

- (1) During the inter house athletics meeting Sean and Ann decide to record the highest attempts each athlete achieved at high jump. Ann records the girls' heights and Sean the boys' heights. The table shows the heights in cm:

Sean	145	156	178	156	190	123	147	156	180	167	191	199	165
	145	176	148	198	165	143	176	186	140	137	169	145	187
	155	176	187	190	145	134	177	169	150				
Ann	145	161	123	118	165	148	172	144	150	138	134	157	126
	165	134	135	136	178	178	187	165	162	153	161	134	144
	147	151	143	176	154								

- (a) Draw a back-to-back stem-and-leaf representation of the data in the table.

	Best heights recorded for all athletes															
	Sean - boys							Ann - girls								
F	Leaf:						Stem:	Leaf:						F		
0							11	8							1	
1	3						12	3	6							2
2	7 4						13	4	4	4	5	6	8	6		
8	8	7	5	5	5	3	0	14	3	4	4	5	7	8	6	
5	6 6 6 5 0						15	0	1	3	4	7				5
5	9 9 7 5 5						16	1	1	2	5	5	5			6
5	8 7 6 6 6						17	2	6	8	8					4
4	7 7 6 0						18	7								1
5	9 8 1 0 0						19								0	
	Key 2/7 represent: 27															

- (b) How many girls and boys took part in high jumping at the inter house athletics?

Girls = 31

Boys = 35

- (c) What is the difference between the best height of the boys and the best height of the girls?

Best height for boys = 199 cm

Best height for girls = 187 cm

Difference = 199 cm - 187 cm = 12 cm

- (d) The previous year the average height that the boys jumped was 154 cm. Is the average height for this year weaker or better than the previous year? Show all calculations.

$$\text{This years' average height} = \frac{5751}{35} = 164,31 \dots \approx 164 \text{ cm}$$

Calculate the total heights of the boys by using the data in the stem-and-leaf representation:

110	×	0	+	0	=	0
120	×	1	+	3	=	123
130	×	2	+	11	=	271
140	×	8	+	38	=	1 158
150	×	5	+	23	=	773
160	×	5	+	35	=	835
170	×	5	+	33	=	883
180	×	4	+	20	=	740
190	×	5	+	18	=	968
				Total:	=	5 751

∴ The average height (164 cm) for this year is better than the previous years' height of 154 cm.

- (2) Study the stem-and-leaf representation below and answer the questions below. Show all calculations.

Number of cell phone contracts sold per day		
Argon Mobile		Beta phones
Leaf:	Stem:	Leaf:
9 4	0	1 5 7 8 8
7 5 5 3 1	1	4 4 5 7 7
8 7 2	2	1 3 3 6 9 9
9 8 6 6 6 6 5 5 1	3	1 2 4 4 5 6 6 6 6
9 7 3 2 1 1	4	1
2	5	
6 1	6	2 3
Key: 2/7 represents: 27		

- (a) Calculate each company's mode and median and draw a comparison between the central tendencies of the two companies.

Argon Mobile:

Beta phones:

Mode:

36

36

Median:

$$\frac{36 + 36}{2} = 36$$

$$\frac{26 + 29}{2} = 27,5$$

Both companies have the same mode, but according to the median it seems as if Argon has sold more contracts than Beta.

- (b) Which cell phone company sold the most contracts for the month?

Argon has sold the most contracts for the month.

Argon has sold 925 to respect of Beta who sold 733 contracts.

Argon:

Beta:

0	×	2	+	13	=	13
10	×	5	+	21	=	71
20	×	3	+	17	=	77
30	×	9	+	52	=	322
40	×	6	+	23	=	263
50	×	1	+	2	=	52
60	×	2	+	7	=	127
				Total:	=	925

0	×	5	+	29	=	29
10	×	5	+	27	=	77
20	×	6	+	31	=	151
30	×	9	+	40	=	310
40	×	1	+	1	=	41
50	×	0	+	0	=	0
60	×	2	+	5	=	125
				Total:	=	733

(c) Which cell phone company, on average, sold the least contracts per day for the month?

Argon:

$$\text{Average} = \frac{925}{28} = 33,03 \dots \approx 33$$

Beta:

$$\text{Average} = \frac{733}{28} = 26,17 \dots \approx 26$$

Beta sold the least contracts (26) per day according to the average.

(d) On how many days were at least 40 contracts sold at “Beta phones”?

3 days namely 41, 62 and 63.