

Math 9th 12 Review Exercise

Q. 1 Choose the correct option.

i. Which data takes only some specific values?

- (a) Continuous data
- (b) Discrete data
- (c) Grouped data
- (d) Ungrouped data

ii. The number of times a value occurs in a data is called:

- (a) Frequency
- (b) Relative frequency
- (c) Class limit
- (d) Class mark

iii. Midpoint is also known as:

- (a) Mean
- (b) Median
- (c) Class limit
- (d) Class mark

iv. Frequency polygon is also drawn constructed by using

- (a) Histogram
- (b) Bar graph
- (c) Class boundaries
- (d) Class limit

v. The difference between the greatest value and the smallest value is called:

- (a) Class limits
- (b) Midpoint
- (c) Relative frequency
- (d) Range

vi. Measure of central tendency is used to find out the of a data set.

- (a) Class boundaries
- (b) Cumulative frequency
- (c) Middle or centre value
- (d) Frequency

vii. If the mean of 5,7,8,9 and x is 7.5 , what will be the value of x ?

- (a) 10



- (b) 8
- (c) 8.5
- (d) 5.8

viii. Find the mode of the given data: 2,5,8, 9, 0, 1, 3, 7 and 10 .

- (a) 5
- (b) 7
- (c) 0
- (d) No mode

ix. In a data the values (observations) which appears or occurs most often is called:

- (a) Mean
- (b) Mode
- (c) Median
- (d) Weighted mean

x. Find the median of the given data: 110 , 125, 122, 130, 124, 127 and 120:

- (a) 124
- (b) 120
- (c) 125
- (d) 127

Answers Key



i	b	ii	a	iii	d	iv	a	v	d
vi	c	vii	c	viii	d	ix	b	x	a

Multiple Choice Questions (Additional)

Frequency distribution

1. A data in the form of frequency distribution is also called:
 - (a) Grouped data
 - (b) Ungrouped data
 - (c) Raw data
 - (d) Dispersed data
2. The size of class interval (6 – 10) is
 - (a) 4
 - (b) 5

- (c) 8
(d) 10
3. The midpoint or class mark of the group (6 – 10), is:
(a) 4
(b) 6
(c) 8
(d) 10
4. A cumulative frequency meansof frequencies.
(a) sum
(b) difference
(c) product
(d) quotient
4. Graphs of frequency distribution
5. A histogram is a graph of ----rectangles:
(a) adjacent
(b) non-adjacent
(c) Parallel
(d) equal height
5. 6. A frequency polygon is geometrically
(a) closed figure
(b) open figure-
6. (c) straight
(d) curved
7. In a frequency polygon frequencies are plotted against:
(a) midpoints
(b) class limits
(c) class boundaries
(d) size of classes
- Arithmetic Mean
8. The sum of all values divided by number of values is called:
(a) Mean
(b) Median
(c) Mode
(d) Range
9. Direct formula to find mean from ungrouped data.
(a) $\bar{X} = \frac{\sum X}{n}$
(c) $\bar{X} = A + \frac{\sum D}{n}$
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- The logo for Taleem Zone features a stylized open book with blue and yellow pages. Above the book, the words "Educational Guide" are written in a yellow sans-serif font. Below this, the words "TALEEM ZONE" are written in a large, bold, black sans-serif font. To the right of the text, there are several small yellow squares of varying sizes arranged in a cluster.

(b) $\bar{X} = \frac{\sum fX}{\sum f}$

(d) $\bar{X} = A + \frac{\sum fD}{\sum f}$

10. Direct formula to find mean from grouped data is:

(a) $\bar{X} = \frac{\sum X}{n}$

(b) $\bar{X} = \frac{\sum fX}{\sum f}$

(c) $\bar{X} = A + \frac{\sum D}{n}$

(d) $\bar{X} = A + \frac{\sum fD}{\sum f}$

11. Short formula to find mean from ungrouped data is:

(a) $\bar{X} = \frac{\sum X}{n}$

(b) $\bar{x} = \frac{\sum fX}{\sum f}$

(c) $\bar{X} = A + \frac{\sum D}{n}$

(d) $\bar{X} = A + \frac{\sum fD}{\sum f}$

12. Short formula to find mean from grouped data is:

(a) $\bar{X} = \frac{\sum X}{n}$

(b) $\bar{X} = \frac{\sum fX}{\sum f}$

(c) $\bar{X} = A + \frac{\sum D}{n}$

(d) $\bar{X} = A + \frac{\sum fD}{\sum f}$

13. A deviation is a difference of any value of the variable from a:

(a) constant

(b) variable

(c) sum

(d) zero

Median

14. The middlemost observation in arranged data set is called:

(a) median

(b) mode

(c) mean

(d) range

15. The arrangement of data is necessary to find the value of:



- (a) Mean
- (b) Median

- (c) Mode
- (d) Range

16. Median from the data 1,4,0,7 and 9 is:

- (a) 0
- (b) 4
- (c) 5
- (d) 7

Mode

17. The observation that occurs most often is called:

- (a) median
- (b) mode
- (c) mean
- (d) range

18. The class having maximum frequency is called class.

- (a) Modal
- (b) Median
- (c) Lower
- (d) Upper

Weighted mean

19. When all observations are not of equal importance then we find:

- (a) Mean
- (b) Median
- (c) Mode
- (d) weighted mean

20. Weighted mean $\bar{X}_w = \dots$

- (a) $\frac{\sum w}{\sum wx}$
- (b) $\frac{\sum wx}{\sum w}$
- (c) $\frac{\sum x}{n}$
- (d) $\frac{\sum wx}{\sum w}$

Answer Key

1	a	2	b	3	c	4	a	5	a	6	a	7	a	8	a	9	a	10	b
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Q. 2 Define the following:

- (i) Frequency distribution
- (ii) Histogram (unequal class limits)
- (iii) Mean
- (iv) Median

Q. 3 Following are the weights of 40 students recorded to the nearest (lbs).

138,164,150,132,144,125,149,157,146

158,140,147,136,148,152,144,168,126

138,176,163,119,154,165,146,173,142

147,135,153,140,135,161,145,135,142, 150,156,145,128, make a frequency table taking size of class limits as 10. Also draw histogram and frequency polygon of the given data.

Solution:

(a) No. of observations = $n = 40$

Smallest value = 119

Largest value = 176

Size of class limits = 10

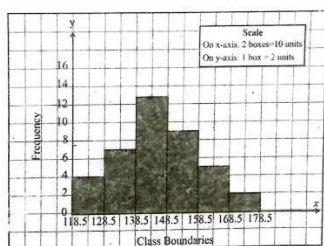
Frequency table taking size of class limits as 10.

Class limits	Tally marks	f	C.B	Midpoints
119-128	IIII	4	118.5-128.5	123.5
129-138	IIII III	7	128.5-138.5	133.5
139-148	IIII IIII IIII	13	138.5-148.5	143.5
149-158	IIII IIII	9	148.5-158.5	153.5
159-168	IN	5	158.5-168.5	163.5
169-178	II	2	168.5-178.5	173.5

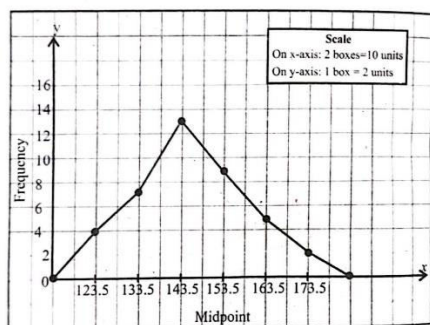
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(b) Histogram of weight 40 students



(c) Frequency Polygon of weight of 40 students



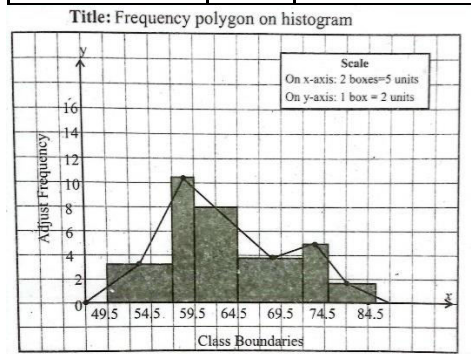
Q. 4 From the table given below. Draw a frequency polygon on histogram for the given frequency distribution.

Weight (kg)	50-56	57-59	60-64	65-72	73-75	76-80
Frequency (f)	25	32	40	30	15	8

Solution:

Weight (kg)	(f)	Size of class (h)	Height of rectangle adjusted frequency f/h	C.B.
50-56	25	7	$25 \div 7 = 3.6$	49.5-56.5
57-59	32	3	$32 \div 3 = 10.7$	56.5-59.5
60-64	40	5	$40 \div 5 = 8$	59.5-64.5

65-72	30	8	$30 \div 8 = 3.8$	64.5-72.5
73-75	15	3	$15 \div 3 = 5$	72.5-75.5
76-80	8	5	$8 \div 5 = 1.6$	75.5-80.5



Q. 5 Given below are marks obtained by 45 students in the monthly test of Biology.

Marks	20 – 24	25 – 29	30 – 34	35 – 39	40 – 44	45 – 49
No. of students	05	08	12	15	03	02

With reference to the above table find the following:

- upper class boundary of the 5th class.
- lower class boundaries of all the classes.
- midpoint of all the classes
- the class interval with the least frequency.

Solution:

Marks	No. of students (f)	Midpoints (x)	C.B
20 – 24	5	22	19.5 – 24.5
25 – 29	8	27	24.5 – 29.5
30 – 34	12	32	29.5 – 34.5
35 – 39	15	37	34.5 – 39.5

40 – 44	3	42	39.5 – 44.5
45 – 49	2	47	44.5 – 49.5

Answers:

- (i) The upper class boundary of 5th class is 44.5 .
- (ii) The lower class boundaries of all classes are 19.5,24.5,29.5,34.5,39.5 and 44.5 respectively.
- (iii) The midpoints of all classes are 22,27,32,37,42 and 47 respectively. (see column 3)
- (iv) The classes interval with least frequency is (45 – 49).

Q. 6 Given below is frequency distribution.

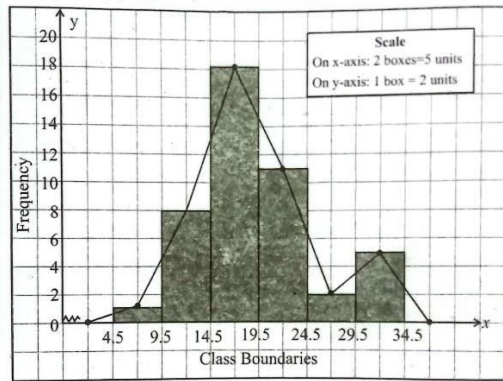
Draw frequency polygon and histogram for the distribution.

Class limits	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34
Frequency	1	8	18	11	2	5

Solution:

Class limits	f	Midpoints (x)	C.B
5-9	1	7	4.5-9.5
10-14	8	12	9.5-14.5
15-19	18	17	14.5-19.5
20-24	11	22	19.5-24.5
25-29	2	27	24.5-29.5
30-34	5	32	29.5-34.5

Histogram and frequency Polygon.



Q. 7 For the following data, find the weighted mean.

Item	Quantity	Cost of item (Rs.)
Chair	20	500
Table	20	400
Black board	10	750
Tube light	25	230
Cupboard	09	950

Solution:

Items	Quantity W	Cost of item S(Rs.)	WX
Chair	20	500	10,000
Table	20	400	8,000
Black board	10	750	7,500
Tube light	25	230	5,750
Cupboard	09	950	8,550

	$\Sigma W = 84$		$\Sigma WX = 39,800$
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We know that

$$\bar{X}_w = \frac{\Sigma WX}{\Sigma W} = \frac{39,800}{84} = 473.81$$

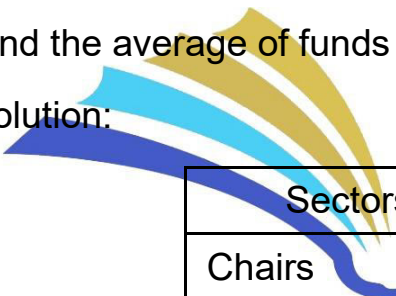
Thus the average price of each item is Rs. 473.81.

Q. 8 A principal of a school allocates funds of Rs. 50,000 to five different sectors:

- (i) chair Rs. 15,000
- (ii) tables Rs. 12,000
- (ii) black boards: Rs. 6,000
- (iv) room renovation: Rs. 10,000
- (v) Gardening: Rs. 7,000

Find the average of funds allocation in each sector of the school.

Solution:



Sectors	Allocated Fund (Rs.)
Chairs	15,000
Tables	12,000
Black boards	6,000
Room renovation	10,000
Gardening	7,000
Total	Rs. 50,000

No. of sectors = 5

Total amount = Rs. 50,000

$$\bar{X} = \frac{\Sigma W}{n} = \frac{50,000}{5} = \text{Rs. } 10,000$$

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The average of fund allocation in each sector is Rs. 10,000/-.

Q. 9 The marks of a student Saad in six test were 84,91,72,68,87,78.

Find the arithmetic mean of this marks.

Solution:

$$X = 84, 91, 72, 68, 87, 78$$

No. of tests = $n = 6$

We know that

$$\begin{aligned}\bar{X} &= \frac{\sum x}{n} \\ \bar{X} &= \frac{84 + 91 + 72 + 68 + 87 + 78}{6} \\ \bar{X} &= \frac{480}{6} = 80 \\ \bar{X} &= 80 \text{ marks}\end{aligned}$$

Q. 10 Adjoining distribution showed maximum load (in kg) supported by certain ropes. Find the mean load using short method.

Max-Load kg	93 – 97	98 – 102	105 – 107	108 – 112	113 – 117	116 – 122
No. of ropes	2	5	8	12	6	2

Solution:

Let assumed mean = $A = 100$

Max. Load kg	No. of ropes (l)	Midpoints (x)	$D = x - A$	fD
93-97	2	95	$95 - 100 = -5$	-10
98-102	5	100	$100 - 100 = 0$	0

703-107	8	105	$105 - 100 = 5$	40
108-112	12	110	$110 - 100 = 10$	120
113-117	6	115	$115 - 100 = 15$	90
118-122	2	120	$120 - 100 = 20$	40
	$\Sigma w = 35$			$\Sigma D = 280$

We know that

$$\bar{X} = A + \frac{\Sigma fD}{\Sigma f} = 100 + \frac{280}{35} = 100 + 8$$

$$\bar{X} = 108 \text{ kg}$$

Thus average load supported by certain ropes is 108 kg

Q. 11 Usman rolled a fair dice eight times. Each time their sum was recorded as 8,5,6,6,9,4,3,11. Find the median and mode of the sum.

Solution:

(a) Median ($\bar{X}$)

Arranged data:

$$X = 3,4,5,6,6,8,9,11$$

No. of obs. = $n = 8$ (Even)

$$\tilde{X} = \frac{1}{2} \left[\left(\frac{n}{2} \right)^{\text{th}} \text{ obs.} + \left(\frac{n+2}{2} \right)^{\text{th}} \text{ obs.} \right]$$

$$\tilde{X} = \frac{1}{2} \left[\left(\frac{8}{2} \right)^{\text{th}} \text{ obs.} + \left(\frac{8+2}{2} \right)^{\text{th}} \text{ obs.} \right]$$

$$\tilde{X} = \frac{1}{2} [4^{\text{th}} \text{ obs.} + 5^{\text{th}} \text{ obs.}]$$

$$\tilde{X} = \frac{1}{2} [6 + 6]$$

$$\tilde{X} = \frac{1}{2} [12]$$

$$\tilde{X} = 6$$

(b) Mode

Since, most repeated value is 6 so mode = 6.

We know that

$$\bar{X} = \frac{\sum fx}{\sum f} = \frac{43,150}{47} = 918.09$$

(b) Median

Wages (Rs.)	Employees	Cumulative Frequency (C.F)
600 – 700	3	3
700 – 800	5	3 + 5 = 8
800 – 900	7	8 + 7 = 15

900 – 1000	$f \rightarrow 21$	$15 + 21 = 36$
1000 – 1100	11	$36 + 11 = 47$

Since, class containing $\frac{n}{2}$ th = $\left(\frac{47}{2} \right)$ th observations = 23.5th

Observation is a Median class, so median class (900 – 1000)

We know that

$$\tilde{X} = \ell + \frac{h}{f} \left(\frac{n}{2} - c \right)$$

Put $\ell = 900$, $h = 100$, $f = 21$, $c = 15$

$$\tilde{X} = 900 + \frac{100}{21} \left[\frac{47}{2} - 15 \right]$$

$$\tilde{X} = 900 + \frac{100}{21} (8.5)$$

$$\tilde{X} = 900 + \frac{850}{21}$$

$$\tilde{X} = 900 + 40.48$$

$$\tilde{X} = 940.48$$

(c) Mode

Wages (Rs.)	Employees (f)
600 – 700	3
700 – 800	5
800 – 900	$f_1 \rightarrow 7$
$\ell \rightarrow 900 - 1000$	$f_m \rightarrow 21$
1000 – 1100	$f_2 \rightarrow 11$
Modal group	

Since the class (900 – 1000) has maximum frequency so modal class is (900 – 1000) We know that

$$\hat{X} = \ell + \frac{(f_m - f_1) \times h}{(f_m - f_1) + (f_m - f_2)}$$

Put $\ell = 900, f_m = 21, f_1 = 7, f_2 = 11$ and $h = 100$

$$\hat{X} = 900 + \frac{(21 - 7) \times 100}{(21 - 7) + (21 - 11)}$$

$$\hat{X} = 900 + \frac{14 \times 100}{14 + 10}$$

$$\hat{X} = 900 + \frac{1400}{24}$$

$$\hat{X} = 900 + 58.33$$

$$\hat{X} = 958.33$$

