No. of Siblings	0	1	2	3	4	5
Students Tally	III	LHT III	III	I		I
Frequency	3	8	3	1	0	1

MODAL NO. OF SIBLINGS = 1 sibling

Mean : $\dfrac{(3\times0)+(8\times1)+(3\times2)+(1\times3)+(0\times4)+(1\times5)}{3+8+3+1+1} = \dfrac{22}{16} = 1.375$ mean no. of siblings.

Pg 129 Q 1+2

T&T2 7.4
Frequancy...

T&T2 7.4
Frequancy...

126 Section 7.4 **Frequency tables**

Example 1

A road-check on 30 motor vehicles yielded the following record of the number of occupants each carried:

2, 1, 3, 4, 5, 3, 2, 1, 2, 3, 1, 1, 2, 4, 6, 5, 4, 2, 2, 1, 1, 2, 4, 6, 5, 2, 6, 2, 5, 3

Make out a frequency table of the above data and find the mean and mode of the distribution.

Exercise 7.4

1. Thirty students in a class were given a test which was marked out of 10.
The results of the test are shown below.

4, 6, 7, 5, 9, 8, 6, 4, 3, 5, 6, 9, 8, 7, 6, 10, 1, 3, 6, 7, 9, 8, 5, 3, 2, 4, 7, 9, 10, 5

Copy and complete the frequency table shown below:

Marks per student	1	2	3	4	5	6	7	8	9	10	
Number of students	1	1	3	3	4	5	4	3	4	2	= 30

From the table, write down the number of students who got
(i) 5 marks **4**   (ii) 8 marks **3 students** (iii) 10 marks. **2 students**

What mark was got most frequently? **Mode/Modal**

5 students scored 6 marks   6 mode

2. A factory produces 50 television sets per day.
Tests at the end of one day gave rise to the following data:

Number of faults per set	0	1	2	3	4	5	6
Number of sets	1	8	12	11	9	5	4

(i)   How many sets had no fault? **1 TV**
(ii) How many sets had 6 faults? **4 TVs**
(iii) What was the modal number of faults? **2 mode**
(iv) What was the total number of faults recorded in all the sets?
(v)   Find the mean number of faults per set.

$$(1 \times 0) + (8 \times 1) + (12 \times 2) + (11 \times 3) + (9 \times 4) + (5 \times 5) + (4 \times 6)$$

with annotations: 0, 8, 24, 33, 36, 25, 24

$$= \text{No of faults} = 150$$

$$\frac{\text{Total no of faults}}{\text{No. of TVs}} = \frac{150}{50} = 3$$

3. The table below shows the numbers of goals scored in a number of hockey matches on a Sunday morning.

Goals scored	1	2	3	4	5	6
Number of matches	14	16	8	8	6	8

(i) In how many matches were 6 goals scored? **8 matches**

(ii) What was the modal number of goals scored? **2 goals**

(iii) What was the total number of goals scored?

(iv) Find the mean number of goals scored.

$$(14 \times 1) + (16 \times 2) + (3 \times 8) + (8 \times 4) + (5 \times 6) + (6 \times 8)$$

14   32   24   32   30   48

Total no. of goals scored = 180

$$\frac{180}{14+16+8+8+6+8} = \frac{180}{60} = 3 \text{ goals}$$

4. The following frequency table shows the numbers of goals scored in 60 football matches.

Mode

Goals scored	1	2	3	4	5	6
Number of matches	15	14	9	6	10	6

(i) Find the mean number of goals scored per match.

(ii) What was the modal number of goals scored?

(iii) In what percentage of the matches were 3 or 4 goals scored?

(iv) Find the greatest number of matches which could have ended in a draw.

$$\frac{(15 \times 1) + (14 \times 2) + (9 \times 3) + (6 \times 4) + (10 \times 5) + (6 \times 6)}{60}$$

$$= \frac{180}{60} = 3$$

$14 + 6 + 6 = 26$ Matches.

$$\frac{9+6}{60} = \frac{15}{60} \times 100 = 25\%$$

5. A dice was thrown 30 times.
The results are shown here.

Score	1	2	3	4	5	6
Frequency	3	4	6	8	7	2

Find the mean score.

6. 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.

Words per line	10	11	12	13	14	15
No. of lines	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) Calculate the mean of the distribution.

MID INTERVAL VALUES

7. The marks of 36 students in third-year are given below:

31 ~~49~~ ~~82~~ 79 40 29 66 71 73 19 ~~81~~ ~~87~~ 81 67 40 ~~52~~ 20 84
65 73 ~~60~~ ~~54~~ ~~60~~ ~~59~~ 25 89 21 91 84 77 18 37 ~~55~~ ~~41~~ 72 38

Copy and complete the grouped frequency table below:

$10·5 \quad 30·5 \quad 50·5 \quad 70·5 \quad 90·5$

Marks	1–20	21–40	41–60	61–80	81–100	→ Intervals
Number of students	**3**	**7**	**11**	**9**	**5**	

(i) How many students scored between 21 and 60 inclusive? **7+11= 18**
(ii) What is the modal class? **41–60**
(iii) Which class had the second largest number of students? **61–80**
(iv) Name one disadvantage of a grouped frequency table. **Not accurate.**

1) Find the middle of the interval

| 1–20 | Add the values and divide by 2

$$\frac{1+20}{2} = \frac{21}{2} = 10·5$$

| 21–40 | $\frac{21+40}{?} = \frac{61}{?} = 30·5$

Mean – Use the
mid interval values
Finish

$$\frac{(10·5 \times 3)+(30·5 \times 7)+(50·5 \times 11)}{36}$$

$\boxed{21-40}$ $\dfrac{21+40}{2} = \dfrac{61}{2} = 30.5$

HIW

8. People attending a course were asked to choose one of the whole numbers from 1 to 12. The results were recorded as follows:

Number	1–3	4–6	7–9	10–12
No. of people	3	17	2	8

   (i) Write down the modal class of the distribution.

  (ii) Use the mid-interval value of each class to estimate the mean of the distribution.

9. The frequency table shows the numbers of books bought by 20 pupils in the past year.

Number of books	0–4	5–9	10–14	15–19
Frequency	2	4	6	8

Find an estimate for the mean number of books bought by each pupil.

10. Use the mid-interval values to estimate the mean of the following frequency distribution:

Class	14–16	16–18	18–20	20–22	22–24
Frequency	1	5	12	3	0

Give your answer correct to one decimal place.

11. One hundred people were asked to record the numbers of mobile phonecalls they received on a particular day. The results are shown in the table below.

No. of calls	0–4	5–9	10–14	15–19	20–24
Frequency	45	29	17	8	1

(i)   What is the modal group?

(ii) What is the greatest number of people who could have received more than 18 calls?

(iii) What is the least number of people who could have received less than 8 calls?

(iv) Use the mid-interval values to find an estimate for the mean number of phonecalls received.
Give your answer correct to the nearest whole number.

12. The table below shows the distances travelled by seven paper airplanes after they were thrown.

Airplane	A	B	C	D	E	F	G
Distance (cm)	188	200	250	30	380	330	302

(i) Find the median of the data.

(ii) Find the mean of the data.

(iii) Airplane D is thrown again and the distance it travels is measured and recorded in place of the original measurement. The median of the data remains unchanged and the mean is now equal to the median. How far did airplane D travel the second time?

(iv) What is the minimum distance that airplane D would need to have travelled in order for the median to have changed?