

MEAN MODE MEDIAN

Mean: $\frac{\text{Sum of Observations}}{\text{No of Observations}}$

Median : For odd no of observations - 5
 $(\frac{n+1}{2})^{\text{th}}$ number $\frac{5+1}{2} = 6$ ③

For even no of observations ⑥
 $6_2 = 3$

Avg of $\frac{n}{2}$ th . $\frac{n+1}{2}$ th term

What is the median of 6, 9, 13, 8, 3, 2, 5, 7 and 11?

✓ 1. 7

✗ 2. 6.5

✗ 3. 8

✗ 4. 6

2, 3, 5, 6, 7, 8, 9, 11, 13

$$\frac{n+1}{2} = \frac{9+1}{2} = \frac{10}{2} = 5^{\text{th}}$$

9 - odd

What is the median of 7, 18, 6, 9, 4, 15, 21, 14, 26?

X 1. 14.5

✓ 2. 14 ✓

4, 6, 7, 9, 10, 15, 18, 21, 26 Odd

X 3. 15

X 4. 16

$$\frac{n+1}{2} = \frac{10}{2} = 5^{\text{th}}$$

What is the mode of the given data?

4, 3, 7, 13, 16, 23, 3, 4, 7, 4, 3, 3, 9, 6, 9, 6

X 1. 9. - 2

X 2. 4 - 2

✓ 3. 3 - " ✓

X 4. 6 - 2

What is the median of the numbers 29, 27, 32, 23, 18, 18, 32, 31, 28, 15, 35, 30?

X 1. 29.5

X 2. 30.5

✓ 3. 28.5 ↗

X 4. 30

$$15, 18, 18, 23, 27, \underline{28}, \underline{29}, 30, 31, 32, 32, 35$$
$$\frac{28+29}{2} = \frac{57}{2} = 28.5$$

$$\frac{n}{2} \quad \frac{n}{2} + 1$$

$$\frac{12}{2} \quad 6+1 \\ 6^m \quad 7^m$$

A set of data is as under:

4, 2, 3, 2, 7, 4, 8, 5, 2, 4, 5, 6, 2, 5, 6, 6, 5, 4, 6, 5, 3, 5, 4, 3

What is the mode of the set?

- 1. 2 - u
- 2. 5 - b ✓
- 3. 6 - u
- 4. 4 - s

Find the median of the given data:

3, 7, 6, 4, 9, 7, 11, 5, 15

1. 4

2. 5

3. 6

4. 7

2, 3, 4, 5 6, 7, 9, 11, 15

$$\frac{n+1}{2}$$

What is difference between mean and median of the given data:

4, 6, 3, 7, 10, 13, 16 and 5 ?

~~X~~ 1. 5

✓ 2. 1.5 ✓

~~X~~ 3. 3

~~X~~ 4. 4.5

$$= 7 + \frac{-7 - 4 + 0 + 3 + 6 + 9 - 2}{8}$$

$$= 7 + \frac{-7 + 15}{8}$$

$$= 7 + \frac{8}{8}$$

$$= 7 + 1 = 8 \text{ mean}$$

Let x be the median of data: 33, 41, 28, 49, 32, 37, 52, 57, 35, 41.

If 32 is replaced by 36 and 41 by 63, then the median of the data, so obtained, is y . What is the value of $(x + y)$?

1. 78

2. 78.5

3. 79.5

4. 79

28, ~~32~~, ³⁶33, 35, ~~37~~, ⁶³41, 42, 49, 52, 57

$$x = 39$$

28, 33, 35, ³⁶37, 42, 49, 52, 57, 63

$$\frac{37+42}{2} = \frac{79}{2} = 39.5$$

Given below is the data of the ages of various children.

10 - 8.5

What is the difference between the mean and mode of the ages?

Age (Years)	Number of children
6	17
7	16
8	16
9	17
10	19
11	15

mode : 10

38
1
25

= 8 +

$$\checkmark 1. 1.5 \quad = 8 + \frac{-5 + 17 + 38}{100} = 8 + \frac{50}{100}$$

- ~~X~~ 2. 1
~~X~~ 3. 2.5
~~X~~ 4. 2

$$-2 \times 7 - 1 \times 16 + 0 \times 16 + 1 \times 17 + 2 \times 19 \\ = 8 + 2.5$$

$$\text{mean} = 8 + 0.5 = 8.5$$

100

$$= 8 + \frac{-30 - 16 + 17 + 38 + 45}{100}$$

$$= 8 + \frac{-50 + 17 + 18}{100}$$

The data below shows the number of wickets taken by each bowler and the number of bowlers who took them.

Number of Wickets per bowler	Number of Bowlers
5	2
4	3
3	4
2	5
1	9
$\bar{x} = \frac{2+3+4+5+9}{23} = \frac{23}{23} = 1$	

$$n = 23$$

$$13 \quad 14$$

$$\frac{n+1}{2} = \frac{23+1}{2} = \frac{24}{2} = 12$$

What is the median of the number of wickets?

1. 3

2. 2

3. 4

4. 2.5

The heights (in cm) of students in a group are given below:

Height	No. of Students	H
155	9	150
153	3	151
154	10	152
150	7	153 -
156	6	154 -
151	12	155
152	3	156

What is the median height of students?

- 1. 154.5 cm
- 2. 153.5 cm
- 3. 154 cm
- 4. 153 cm

$$\begin{array}{lll} \text{NO} & \text{CF} & \frac{153 + 159}{2} \\ 7 & 19 & \\ 12 & 22 = 153.5 & \\ 3 & 25 \\ 3 - & 352 \\ 10 & 352 \\ 9 & 44 \\ 6 & 50 \\ 50 & 25 \end{array}$$

The data given below presents number of households corresponding to the number of children residing therein.

Number of Children	Number of Household
0	8
1	7
2	3
3	8
4	4
	<u>30</u>

$$\begin{aligned} \text{Mean} &= \frac{\sum x_i}{n} = \frac{1+2+3+4}{4} = \frac{10}{4} = 2.5 \\ \text{Median} &= \frac{1+2}{2} = \frac{3}{2} = 1.5 \end{aligned}$$

Median

What is the difference (correct up to two decimal places) between the mean and the median of the number of the children?

- 1. 0.26
- 2. 0.28
- 3. 0.27 ✓
- 4. 0.25

$$\begin{aligned} \text{mean} &= \frac{1+2+3+4}{4} = \frac{10}{4} = 2.5 \\ \text{median} &= \frac{1+2}{2} = \frac{3}{2} = 1.5 \\ \text{difference} &= 2.5 - 1.5 = 1.0 \end{aligned}$$

The data below shows the number of batsmen having different batting averages.

Average	Number of batsmen	
40 - 44	12	
44 - 48	16	
48 - 52	50	
52 - 56	54	
56 - 60	58	
	12 } 10 } 8 } 6 } 4 20 20 20 20 20	= 50 + $\frac{-136 + 56}{20}$
		= 50 - $\frac{285}{20}$
		= 48

What is the mean batting average per batsman?

- ✓ 1. $48 = 50 + \frac{-8 \times 12 - 6 \times 10 + 6 \times 6 + 8 \times u}{20}$
- ✗ 2. 47
- ✗ 3. 46
- ✗ 4. 45
- $$= 50 + \frac{-96 - 60 + 24 + 32}{20}$$

$$\text{Mode} = l + \left[\frac{f_m - f_b}{2f_m - f_b - f_a} \right] \times h$$

l - Lower limit of the modal class

f_m - freq of the modal class

f_b - freq of class before the mod. class

f_a - freq after the class of mod class

h - class size

The mode of the following data is 36. What is the value of x ?

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	13	10	10	16	x	8

~~X~~ 1. 11

~~X~~ 2. 15

~~X~~ 3. 13

✓ 4. 12

$$\text{mode} = l + \left(\frac{F_m - F_b}{2F_m - F_{b0} - F_{a0}} \right) h$$
$$F_{b0} = 10 \quad h = 10$$
$$F_a = x$$
$$l = 30$$
$$F_m = 16$$
$$\beta = \frac{\kappa}{22-\kappa} \times 10$$

$$36 = 30 + \left(\frac{16 - 10}{32 - 10 - x} \right) 10$$
$$22 - \kappa = 10$$
$$22 - 10 = \kappa$$
$$12 = \kappa$$