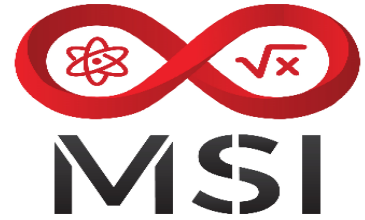




Province of the
EASTERN CAPE
EDUCATION



NATIONAL SENIOR CERTIFICATE

PUSH – ONE INTERVENTION PROGRAM

MATHEMATICS

GRADE 12

LAST PUSH

2022

STATISTICS
MEASURES OF CENTRAL TENDENCY MEMO

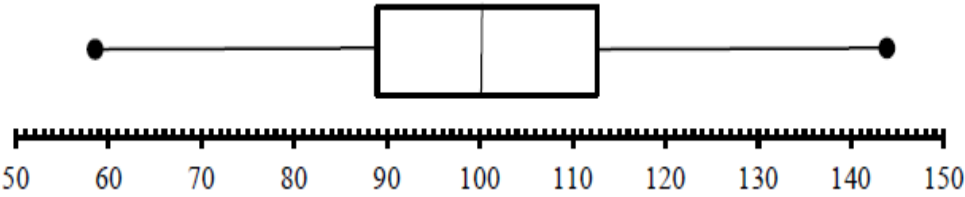
Activity 1

No.	Solutions	Marks
1.1	$\bar{x} = \frac{220}{10}$ $\bar{x} = 22$	(2)
1.2	$\sigma = 3,95$	(2)
1.3	$(22 - 3,95 ; 22 + 3,95) \rightarrow (18,05 ; 25,95)$ 19 20 21 22 23 24	(2)
		[6]

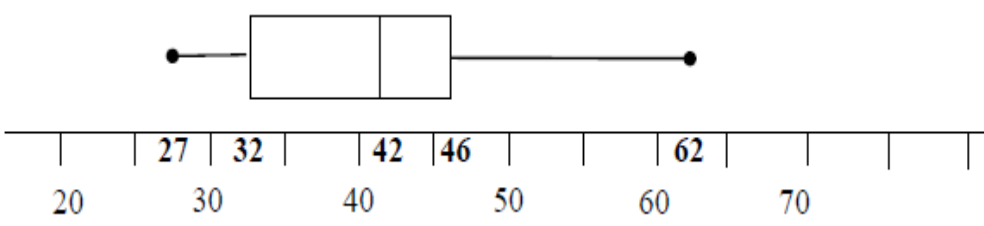
Activity 2

No.	Solutions	Marks
2.1	$\bar{x} = \frac{550}{10}$ $\bar{x} = 55$ kilocalories	(2)
2.2	$\sigma = 69,03$	(2)
2.3	Snack foods have a greater variation. The standard deviation for snack foods is 69,03 kilocalories whilst the standard deviation for breakfast cereals is 28 kilocalories. i.e. energy levels of breakfast cereals is spread closer to the mean than in those of the snack food.	(2)
		[6]

Activity 3

No	Solutions	Marks
3.1	$\bar{x} = \frac{1522}{15}$ $\bar{x} = 101,7$	(2)
3.2	$\sigma 19,07$	(2)
3.3	<p><i>Lower quartile = 89</i></p> <p><i>Upper quartile = 113</i></p>	(2)
3.4		(3)
3.5	$(\bar{x} - 1\sigma ; \bar{x} + 1\sigma) = (82,4 ; 120,54)$ <p>\therefore 2 days</p>	(3)
		[12]

Activity 4

No.	Solutions	Marks
4.1	<i>Median = 42</i>	(1)
4.2	<i>Lower quartile = 32</i> <i>Upper quartile = 46</i> <i>Interquartile range = 46 – 32</i> <i>Interquartile range = 14</i>	(3)
4.3	 <p>A box plot is shown on a horizontal axis. The axis has tick marks at 20, 30, 40, 50, 60, and 70. The box starts at 32 and ends at 46, with a vertical line at 42 representing the median. Whiskers extend from the box to 27 on the left and 62 on the right. There are small black dots at the ends of the whiskers.</p>	(3)
4.4	There is a greater spread of scores to the right of the median (42)	(2)
		[9]

Activity 5

No.	Solutions	Marks
5.1	$\bar{x} = \frac{102\,100}{9}$ $\bar{x} = 11\,344,44$	(2)
5.2	$\sigma = 4\,460,97$	(2)
5.3	The value of the standard deviation above the mean: $= R11\,344,44 + R4\,460,97$ $= R15\,805,41$ There is only one person who obtained commission one standard deviation above the mean. Only one person received a rating of good.	(2)
		[6]

Activity 6

No.	Solutions	Marks
6.1	$\bar{x} = \frac{128}{8}$ $\bar{x} = 16$	(2)
6.2	$\sigma = 7,55$	(2)
6.3	$\sigma = 9,71$ σ increases	(2)
6.4	<p>The total number of runs required is $20 \times 16 = 320$</p> <p>The total number of runs to be scored in last five games:</p> $= 320 - 59 - 128$ $= 133$ $\bar{x} = \frac{133}{5}$ $\bar{x} = 26,6$	(3)
		[9]

Activity 7

No.	Solutions	Marks
7.1	$\bar{x} = \frac{522,5}{12}$ $\bar{x} = 43,5$	(2)
7.2	<p><i>Minimum</i> = 9,3</p> <p><i>Lower quartile</i> = $\frac{15 + 23,6}{2} \rightarrow 19,3$</p> <p><i>Median</i> = $\frac{28 + 32,5}{2} \rightarrow 30,3$</p> <p><i>Upper quartile</i> = $\frac{65,7 + 71,9}{2} \rightarrow 68,8$</p> <p><i>Maximum</i> = 98,2</p>	(5)

7.3		(3)
7.4	<p>The data is skewed to the right (positively skewed). This suggests that there was a large difference between the median and the maximum rainfall (some months had exceptionally high rainfall in that year).</p>	(2)
7.5	$\sigma = 28,19$	(3)
		[15]

Activity 8

No.	Solutions	Marks
8.1	<p><i>Minimum = 9</i></p> <p><i>Lower quartile = 25,5</i></p> <p><i>Median = 55</i></p> <p><i>Upper quartile = 75</i></p> <p><i>Maximum = 92</i></p>	(4)
8.2		(2)
8.3	<p>Class B</p> <p>Class B performed better because half of the learners got above 60% whilst half of Class A got more than 55%.</p> <p>Class B performed better because half of the learners got above 60% whilst half of Class A got less than 55%.</p> <p>Median of Class B > Median of Class A</p>	(3)
		[9]

Activity 9

No.	Solutions	Marks
9.1	$\frac{55 + 55 + 50 + 47 + 42 + 3x}{8} = 48,375$ $\frac{249 + 3x}{8} = 48,75$ $x = 46$	(2)
9.2		(4)
		[6]

Activity 10

No.	Solutions	Marks
10.1	$\bar{x} = \frac{202}{30}$ $\bar{x} = 6,73$	(2)
10.2	$\text{Median} = \frac{7 + 7}{2}$ $\text{Median} = 7$	(2)
10.3	$\sigma = 2,26$	(2)
10.4	$(6,73 - 2,26 ; 6,73 + 2,26)$ $= (4,47 ; 8,99)$ $\therefore 4 + 4 + 8 + 3 = 19 \text{ times}$	(3)
		[9]