

Exercise 12.1

Monday, July 20, 2026 11:31 AM

Question 4:

A group of Grade-10 students obtained the following marks out of 100 marks in English test.

58, 59, 58, 33, 40, 58, 45, 46, 43, 45, 45,
50, 52, 49, 50, 57, 52, 55, 49, 50, 62, 49,
48, 44, 42, 47, 46, 47, 46, 53, 40, 44

Classify the data into a frequency distribution (direct method) taking 6 as the class size. Also find the class limit with least class frequency and construct a histogram.

Solution:

Data after arrangement is:

33, 40, 40, 42, 43, 44, 44,

45, 45, 45, 46, 46, 46, 47, 47, 48, 49, 49, 49, 50, 50, 50,

52, 52, 53, 55, 57, 58, 58, 58, 59, 62

Smallest value = 33

Largest value = 62

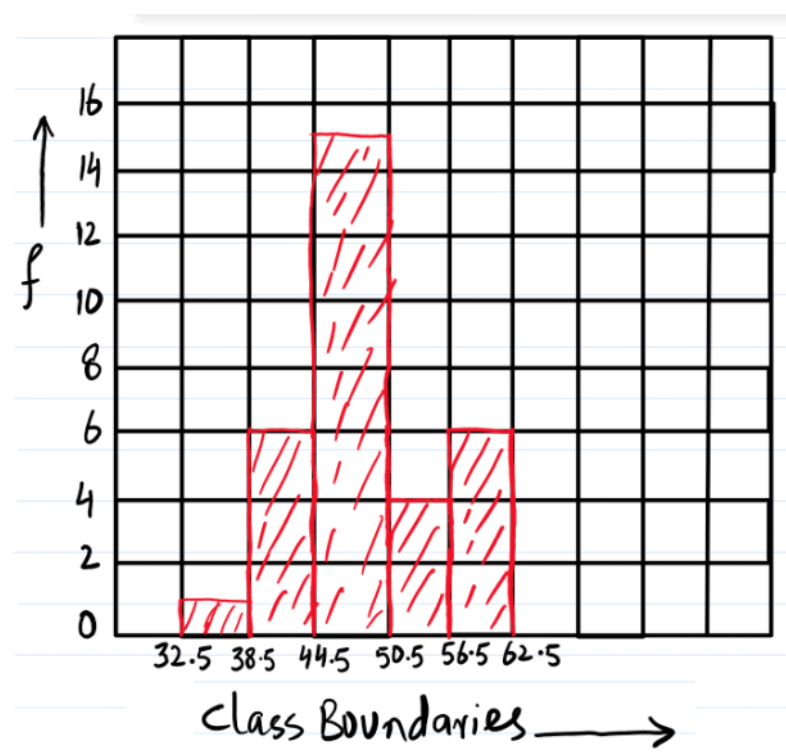
Frequency Distribution Table:

Class Interval	Class Boundaries	Tally Marks	Frequency
33 – 38	32.5–38.5	I	1
39 – 44	38.5 – 44.5		6
45 – 50	44.5 – 50.5		15
51 – 56	50.5 – 56.5		4
57 – 62	56.5 – 62.5		6
Total			$\Sigma f = 32$

Least Frequency:

The least frequency is **1**, occurring in the class interval (33–38).

Histogram:



Question 5:

From the table given below, draw a frequency polygon on the histogram for the given frequency distribution.

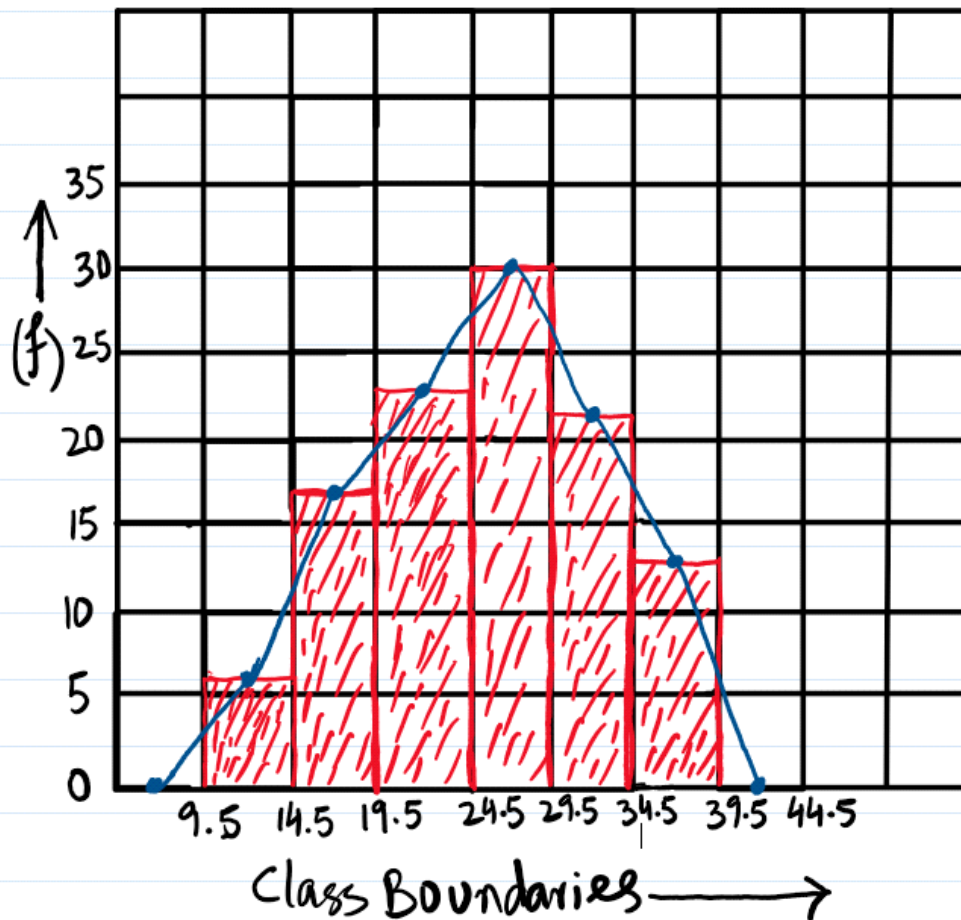
Weight (kg)	10–14	15–19	20–24	25–29	30–34	35–39
Frequency	6	17	23	30	22	13

Solution:

Frequency Distribution Table:

Class Interval	Class Boundaries	Mid-point	Frequency
10 – 14	9.5 – 14.5	12	6
15 – 19	14.5 – 19.5	17	17
20 – 24	19.5 – 24.5	22	23
25 – 29	24.5 – 29.5	27	30
30 – 34	29.5 – 34.5	32	22
35 – 39	34.5 – 39.5	37	13
Total			$\Sigma f = 111$

Frequency Polygon on Histogram:



Scale:

on x-axis:

1 box = 5 units

on y-axis:

1 box = 5 units

Question 6:

A coin was tossed 5 times. Make a discrete frequency distribution from the following information.

3, 3, 4, 0, 5, 4, 3, 3, 1, 2, 4, 5, 0, 3, 2, 4, 4,
 0, 0, 0, 5, 5, 3, 2, 1, 4, 3, 2, 5, 3, 2, 1, 3, 5,
 4, 3, 2, 1, 3, 2, 1, 3, 1, 3, 1, 4, 3, 2, 2, 4

Solution:

Data after arrangement is:

0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2,
 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3,
 3, 4, 4, 4, 4, 4, 4, 4, 4, 4, 5, 5, 5, 5, 5, 5

Discrete Frequency Distribution:

Number of Heads (x)	Tally Marks	Frequency (f)
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0		5
1		7
2		9
3		14
4		9
5		6
Total		$\Sigma f = 50$

Question 7:

The marks obtained by the students of Grade-10 in mathematics test were grouped into the following frequency distribution. Draw a histogram for the above distribution.

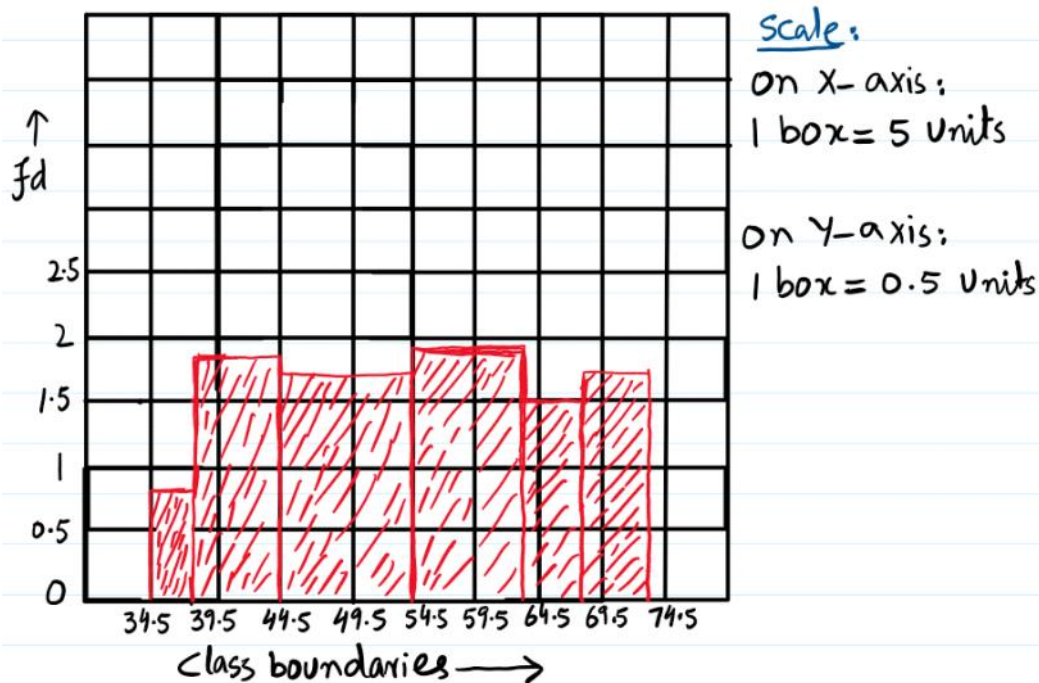
Marks	35-37	38-44	45-54	55-61	62-67	68-72
Frequency	2	12	16	13	9	3

Solution:

Frequency Distribution Table:

Class Interval	Class Boundaries	Class Width	Frequency	Frequency Density
35 - 37	34.5 - 37.5	$37.5 - 34.5 = 3$	2	$\frac{2}{3} = 0.67$
38 - 44	37.5 - 44.5	$44.5 - 37.5 = 7$	12	$\frac{12}{7} = 1.71$
45 - 54	44.5 - 54.5	$54.5 - 44.5 = 10$	16	$\frac{16}{10} = 1.60$
55 - 61	54.5 - 61.5	$61.5 - 54.5 = 7$	13	$\frac{13}{7} = 1.86$
62 - 67	61.5 - 67.5	$67.5 - 61.5 = 6$	9	$\frac{9}{6} = 1.50$
68 - 72	67.5 - 72.5	$72.5 - 67.5 = 5$	3	$\frac{3}{5} = 0.60$

Histogram:



Question 8:

Make a frequency polygon on the histogram for the following grouped data.

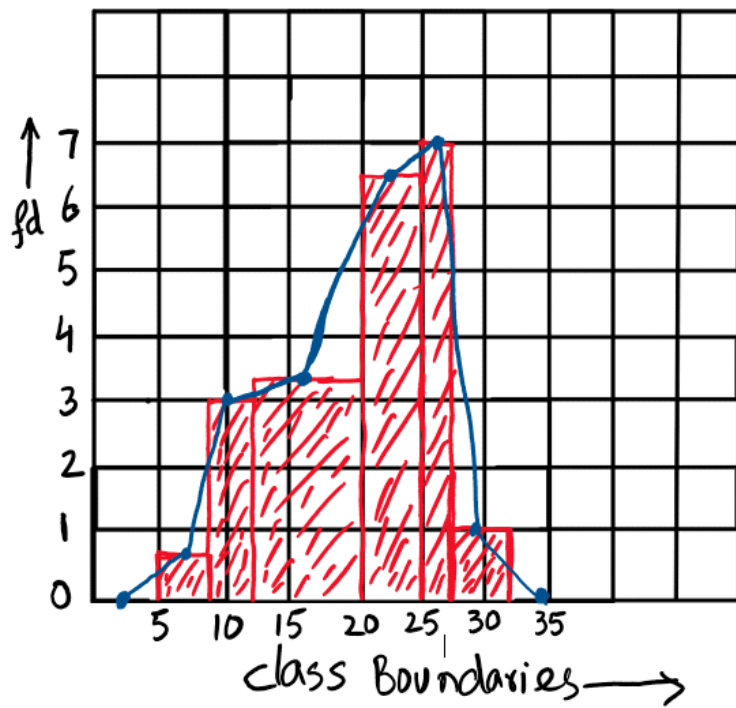
Class Limits	5-8	8-12	12-20	20-25	25-27	27-32
Frequency (f)	2	12	25	32	14	5

Solution:

Frequency Distribution Table:

Class Interval	Class Width	Frequency	Frequency Density	Class Mark
5 - 8	$8 - 5 = 3$	2	$\frac{2}{3} = 0.67$	$\frac{5+8}{2} = 6.5$
8 - 12	$12 - 8 = 4$	12	$\frac{12}{4} = 3$	$\frac{8+12}{2} = 10$
12 - 20	$20 - 12 = 8$	25	$\frac{25}{8} = 3.13$	$\frac{12+20}{2} = 16$
20 - 25	$25 - 20 = 5$	32	$\frac{32}{5} = 6.4$	$\frac{20+25}{2} = 22.5$
25 - 27	$27 - 25 = 2$	14	$\frac{14}{2} = 7$	$\frac{25+27}{2} = 26$
27 - 32	$32 - 27 = 5$	5	$\frac{5}{5} = 1$	$\frac{27+32}{2} = 29.5$

Plot the Frequency Polygon:



scale:

on X-axis;

1 box = 5 units

on Y-axis;

1 box = 1 unit