MEAN, MEDIAN AND MODE

1. At a pet store, a survey was taken asking how many pets each person had. The results were: 2, 5, 3, 1, 0, 4, 2, 7, 0, 2 ,7, 3, 2, 4, 3. Find the following:
   a) Mean
   b) Median
   c) Mode

2. Forty students took a math test marked out of ten points. Their results are as follows:
9, 10, 7, 8, 9, 6, 5, 9, 4, 7, 1, 7, 2, 7, 8, 5, 4, 3, 10, 7, 3, 7, 8, 6, 9, 7, 4, 2, 3, 9, 4, 3, 7, 5, 5, 2, 7, 9, 7, 1
   a) Prepare a frequency table of the scores
   b) Using the frequency table, calculate the mean, median, mode, and range.
   c) Draw a bar chart to represent the data.

3. The table shows data of heights of people in a sample of people in 3rd ESO:

Height (cm)	Frequency
[130, 140)	7
[140, 150)	12
[150, 160)	16
[160, 170)	5
[170, 180)	2

   a) Find the range of heights.
   b) Find the median class.
   c) What is the modal class?
   d) Find an estimate of the mean height.
   e) Draw a histogram to represent the data.

4. The following are heights of small Christmas trees in cm. The heights are between 21 cm and 66 cm
65, 32, 54, 56, 34, 43, 21, 51, 50, 61, 59, 45, 48, 39, 41, 31, 36, 65, 66, 44, 45, 40, 30, 50, 57, 32, 61, 48, 55, 45, 35, 30, 32, 45, 39, 32, 49, 47, 55, 34, 53, 43, 59, 41

a) Draw a stem and leaf diagram for the data (use intervals of 10 cm).
b) Find the mean height.
c) Find the range of the heights
d) Draw a histogram to represent the data.

Guadalupe Buendía Castiñeira

SOLUTION

1. At a pet store, a survey was taken asking how many pets each person had. The results were: 2, 5, 3, 1, 0, 4, 2, 7, 0, 2 ,7, 3, 2, 4, 3.
First, we order the data: 0, 0, 1, 2, 2, 2, 2, 3, 3, 3, 4, 4, 5, 7, 7

Mean: $\overline{x} = \dfrac{1+2+2+2+2+3+3+3+4+4+5+7+7}{15} = 3$ pets

Mode (the most common value in the data set): 2 pets
Median (value of "middle" data item): 2.5

2. Frequency table:

Marks x	Frequency f	Cumulative Frequency (F)	x·f
1	2	2	2
2	3	5	6
3	4	9	12
4	4	13	16
5	4	17	20
6	2	19	12
7	10	29	70
8	3	32	24
9	6	38	54
10	2	40	20
Total	40		236

Mean: $\overline{x} = \dfrac{236}{40} = 5.9$ points   Range: 10 – 1 = 9 points

Mode: 7 points
Median: $40 : 2 = 20 \rightarrow F > 20 \rightarrow 29 \rightarrow$ 7 points is the median
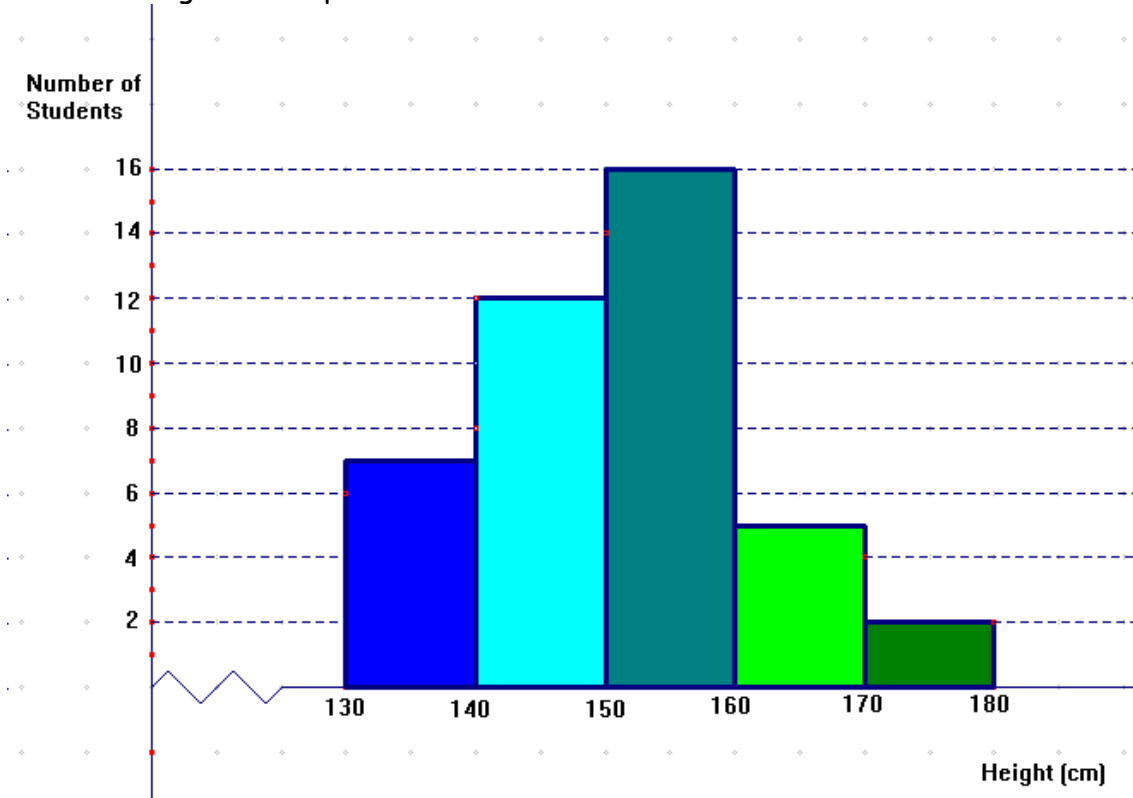Bar chart:
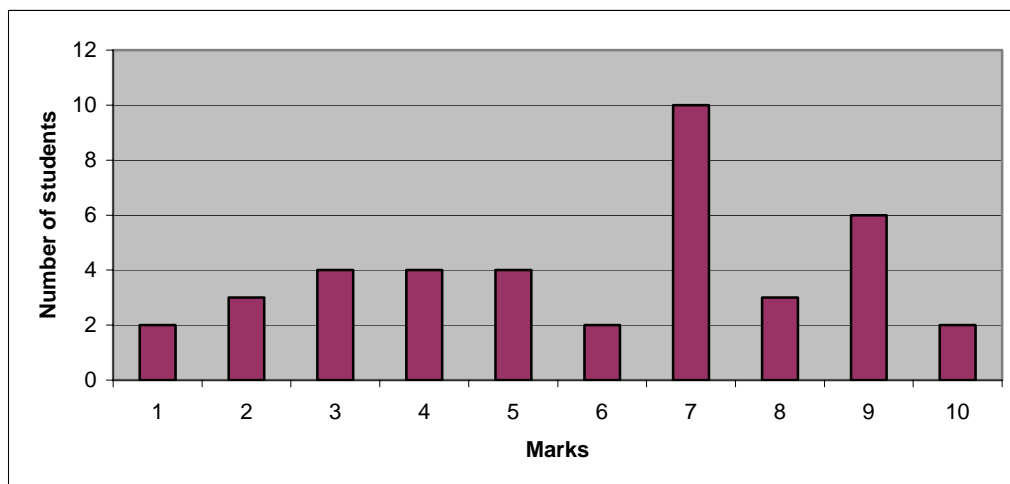
3. Range of heights: 180 – 130 = 50 cm

Height (cm)	Mid-point(x)	Frequency(f)	Cumulative f.(F)	x·f
[130, 140)	135	7	7	945
[140, 150)	145	12	19	1740
[150, 160)	155	16	35	2480
[160, 170)	165	5	40	825
[170, 180)	175	2	42	350
	Total	42		6340

Median: $42 : 2 = 21 \rightarrow 35 > 21 \rightarrow [150,160)$ is the median class

Modal: $[150,160)$ is the modal class

Mean height. $\overline{x} = \dfrac{6340}{42} = 150.95$

Draw a histogram to represent the data:

4. The following are heights of small Christmas trees in cm. The heights are between 21 cm and 66 cm

65, 32, 54, 56, 34, 43, 21, 51, 50, 61, 59, 45, 48, 39, 41, 31, 36, 65, 66, 44, 45, 40, 30, 50, 57, 32, 61, 48, 55, 45, 35, 30, 32, 45, 39, 32, 49, 47, 55, 34, 53, 43, 59, 41

Stem and leaf diagram for the data (use intervals of 10 cm):

Guadalupe Buendía Castiñeira

Height(cm)	Mid-point (x)	Frequency(f)	x·f
[20, 30)	25	1	25
[30,40)	35	13	455
[40,50)	45	14	630
[50,60)	55	11	605
[60,70)	65	5	325
		44	2040

Mean height: $\overline{x} = \dfrac{2040}{44} = 46.36$ cm

Range of the heights: 66 – 21 = 45 cm

Histogram: