} = 3 \text{ median} - 2 \text{ mean}$$

$$\text{mode} = 3 \times 7000 - 2 \times 6600$$

$$= 21000 - 13200$$

$$= 7800$$

We see that, 7000 has the maximum times pay for salary of 10 employees.

Then, mode = 7000.

Thus,  $\theta$  mean = 6600, median = 7000 and mode = 7000.

② Find the mode of the given data:

3.1, 3.2, 3.3, 2.1, 1.3, 3.3, 3.1

$\Rightarrow$  given that

3.1, 3.2, 3.3, 2.1, 1.3, 3.3, 3.1

We see that 3.1 and 3.3 ~~have~~ have the maximum times given the data.

Then, mode = 3.1 or 3.3

③ For that data 11, 15, 17,  $x+1$ , 19,  $x-2$ , 3 if the mean is 14, find the value of  $x$ , Also find the mode of the data.

$\Rightarrow$  Sum of all the given data

$$= 11 + 15 + 17 + (x+1) + 19 + (x-2) + 3$$

$$= 2x + 64$$

Number of given data = 7

$$\text{mean} = \frac{\text{Sum of all the values}}{\text{Number of the values}}$$

$$= \frac{2x + 64}{7}$$

Now, mean = 14

$$\frac{2x + 64}{7} = 14$$

$$2x + 64 = 98$$

$$2x = 34$$

$$x = 17$$

$\therefore$  The values of  $x = 17$ .

Now, the given data.

11, 15, 17, 18, 19, 15, 3

We see that 15 has maximum ~~time~~ the given data.

So, mode = 15

④ The demand of track suit of different sizes as obtained by a survey is given below.

size	38	39	40	41	42	43	44	45
No. of persons	36	15	37	13	26	8	6	2

Which size is in greater demanded?

⇒ given the data.

37 has maximum persons.

Then, 40 size is in greater demand.

⑤ Find the mode of the following data.

marks	0-10	10-20	20-30	30-40	40-50
Number of students	22	38	46	34	20

⇒

marks	0-10	10-20	20-30	30-40	40-50
No. of students (f)	22	38	46	34	20

46 has maximum frequency.

then marks interval 20-30.

$l = 20$ ,  $f = 46$ ,  $f_1 = 38$  and  $f_2 = 34$

$e = 10$

We know that

$$\text{mode} = l + \left( \frac{f - f_1}{2f - f_1 - f_2} \right) \times e$$

$$\begin{aligned} \text{mode} &= 20 + \left( \frac{46-38}{2 \times 46 - 38 - 34} \right) \times 10 \\ &= 20 + \frac{84}{29} \times 10 \\ &= 24 \end{aligned}$$

Thus, the ~~given that~~ mode of given data is 24.

⑥ Find the mode of the following distribution:

Weight (in kgs)	25-34	35-44	45-54	55-64	65-74	75-84
Number of students	4	8	10	14	8	6

⇒

Weight (in kgs)	25-34	35-44	45-54	55-64	65-74	<del>75-84</del>
no. of students (f)	4	8	10	14	8	6

14 has maximum frequency.

So, weight interval 55-64.

$$l = 55, f = 14, f_1 = 10, f_2 = 8$$

$$\text{and } c = 64 - 55 = 9$$

$$\text{mode} = l + \left( \frac{f - f_1}{2f - f_1 - f_2} \right) \times c$$

$$= 55 + \left( \frac{14 - 10}{2 \times 14 - 10 - 8} \right) \times 9$$

$$= 55 + \frac{4}{10} \times 9$$

$$= 55 + 3.6$$

$$= 58.6$$

Therefore, the mode of given distribution is

$$58.6$$