

LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS

You have arrived to your Stats lesson to discover a murder has taken place!

Solve the Statistical problems using the skills we have been practicing this year to decipher the clues left by the murderer.

After you have worked out each clue, use it to eliminate teachers from the suspect list and find the next clue.

Can you solve the murder before the lesson is over?

© MrsHodgettsStatistics 2021

LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS

LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D

Suspect List

Teacher	Subject	Sex	Right/Left-Handed	Free Period
Mr Wills	Maths	M	Right	2
Mrs Jassal	English	F	Left	3
Mr Armstrong	P.E	M	Right	3
Mr Patel	History	M	Right	2
Miss Nowak	Maths	F	Left	3
Mrs Crisp	Statistics	F	Left	2
Ms Wilson	English	F	Left	2
Mr Guest	Maths	M	Left	2
Mr Dogaru	Maths	M	Right	3
Miss Trier	Art	F	Right	3
Miss Rogers	P.E	F	Right	2
Mrs Halford	Maths	F	Right	3
Mr Brownhill	Statistics	M	Left	3
Mr Hartlebury	English	M	Left	3
Mr Plant	French	M	Left	2
Miss Goodyear	Maths	F	Right	2

Murderer: _____

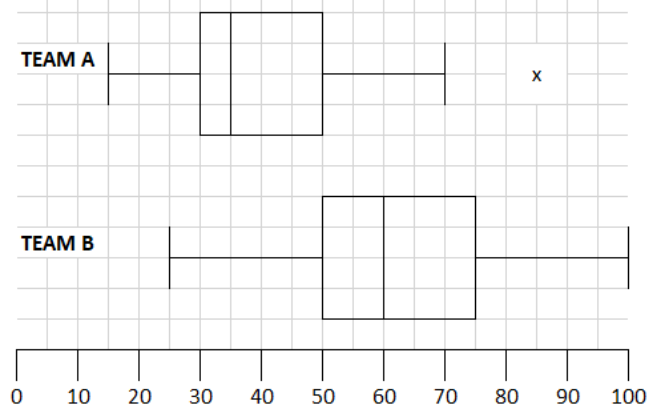
LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D

LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: D

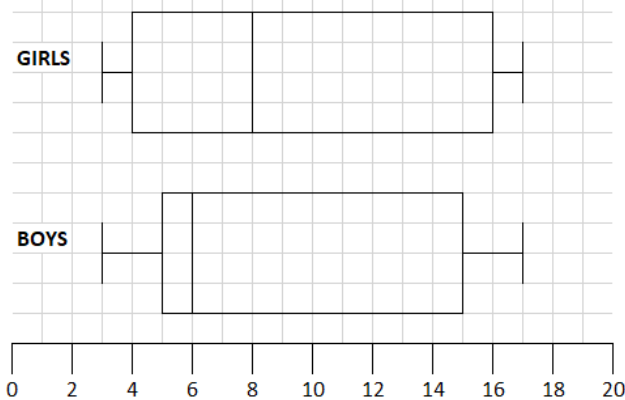
Work out the missing words from these comparisons for box plots.

The letter highlighted is the letter for your clue.

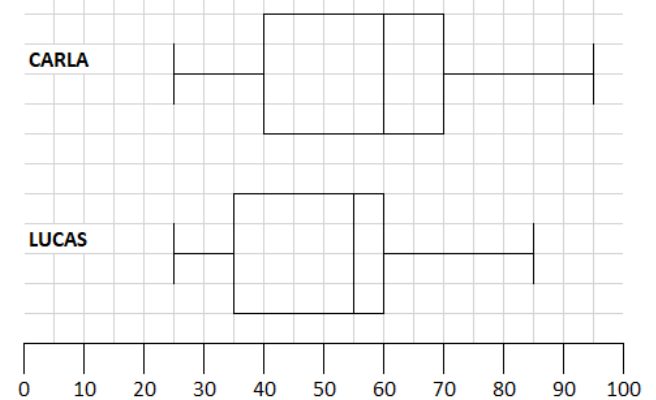
Compare the data for the number of baskets scored by Team A and Team B



Compare the data for the number of points earned by the girls and boys



Compare the data for the number of detentions earned by Carla and Lucas



S: The range for █ B is wider █ Team A

A: The █ for Team B is higher than Team A

Sk: Team A and Team B have positive █

I: On average, Team B score more baskets

A: Team A has an █

S: Boys have a █ inter █ range

A: Girls █ a █

Sk: █ and █ have █ skew

I: On average, Girls score more █

A: No █

S: Carla has a █ range than █

A: █ has █ higher median than █

Sk: █ and █ have negative skew

I: █ has a less █ number of █

A: █

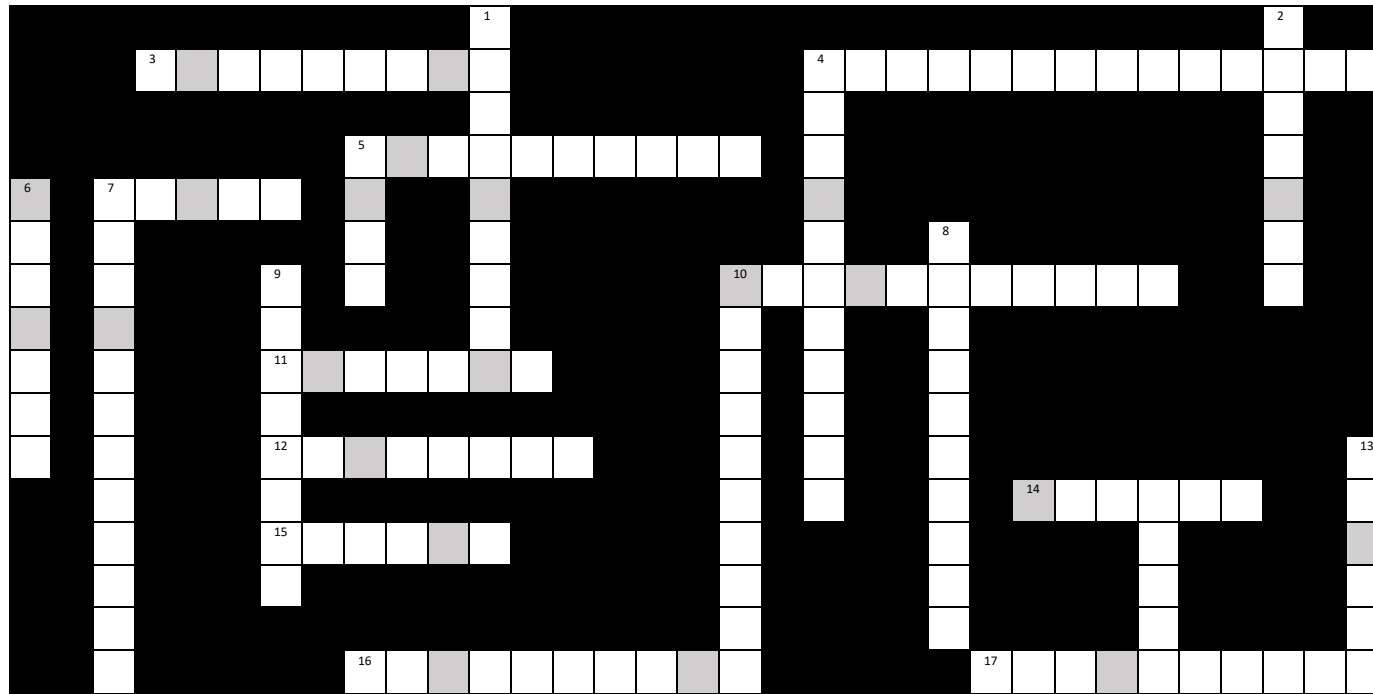
CLUE: _____

© MrsHodgettsStatistics 2021

LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: DO NOT CROSS POLICE LINE: D

LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D

Use the clues to complete the crossword. The letter in the shaded box is the letter for your clue.



ACROSS CLUES:

- 3: Two sets of data that is paired
- 4: These contain both open and closed questions and are used to gain information about the sample
- 5: A type of sampling where sample is representative of the population
- 7: A type of sampling where you have a specific number of each group you must get to take part
- 10: Data that can has split into groups
- 11: A type of sampling similar to stratified where you sample all or some of one selected group
- 12: Numerical data that is countable
- 14: A select few from the population
- 15: A type of sampling where everyone has an equal chance of being chosen
- 16: These are more expensive than questionnaires but allow for more explanation around each question
- 17: A testable statement about the population

DOWN CLUES:

- 1: the capture/_____ method is used to estimate the population size from a sample
- 2: Data that your investigation collects itself
- 4: Data that is presented non-numerically
- 5: Can be positive, negative or symmetrical and shows where the median is in comparison to the lower and upper quartile
- 6: Data that has been put in rank order
- 7: Data that is presented numerically
- 8: Every possible person or 'thing' that can be included
- 9: Data that has already been collected previously
- 10: Numerical data that is measurable
- 13: A study of the whole population

© MrsHodgettsStatistics 2021

LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D

LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D

For each of these sets of data calculate the standard deviation.

Round this to the nearest whole number and use the codebreaker to decipher the clue.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

$n = 13$ $\Sigma(x - \bar{x})^2 = 837.5$	$n = 41$ $\Sigma(x - \bar{x})^2 = 1026.3$	$n = 9$ $\Sigma(x - \bar{x})^2 = 4763.8$	$n = 62$ $\Sigma(x - \bar{x})^2 = 65.7$	$n = 7$ $\Sigma(x - \bar{x})^2 = 2410.2$	$n = 36$ $\Sigma(x - \bar{x})^2 = 12854.3$																																								
$n = 101$ $\sum x = 84$ $\sum x^2 = 3041$	$n = 69$ $\sum x = 32$ $\sum x^2 = 2061$	$n = 25$ $\sum x = 61$ $\sum x^2 = 5374$	$n = 6$ $\sum x = 18$ $\sum x^2 = 3174$	$n = 29$ $\sum x = 22$ $\sum x^2 = 674$	$n = 42$ $\sum x = 14$ $\sum x^2 = 83$																																								
17 , 25 , 53 , 42 , 3	3 , 30 , 8 , 14 , 7 , 2	131 , 174 , 147 , 152 , 160	25 , 34 , 28 , 14	1.3 , 0.9 , 2.5 , 0.7 , 0.1 , 0.8	30 , 26 , 15 , 67 , 42																																								
<table><tr><td>X</td><td>5</td><td>10</td><td>15</td></tr><tr><td>f</td><td>34</td><td>7</td><td>22</td></tr></table>	X	5	10	15	f	34	7	22	<table><tr><td>X</td><td>0</td><td>5</td><td>10</td></tr><tr><td>f</td><td>6</td><td>5</td><td>16</td></tr></table>	X	0	5	10	f	6	5	16	<table><tr><td>X</td><td>3</td><td>13</td><td>23</td></tr><tr><td>f</td><td>5</td><td>5</td><td>8</td></tr></table>	X	3	13	23	f	5	5	8	<table><tr><td>X</td><td>0</td><td>1</td><td>2</td></tr><tr><td>f</td><td>8</td><td>4</td><td>7</td></tr></table>	X	0	1	2	f	8	4	7	<table><tr><td>X</td><td>25</td><td>50</td><td>75</td></tr><tr><td>f</td><td>30</td><td>37</td><td>30</td></tr></table>	X	25	50	75	f	30	37	30	
X	5	10	15																																										
f	34	7	22																																										
X	0	5	10																																										
f	6	5	16																																										
X	3	13	23																																										
f	5	5	8																																										
X	0	1	2																																										
f	8	4	7																																										
X	25	50	75																																										
f	30	37	30																																										

© MrsHodgettsStatistics 2021

LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D

LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D

For each pair of data, rank them ready for calculating SRCC.

© MrsHodgettsStatistics 2021

Use the codebreaker to find the letter represented by each shaded rank.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13

X	12	4	11	6	7	13	5	10	14	5	8	14	9
Rank X													
Y	21	24	22	25	23	24	17	26	17	16	19	20	18
Rank Y													

A	29	27	49	25	48	24	32	45	10	38	38	16	16
Rank A													
B	70	75	35	62	66	58	39	39	30	45	49	59	56
Rank B													

M	26	6	22	9	6	2	16	15	18	12	26	20	10
Rank M													
F	9	11	29	13	9	5	15	23	19	13	27	26	13
Rank F													

A	15	20	19	26	20	28	25	25	26	10	10	12	15
Rank A													
B	12	15	6	16	7	12	17	10	9	1	2	3	4
Rank B													

A	20	33	21	34	22	32	30	23	29	24	28	25	31
Rank A													
B	25	14	26	28	29	15	16	23	19	22	25	21	18
Rank B													

LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSSPOLICE LINE: DO NOT CROSS POLICE LINE: D