

# Frequency Distribution

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Formula for  
mean of  
frequency  
distribution

$$\frac{\text{Sum of (frequency} \times \text{value)}}{\text{Sum of the frequencies}}$$

Sum of - add up.

Find the mean of the distribution table.

Value	No. of texts	3	5	8	10	12
Freq	No. of students	7	3	12	24	18

← median.

Modal no. of text sent is 10 because 24 students sent 10 texts.

$$\frac{(3 \times 7) + (5 \times 3) + (8 \times 12) + (10 \times 24) + (12 \times 18)}{7 + 3 + 12 + 24 + 18} = \frac{588}{64}$$

$$\text{Mean} = 9.1875$$

1dp. 9.2 whole no. 9.

$$\text{Median} = \left( \frac{n+1}{2} \right) \quad n = \text{no. of values.}$$

$$n = 64$$

$$\frac{64+1}{2} = \frac{65}{2} = 32.5$$

37    38<sup>th</sup> value.

Medicun no. of texts sent is 10.



T&T3 8.4



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8.4.pptx

**PROJECT MATHS**

**Text & Tests**

**Leaving 3 Certificate**

chapter

8

# Measures of Location and Spread

## Section 8.4 Frequency distributions

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### Example 1

If the mean of the frequency distribution below is 3, find the value of  $x$ .  
Write down the mode of the distribution.

<b>Goals scored</b>	1	2	3	4	5	6
<b>Number of matches</b>	7	8	4	4	3	$x$

### Exercise 8.4

1. The following table gives the numbers of goals scored in 60 matches on a particular weekend:

	1	2	3	4	5	6
<b>Goals scored</b>	1	2	3	4	5	6
<b>No. of matches</b>	12	16	10	8	6	8

*freq:*

*median*

- (i) Write down the mode of the distribution. *16 matches 2 goals scored.*  
 (ii) Find the median number of goals scored.

$$n = 12 + 16 + 10 + 8 + 6 + 8 = 60$$

$$\frac{n+1}{2} \quad \frac{60+1}{2} = \frac{61}{2} = 30.5$$

*Median = 3 goals.*

*30<sup>th</sup> 31<sup>th</sup> values.*

Exercise 8.4

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2. Calculate the mean of this frequency distribution:

Variable ( $x$ )	1	2	3	4	5	6
Frequency ( $f$ )	9	9	6	4	7	3

### Exercise 8.4

3. A test consisted of 10 questions, 1 mark per question, and 0 for an incorrect solution. The following table shows how a class of students scored in the test:

<b>Marks</b>	3	4	5	6	7	8	9
<b>No. of students</b>	3	2	6	10	0	3	1

- (i) How many students were in the class?
- (ii) Write down the mode of the data.
- (iii) Calculate the mean mark per student.
- (iv) How many students scored better than the mean mark?
- (v) Find the median mark.

### Exercise 8.4

4. Paula has 6 people in her family. She wonders how many people are in her friends' families. She asks each of her friends and records the information in a table.

<b>Number in family</b>	2	3	4	5	6	7	8
<b>Frequency</b>	2	4	6	5	2	0	1

- (i) Write down the modal number of people in the family.
- (ii) Find the median number of persons per family.
- (iii) Calculate the mean of the distribution.



### Exercise 8.4

5. Carol is trying to estimate how many words she has written in an essay. She records the number of words she wrote on each line of one page. Her results are given in the table below.

<b>Words per line</b>	10	11	12	13	14	15
<b>No. of lines</b>	1	3	6	9	7	4

- (i) How many lines in total were there on the page?
- (ii) How many lines contained 14 words?
- (iii) What was the modal number of words per line?
- (iv) Find the median number of words per line.
- (v) Calculate the mean of the distribution.

### Exercise 8.4

6. The table below shows the number of goals scored in 100 hockey matches on a particular Saturday.

<b>Goals scored</b>	0	1	2	3	4	5
<b>No. of matches</b>	10	25	30	25	10	0

- (i) Write down the modal number of goals scored.
- (ii) Calculate the mean of the distribution.
- (iii) Find the greatest number of matches that could have ended in a draw.
- (iv) How many matches could have ended in a two-all draw?

### Exercise 8.4

7. If the mean of the frequency distribution below is 2, find the value of  $x$ .

<b>Variable</b>	0	2	3	4
<b>Frequency</b>	4	3	$x$	3

### Exercise 8.4

8. The mean mark from the following frequency distribution table was found to be 6. Calculate the value of  $y$ .

<b>Marks</b>	3	5	8
<b>No. of students</b>	3	$y$	7

### Exercise 8.4

9. The frequency table below has two missing values.

<b>Variable (<math>x</math>)</b>	1	3	4	6	
<b>Frequency (<math>f</math>)</b>	2	4	6		3

- (i) The range of  $x$  is 7 and the sum of the frequencies is 20.  
Use this information to complete the table.
- (ii) What is the modal value of  $x$ ?
- (iii) Find the mean value of  $x$ .

## Answers 8.4

1. (i) 2 goals (ii) 3
2. 3
3. (i) 25 (ii) 6 marks (iii) 5.6  
(iv) 14 (v) 6
4. (i) 4 (ii) 4 (iii) 4.25
5. (i) 30 (ii) 7 (iii) 13  
(iv) 13 (v) 13
6. (i) 2 (ii) 2 (iii) 5 (iv) 10
7.  $x = 2$
8.  $y = 5$
9. (ii) 4 (iii) 4.6