

Numerical on Mean

<https://youtu.be/HP541QK4tDo>

- **Prerequisites**

- 4.1) Mean
 - 2) Introduction to Measure of Central Tendency- Mean, Median, Mode
 - 1) Representation of Data in Statistics- Ungrouped, Grouped Data Distribution(Discrete & Continuous)
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- **Formula Summary**

mean

→ Type 1 $\Rightarrow \frac{\sum x_i}{n}$

→ Type 2 $\Rightarrow \frac{\sum x_i f_i}{\sum f_i}$

→ Type 3 $\Rightarrow \frac{\sum f_i m_i}{\sum f_i}$

mid value

1. Type 1

- Data in a Sequence

- **Formula**

$$\frac{\sum x_i}{n}$$

- **Question 1**

find mean of 2, 3, 7, 8, 3, 11

$$\begin{aligned}\bar{x} &= \frac{2+3+7+8+3+11}{6} \\ &= \frac{34}{6} \Rightarrow \boxed{5.66\ldots}\end{aligned}$$

- **Question 2**

If mean of 2, 3, 7, x , 11 is '9', then find x

$$\bar{x} = 9 = \frac{2+3+7+x+11}{5}$$

$$\Rightarrow x = 22$$

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2. Type 2

• **Grouped Data with Single-Class-Value**

• **Formula**

$$\frac{\sum x_i f_i}{\sum f_i}$$

• **Question 1**

Find mean of age of students:

Age (x_i)	No. of students (f_i)
14	10
15	20
16	8
17	12

Ans $\text{mean} = \frac{\sum x_i f_i}{\sum f_i}$

$$= \frac{14 \times 10 + 15 \times 20 + 16 \times 8 + 17 \times 12}{10 + 20 + 8 + 12}$$

$$= \frac{140 + 300 + 128 + 204}{50}$$

\Rightarrow 15.44

3. Type 3

- **Grouped Data with Class-Value in Interval**
- **Formula**

$$\frac{\sum \overset{\text{mid value}}{x_i} f_i}{\sum f_i}$$

Question 1

X_i	f_i
0 - 9	2
10 - 19	10
20 - 29	12
30 - 39	8

mean?

X_i	f_i
0 - 9	2
10 - 19	10
20 - 29	12
30 - 39	8

X_i	f_i
0 - 9	2
10 - 19	10
20 - 29	12
30 - 39	8

x_i^m
4.5
14.5
24.5
34.5

$$\begin{aligned} \text{mean} &= \frac{2 \times 4.5 + 10 \times 14.5 + 12 \times 24.5 + 8 \times 34.5}{2 + 10 + 12 + 8} \\ &= \boxed{22.625} \end{aligned}$$