

- (1) (a) Represent the table below as a grouped frequency distribution table. Choose four suitable class intervals.

3	5	12	11	11	2	16	11	19	7
11	15	11	15	17	1	13	9		

Class interval:	Tally:	Frequency (F):	C _F	%
1 - 5	////	4	4	22
6 - 10	//	2	6	11
11 - 15	### ////	9	15	50
16 - 20	///	3	18	17
			$\therefore N = 18$	

- (b) Determine the data's range in (a). $19 - 1 = 18$
- (c) Determine the mode of the data in (a). **11**
- (d) Determine the modal class interval of the data in (a). **11 - 15**
- (e) Does the mode lie in the modal class interval? **Yes**
- (f) Determine the median of the data in (a).

Median lies between count 9 and count 10 ($N = 18$)

Median lies in the class (11 - 15): T_7 ; T_8 ; T_9 ; T_{10} ; T_{11} ; T_{12} ; T_{13} ; T_{14} ; T_{15}
 11 ; 11 ; 11 ; 11 ; 11 ; 12 ; 13 ; 15 ; 15

$$\therefore \text{Median} = \frac{11 + 11}{2} = 11$$

- (g) Determine the mean of the data in (a).

$$\text{Mean} = \frac{3+5+12+11+11+2+16+11+19+7+11+15+11+15+17+1+13+9}{18} = \frac{189}{18} = 10,5$$

- (h) Which of the central tendencies is the best indication of the data in the table?
 Motivate your answer.

Mode and median, because they are exactly the same.

- (2) The table shows the ages of all the members of Green Trees Golf Club whose birthdays are in January.

12	34	24	41	50	56	32	21	19	27	39	45
22	12	35	71	64	23	56	14	47	25	27	31
40	19	33	38	43	30	61	38	24	32	39	47
16	35	23	45	38	26	70	28	33	38	23	29
36	41	12	38	35	51	43					

- (a) Calculate the range of the data in the table. $71 - 12 = 59$
- (b) Represent data above as a grouped frequency distribution table. Choose suitable class intervals. Clearly indicate the class boundaries and class mid-points.

Class interval	Class boundaries	Class mid-point	Tally	F	C _F	%
10 – 19	9,5 – 19,5	14,5	### //	7	7	12,72
20 – 29	19,5 – 29,5	24,5	### ## ///	13	20	23,64
30 – 39	29,5 – 39,5	34,5	### ### ### ///	18	38	32,73
40 – 49	39,5 – 49,5	44,5	### ////	9	47	16,36
50 – 59	49,5 – 59,5	54,5	////	4	51	7,27
60 – 69	59,5 – 69,5	64,5	//	2	53	3,64
70 – 79	69,5 – 79,5	74,5	//	2	55	3,64
				N = 55		

- (c) Determine the data's modal class interval. 30 - 39
- (d) Determine the estimated mean of the data in the grouped frequency distribution table in (b). Show all calculations.

$$\begin{aligned}\text{Estimated mean} &= \frac{14,5 \times 7 + 24,5 \times 13 + 34,5 \times 18 + 44,5 \times 9 + 54,5 \times 4 + 64,5 \times 2 + 74,5 \times 2}{55} \\ &= \frac{1\,937,5}{55} = 35,227... \approx 35\end{aligned}$$

- (e) Is the modal class interval or estimated mean the best to use? Motivate your answer.

The estimated mean (35) is within the modal class-interval (30 -39).

∴ The mean is thus a very good indication of the central tendency.

- (3) Study the grouped frequency distribution table below and answer the questions below. The table shows a summary of grade 10C's Mathematics marks. The class intervals are in terms of percentage.

Class interval	Class boundaries	Class mid-point	F	C _F	%
0 - 9	0 - 9,5	4,5	1	1	3
10 - 19	9,5 - 19,5	14,5	0	1	0
20 - 29	19,5 - 29,5	24,5	1	2	3
30 - 39	29,5 - 39,5	34,5	3	5	9
40 - 49	39,5 - 49,5	44,5	5	10	14
50 - 59	49,5 - 59,5	54,5	6	16	17
60 - 69	59,5 - 69,5	64,5	7	23	20
70 - 79	69,5 - 79,5	74,5	5	28	14
80 - 89	79,5 - 89,5	84,5	5	33	14
90 - 99	89,5 - 99,5	94,5	2	35	6
			N = 35		

- (a) Complete the table. The percentage column has to be rounded off to the closest integer. Show all calculations.

$$\frac{1}{35} \times \frac{100}{1} = 2,85 \dots \approx 3\%$$

$$\frac{2}{35} \times \frac{100}{1} = 5,71 \dots \approx 6\%$$

$$\frac{3}{35} \times \frac{100}{1} = 8,57 \dots \approx 9\%$$

$$\frac{5}{35} \times \frac{100}{1} = 14,28 \dots \approx 14\%$$

$$\frac{6}{35} \times \frac{100}{1} = 17,14 \dots \approx 17\%$$

$$\frac{7}{35} \times \frac{100}{1} = 20$$

- (b) Calculate the estimated class average for grade 10C's Mathematics test.

$$\begin{aligned} \text{Estimated mean} &= \frac{4,5 \times 1 + 14,5 \times 0 + 24,5 \times 1 + 34,5 \times 3 + 44,5 \times 5 + 54,5 \times 6 + 64,5 \times 7 + 74,5 \times 5 + 84,5 \times 5 + 94,5 \times 2}{35} \\ &= \frac{2117,5}{35} = 60,5 \end{aligned}$$

(c) Determine how many learners passed, if the passing rate is 40%.

30 learners have passed – have 40% or more.

(d) Determine the modal class interval.

60 - 69

(e) Discuss the measurements for central tendencies.

The estimated mean is within the modal class-interval and therefor the mean is a very good indication of the central tendency.