IMP MCQs Lecture 3

Chp14 Measures of Central Tendency & Dispersion

CA. Pranav Popat

Schedule

Date	Day	Chapter to be Covered
05-Aug-25	Tue	Chp4 Math for Finance
07-Aug-25	Thu	Chp13 Statistical Description of Data
09-Aug-25	Sat	Chp14 Central Tendency & Dispersion
11-Aug-25	Mon	Chp17 Correlation and Regression
13-Aug-25	Wed	Chp12 Blood Relations and Chp10 Direction Test
15-Aug-25	Fri	Chp11 Seating Arrangements & Chp9 Number Series...
17-Aug-25	Sun	Chp1 Ratio Proportion Indices Logarithm
19-Aug-25	Tue	Chp18 Index Numbers and Chp6 Sequence and Series
21-Aug-25	Thu	Chp2 Equations & Chp3 Linear Inequalities
23-Aug-25	Sat	Chp5 Permutations & Combinations
25-Aug-25	Mon	Chp7 Set Relation Functions
27-Aug-25	Wed	Chp15 Probability and Chp16 Theoretical Distribution

24 Days Challenge

24 DAYS QA CHALLENGE

QA (Math, LR and Stats) **BY CA. PRANAV POPAT**

CA FOUNDATION SEP 2025

Day Numbe	Date	Day	Title	Video Link	PDF Link	Duration (Hours)
1	4-Aug-25	Mon	Revision of Chp4 Math for Finance (Self/ One Shot)	Play	PDF	3:02:00
2	5-Aug-25	Tue	IMP MCQs of Chp4 Math for Finance (Live on YT)	coming soon	coming soon	
3	6-Aug-25	Wed	Revision of Chp13 Statistical Description of Data (Self/ One Shot)	Play	PDF	3:06:00
4	7-Aug-25	Thu	IMP MCQS of Chp13 Statistical Description of Data (Live on YT)	coming soon	coming soon	
5	8-Aug-25	Fri	Revision of Chp14 Central Tendency & Dispersion (Self/ One Shot)	Play	PDF	3:02:00
6	9-Aug-25	Sat	IMP MCQs of Chp14 Central Tendency & Dispersion (Live on YT)	coming soon	coming soon	
7	10-Aug-25	Sun	Revision of Chp17 Correlation Regression (Self/ One Shot)	Play	PDF	2:43:58
8	11-Aug-25	Mon	IMP MCQs of Chp17 (Live on YT)	coming soon	coming soon	
9	12-Aug-25	Tue	Revision of Chp12 Blood Relations (Self/ One Shot)	Play	PDF	1:24:49
			Revision of Chp10 Direction Test (Self/ One Shot)	Play	PDF	1:01:11
10	13-Aug-25	Wed	IMP MCQs of Chp12 and Chp10 (Live on YT)	coming soon	coming soon	
11	14-Aug-25	Thu	Revision of Chp11 Seating Arrangements (Self/ One Shot)	Play	PDF	1:48:40

let’s get started.

MTP 1 - Jan 2025

	MTP 1 – Jan 2025
(66)	*In a class of 11 students, 3 students were failed in a test. 8 students who passed secured 10, 11, 20, 15, 12, 14, 26 and 24 marks respectively. What will be the median marks of the students.* *a.* 12 *b.* 15 *c.* 13 *d.* 13.5

MTP 1 - Jan 2025

MTP 1 – Jan 2025

(66) *In a class of 11 students, 3 students were failed in a test. 8 students who passed secured 10, 11, 20, 15, 12, 14, 26 and 24 marks respectively. What will be the median marks of the students.*

a. 12
b. 15
c. 13
d. 13.5

—, —, —, 10, 11, 12, 14, 15, 20, 24, 26

(failed)

n = 11, Median = 6th term = 12

MTP 1 - Jan 2025

MTP 1 – Jan 2025			
(67)	*Suppose a population A has 100 observations 101, 102, 103, …, 200 and another population B has 100 observations 151, 152, 153, …, 250. If V_A and V_B represents the variance of the two populations respectively, then V_A/V_B =*		
	a. 9/4	*b.* 1	
	c. 4/9	*d.* 2/3	

MTP 1 - Jan 2025

MTP 1 – Jan 2025

(67) *Suppose a population A has 100 observations 101, 102, 103, …, 200 and another population B has 100 observations 151, 152, 153, …, 250. If V_A and V_B represents the variance of the two populations respectively, then V_A/V_B =*

a. 9/4 *b.* 1

c. 4/9 *d.* 2/3

A: 101, 102, 103, ..., 200

B: 151, 152, 153, ..., 250

A-100: 1, 2, 3, ..., 100

B-150: 1, 2, 3, ..., 100

due to change of origin – no effect, $V_A = V_{A-100}$, $V_B = V_{B-150}$

$\Rightarrow V_A = V_B$

so $V_A / V_B = 1$

PYQ Jan 2025/ MTP 1 May 2025

	PYQ Jan 2025
(3)	*The mean of three numbers is 135. Among the three numbers the biggest number is 180. The difference between the remaining two numbers is 25. Then the smallest number is*
	a. 130 b. 125
	c. 120 d. 100

PYQ Jan 2025/ MTP 1 May 2025

PYQ Jan 2025

(3) *The mean of three numbers is 135. Among the three numbers the biggest number is 180. The difference between the remaining two numbers is 25. Then the smallest number is*

a. 130 *b.* 125

c. 120 *d.* 100 ✓

let smallest is x then

smallest x biggest 180

third no. $x+25$

$$135 = \frac{x + x+25 + 180}{3}$$

$$405 = 2x + 205$$

$$x = 100$$

PYQ Jan 2025

PYQ Jan 2025			
(17)	*If the mode of the following data is 13, then the value of x in the data set is 13, 8, 6, 3, 8, 13, 2x+3, 8, 13, 3, 5, 7*		
	a. 6	*b.* 5	
	c. 7	*d.* 8	

PYQ Jan 2025

PYQ Jan 2025

(17) If the mode of the following data is 13, then the value of x in the data set is 13, 8, 6, 3, 8, 13, 2x+3, 8, 13, 3, 5, 7

a. 6 ✓b. 5

c. 7 d. 8

as frequency of 8 is 3 then 13 is mode only if it has higher frequency than 3.

so we can conclude $2x + 3 = 13$

$x = \frac{13-3}{2} = 5$

PYQ May 2025

PYQ May 2025

(49) *The monthly profit/loss for six months of the firm is as under:*

Month	*Profit/ Loss in ₹*
Jan	*1,000*
Feb	*900*
Mar	*0*
Apr	*-200*
May	*-400*
Jun	*2,000*

The coefficient of range of the above data is

a. 122 *b.* 150

c. 33.33 *d.* 55.55

PYQ May 2025

PYQ May 2025

(49) *The monthly profit/loss for six months of the firm is as under:*

Month	Profit/ Loss in ₹
Jan	1,000
Feb	900
Mar	0
Apr	-200
May	-400
Jun	2,000

The coefficient of range of the above data is

a. 122 b. 150 ✓

c. 33.33 d. 55.55

L = 2000 S = -400

Co. of range = $\frac{L-S}{L+S} \times 100$

$= \frac{2000-(-400)}{2000+(-400)} \times 100$

$= \frac{2400}{1600} \times 100$

= 150

67. The mean salary of a group of 50 persons is ₹ 5850. Later on it is discovered that the salary of one has been wrongly taken as ₹8000 instead of RS. 7800. The corrected mean salary is

(a) ₹ 5854

(b) ₹ 5846

(c) ₹ 5640

(d) None

67. The mean salary of a group of 50 persons is ₹ 5850. Later on it is discovered that the salary of one has been wrongly taken as ₹8000 instead of RS. 7800. The corrected mean salary is

(a) ₹ 5854

(b) ₹ 5846 ✓

(c) ₹ 5640

(d) None

wrong observation taken = 8000

correct observation = 7800

$\frac{\Sigma x}{n} = \bar{x} \Rightarrow \frac{\Sigma x}{50} = 5850$

$\Rightarrow \Sigma x = 5850 \times 50 = 292500$

Σx [correct] $= 292500 - 8000 + 7800$

$= 292300$

$\bar{x} = \frac{292300}{50} = 5846$

MTP Sep 2024 – II

61. For a moderately skewed distribution, quartile deviation and the standard deviation are related by:

(a) S.D. = $\frac{2}{3}$ Q.D

(b) S.D. = $\frac{3}{4}$ Q.D

(c) S.D. = $\frac{4}{3}$ Q.D

(d) S.D. = $\frac{3}{2}$ Q.D

MTP Sep 2024 – II

61. For a moderately skewed distribution, quartile deviation and the standard deviation are related by:

(a) S.D. = $\frac{2}{3}$ Q.D

(b) S.D. = $\frac{3}{4}$ Q.D

(c) S.D. = $\frac{4}{3}$ Q.D

(d) ✓ S.D. = $\frac{3}{2}$ Q.D

$4SD = 5MD = 6QD$

$4SD = 6QD$

$\frac{SD}{QD} = \frac{6}{4}$

$SD = \frac{3}{2}QD$

MTP June 2024 Series III

99. If the arithmetic mean between two numbers is 64 and the Geometric Mean between them is 16. The Harmonic mean between them is ___

(a) 64

(b) 4

(c) 16

(d) 40

MTP June 2024 Series III

99. If the arithmetic mean between two numbers is 64 and the Geometric Mean between them is 16. The Harmonic mean between them is ___

(a) 64

(b) 4

(c) 16

(d) 40

given,

$AM = 64$

$GM = 16$

For two numbers,

$AH = G^2$

$64 \times H = (16)^2$

$H = 4$

MTP June 2024 Series II

MTP June 24 Series II

The average of marks obtained by 120 students in a certain examination is **35**. *If the average marks of passed students is 39 and that of the failed students is 15; what is the number of students who passed in the examination?*

a. 100 b. 150

c. 200 d. None of these

MTP June 2024 Series II

MTP June 24 Series II

The average of marks obtained by 120 students in a certain examination is **35**. *If the average marks of passed students is 39 and that of the failed students is 15; what is the number of students who passed in the examination?*

a. 100 ✓
b. 150
c. 200
d. None of these

let no. of passed students be x

failed students = (120 − x)

$$\bar{x}_c = \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2}$$

$$35 = \frac{x \times 39 + (120-x) \times 15}{120}$$

$$4200 = 39x + 1800 - 15x$$

$$24x = 2400$$

$$x = 100$$

MTP June 2024 Series II

MTP June 24 Series II

For a set of 100 observations, taking assumed mean as 4, the sum of the deviations is -11 cm, and the sum of the squares of these deviations is 257 cm². The coefficient of variation is:

a. 41.13%
b. 42.13%
c. 40.13%
d. None of these

MTP June 2024 Series II

out of syllabus

MTP June 24 Series II

For a set of 100 observations, taking assumed mean as 4, the sum of the deviations is -11 cm, and the sum of the squares of these deviations is 257 cm². The coefficient of variation is:

a. 41.13% ✓ b. 42.13%

c. 40.13% d. None of these

step deviation method for AM

$$AM = A + \frac{\Sigma fd}{N} \times C$$ (freq dist)

$$AM \text{ (discrete)} = A + \frac{\Sigma d}{n} = 4 + \left(\frac{-11}{100}\right) = 3.89$$

step deviation method for SD

$$SD = \sqrt{\frac{\Sigma x^2}{n} - \left(\frac{\Sigma x}{n}\right)^2}$$

$$SD = \sqrt{\frac{\Sigma d^2}{n} - \left(\frac{\Sigma d}{n}\right)^2} = \sqrt{\frac{257}{100} - \left(\frac{-11}{100}\right)^2}$$

$$= 1.59934$$

$$\text{co. of variation} = \frac{SD}{AM} \times 100$$

$$= \frac{1.59934}{3.89} \times 100$$

$$= 41.11\%$$

MCQ Compiler Edition 3 – Page 14.2

PYQ Dec 23

The mean of a set of 20 observations is 18.3. The mean is reduced by 0.6 when a new observation is added to the set. The new observation is:

a. 17.6 *b.* 18.9

c. 5.7 *d.* 24.6

MCQ Compiler Edition 3 – Page 14.2

PYQ Dec 23

The mean of a set of 20 observations is 18.3. The mean is reduced by 0.6 when a new observation is added to the set. The new observation is:

a.	*17.6*	*b.*	*18.9*
c. ✓	*5.7*	*d.*	*24.6*

$\bar{x}_{20} = 18.3$, $\Sigma x_{20} = 18.3 \times 20 = 366$

$\bar{x}_{21} = 18.3 - 0.6 = 17.7$

n is new observation

$$\frac{366 + n}{21} = 17.7$$

$$n = 5.7$$

MCQ Compiler Edition 3 – Page 14.6

MTP Dec 2023 Series II

If the arithmetic mean of 1st n natural numbers is $\frac{6n}{11}$ *then the value of 'n' is:*

a. 10 *b.* 11

c. 14 *d.* None of these

MCQ Compiler Edition 3 – Page 14.6

MTP Dec 2023 Series II

If the arithmetic mean of 1st n natural numbers is $\frac{6n}{11}$ *then the value of 'n' is:*

a. 10 ✓b. 11

c. 14 d. None of these

AM of first n natural no. = $\frac{\text{sum of first n natural no.}}{n}$

$$\frac{6n}{11} = \frac{\frac{n(n+1)}{2}}{n}$$

$$\frac{n+1}{2} = \frac{6n}{11}$$

$$11n + 11 = 12n$$

$$n = 11$$

MCQ Compiler Edition 3 – Page 14.6

MTP Dec 2023 Series II

The average age of a group of 10 students was 20 years. The average age is increased by two years when two new students joined the group. What is the average age of two new students who joined the group ?

a. 22 years *b.* 30 years

c. 44 years *d.* 32 years

MCQ Compiler Edition 3 – Page 14.6

MTP Dec 2023 Series II

The average age of a group of 10 students was 20 years. The average age is increased by two years when two new students joined the group. What is the average age of two new students who joined the group ?

a. 22 years b. 30 years

c. 44 years d. 32 years

$\bar{x}_{10} = 20$, $\Sigma x_{10} = 20 \times 10 = 200$

n = sum of two new observations

$\Sigma x_{12} = 200 + n$

$\bar{x}_{12} = 20 + 2 = 22$ years

$\frac{200 + n}{12} = 22$

$n = 64$

avg of age of two students

$= \frac{64}{2} = 32$ yrs

— the end —

MCQ Compiler Edition 3 – Page 14.10 (MTP Sep 24 – I)

MTP Dec 2023 Series I

The median of following numbers, which are given in ascending order is 25. Find the value of x.

11, 13 , 15 , 19 , (x+2) , (x+4) , 30, 35, 39, 46

a. 22 *b.* 20

c. 15 *d.* 30

MCQ Compiler Edition 3 – Page 14.10 (MTP Sep 24 – I)

MTP Dec 2023 Series I

The median of following numbers, which are given in ascending order is 25. Find the value of x.

11, 13 , 15 , 19 , (x+2) , (x+4) , 30, 35, 39, 46

a. 22 ✓ *b. 20*

c. 15 *d. 30*

$n=10$, Median $= \frac{5^{th}\text{ term} + 6^{th}\text{ term}}{2}$

$25 = \frac{(x+2)+(x+4)}{2}$

$50 = 2x + 6$

$x = 22$

MCQ Compiler Edition 3 – Page 14.13 (MTP Sep 2024 – I)

MTP Dec 23 – Series I

The Harmonic mean H of two numbers is 4 and their arithmetic means A and the geometric mean G satisfy the equation $2A+G^2=27$*, the numbers are*

a. (1,3) *b.* (9,5)

c. (6,3) *d.* (12,7)

MCQ Compiler Edition 3 – Page 14.13 (MTP Sep 2024 – I)

MTP Dec 23 – Series I

The Harmonic mean H of two numbers is 4 and their arithmetic means A and the geometric mean G satisfy the equation $2A+G^2=27$, the numbers are

a. (1,3) b. (9,5)

c. (6,3) d. (12,7)

given, H = 4

$2A + G^2 = 27$

$2A + AH = 27$

$2A + 4A = 27$

$A = 4.5$

check by option,

	AM	HM
a)	$\frac{1+3}{2} = 2$	
b)	$\frac{9+5}{2} = 7$	
c)	$\frac{6+3}{2} = 4.5$	$\frac{2}{\frac{1}{6}+\frac{1}{3}} = 4.00$

MCQ Compiler Edition 3 – Page 14.13

MTP Dec 2023 Series II

Mean and S.D. of a given set of observations' is 1,500 and 400 respectively. If there is an increment of 100 in the first year and each observation is hiked by 20% in 2nd years, then find new mean and S.D.

a. 1920,480 *b.* 1920,580

c. 1600,480 *d.* 1600,400

MCQ Compiler Edition 3 – Page 14.13

MTP Dec 2023 Series II

Mean and S.D. of a given set of observations' is 1,500 and 400 respectively. If there is an increment of 100 in the first year and each observation is hiked by 20% in 2nd years, then find new mean and S.D.

a. 1920,480 ✓ b. 1920,580

c. 1600,480 d. 1600,400

hiked by 20% = becomes 1·2 times

	current	year 1	year 2
AM	1500	1600 (1500+100)	1920 (1600×1·2)
SD	400	400 (no effect of chg of origin)	480 (400×1·2)

MCQ Compiler Edition 3 – Page 14.1

PYQ July 21

There are n numbers. When 50 is subtracted from each of these number the sum of the numbers so obtained is – 10. When 46 is subtracted from each of the original n numbers, then the sum of numbers so obtained is 70. What is the mean of the original n numbers?

a. 56.8 *b.* 25.7

c. 49.5 *d.* 53.8

MCQ Compiler Edition 3 – Page 14.1

PYQ July 21

There are n numbers. When 50 is subtracted from each of these number the sum of the numbers so obtained is – 10. When 46 is subtracted from each of the original n numbers, then the sum of numbers so obtained is 70. What is the mean of the original n numbers?

a. 56.8 b. 25.7

c. ✓ 49.5 d. 53.8

let S be sum of original numbers & count of original no. be n

$S - 50n = -10$ ——— (i)

$S - 46n = 70$ ——— (ii)

Solve,

$n = 20$

put n in eq(i) to get sum of original no.

$S - 50(20) = -10$

$S = 990$

$\text{Mean} = \frac{990}{20} = 49.5$

MCQ Compiler Edition 3 – Page 14.2

PYQ Dec 22

The mean of 50 observations is 36. If two observations 30 and 42 are to be excluded, then the mean of the remaining observations will be:

a. 36 *b.* 38

c. 48 *d.* 50

MCQ Compiler Edition 3 – Page 14.2

PYQ Dec 22

The mean of 50 observations is 36. If two observations 30 and 42 are to be excluded, then the mean of the remaining observations will be:

a. 36 ✓ b. 38

c. 48 d. 50

$\Sigma x = 50 \times 36 = 1800$

revised $\Sigma x = 1800 - 30 - 42 = 1728$

revised $n = 50 - 2 = 48$

Mean of remaining obs $= \frac{1728}{48} = 36$

MCQ Compiler Edition 3 – Page 14.6

MTP June 2023 Series II

A student marks were wrongly entered as 85 instead of 45. Due to that the average marks for the whole class got increased by one-fourth. The no. of students in the class is?

a. 80 *b.* 160

c. 40 *d.* 20

MCQ Compiler Edition 3 – Page 14.6

MTP June 2023 Series II

A student marks were wrongly entered as 85 instead of 45. Due to that the average marks for the whole class got increased by one-fourth. The no. of students in the class is?

a. 80 ✓ b. 160

c. 40 d. 20

Incorrect sum $= \Sigma x$

correct sum $= \Sigma x - 85 + 45 = \Sigma x - 40$

$$\frac{\Sigma x - 40}{n} + 0.25 = \frac{\Sigma x}{n}$$

(Incorrect AM) (correct AM)

$$\frac{\Sigma x}{n} - \frac{40}{n} + 0.25 = \frac{\Sigma x}{n}$$

$$0.25 = \frac{40}{n}$$

$$n = 160$$

MCQ Compiler Edition 3 – Page 14.9 (MTP Sep 2024 – I)

MTP June 22

The first Quartile is 142 and Semi-Inter Quartile Range is 18 , then the value of Median is:

a.	*151*	*b.*	*160*
c.	*178*	*d.*	*None of these*

MCQ Compiler Edition 3 – Page 14.9 (MTP Sep 2024 – I)

MTP June 22

The first Quartile is 142 and Semi-Inter Quartile Range is 18 , then the value of Median is:

a. 151 ✓b. 160

c. 178 d. None of these

semi inter quartile range $= \frac{Q_3 - Q_1}{2}$

$18 = \frac{Q_3 - 142}{2}$

$Q_3 = 178$

Median $= \frac{Q_1 + Q_3}{2} = \frac{142 + 178}{2} = 160$

MCQ Compiler Edition 3 – Page 14.18

PYQ July 21

If a school has 14 teachers, their heights (in cm) are:

172, 173, 164, 178, 168, 169, 173, 172, 173, 164, 178, 168, 169, 173

then average deviation of this data is:

a. 2.43 approx. *b.* 3.93 approx.

c. 3.43 approx. *d.* 2.92 approx.

MCQ Compiler Edition 3 – Page 14.18

PYQ July 21

If a school has 14 teachers, their heights (in cm) are:
172, 173, 164, 178, 168, 169, 173, 172, 173, 164, 178, 168, 169, 173
then average deviation of this data is:

a. 2.43 approx. b. 3.93 approx.
c. ✓ 3.43 approx. d. 2.92 approx.

avg deviation here implies mean deviation about AM

$AM = \Sigma x / n = 2394/14 = 171$ cm

$\lvert x - AM \rvert$	1	2	7	7	3	2	2	1	2	7	7	3	2	2

$$MD = \frac{\Sigma |x - AM|}{n} = \frac{48}{14} = 3.428$$

MCQ Compiler Edition 3 – Page 14.18

PYQ July 21

The probable value of mean deviation when $Q_3 = 40$ *and* $Q_1 = 15$ *is:*

a.	*15*	*b.*	*18.75*
c.	*17.50*	*d.*	*0*

MCQ Compiler Edition 3 – Page 14.18

PYQ July 21

The probable value of mean deviation when $Q_3 = 40$ and $Q_1 = 15$ is:

a.	15	b.	18.75
c.	17.50	d.	0

$$QD = \frac{40-15}{2} = 12.5$$

$$SD : MD : QD = 15 : 12 : 10$$

$$\frac{MD}{QD} = \frac{12}{10}$$

$$MD = QD \times \frac{12}{10} = 12.5 \times \frac{12}{10} = 15$$

MCQ Compiler Edition 3 – Page 14.19

PYQ Nov. 18

If the variance of 5, 7, 9 and 11 is 4, then the coefficient of variation is:

a. 15 *b.* 25

c. 17 *d.* 19

MCQ Compiler Edition 3 – Page 14.19

PYQ Nov. 18

If the variance of 5, 7, 9 and 11 is 4, then the coefficient of variation is:

a.	*15*	*b.*	*25*
c.	*17*	*d.*	*19*

$SD = \sqrt{4} = 2$

$AM = \frac{5+7+9+11}{4} = 8$

co. of variation $= \frac{2}{8} \times 100 = 25$

MCQ Compiler Edition 3 – Page 14.20

PYQ Dec 22

If the sum of square of the values equals to 3390, Number of observations are 30 and Standard deviation is 7, what is the mean value of the above observations?

a. 14 *b.* 11

c. 8 *d.* 5

MCQ Compiler Edition 3 – Page 14.20

PYQ Dec 22

If the sum of square of the values equals to 3390, Number of observations are 30 and Standard deviation is 7, what is the mean value of the above observations?

a. 14 b. 11

c. ✓ 8 d. 5

$\Sigma x^2 = 3390 \quad n = 30 \quad SD = 7$

$$SD = \sqrt{\frac{\Sigma x^2}{n} - (\bar{x})^2}$$

$$7 = \sqrt{\frac{3390}{30} - (\bar{x})^2}$$

$$49 = 113 - (\bar{x})^2$$

$$(\bar{x})^2 = 64 \Rightarrow \bar{x} = 8$$

MCQ Compiler Edition 3 – Page 14.22

MTP Nov 19

Find the coefficient of variation if the sum of squared deviations taken from mean 40 of 10 observations is 360.

a. 15 *b.* 20

c. 40 *d.* None of these

MCQ Compiler Edition 3 – Page 14.22

MTP Nov 19

Find the coefficient of variation if the sum of squared deviations taken from mean 40 of 10 observations is 360.

a. 15 ✓ b. 20

c. 40 d. None of these

$\Sigma (x-\bar{x})^2 = 360$

$SD = \sqrt{\frac{360}{10}} = 6$

Co. of variation $= \frac{6}{40} \times 100 = 15$