2.5 Answers

2.5.1 Solutions (Example)

(i) **Group 1 :** 57 – 40 =17
Group 2 : 54 – 33 = 21
Group 3 : 64 – 37 = 27

(ii) Outlier is 37

(iii) Other than the 37, the data lies between 61 and 64, a range of just 3.
So other than the 37 there is very little spread in the group 3 data.
The range has failed to detect the extraordinary character of this data.

2.5.2 Solutions (Exercise)

Answer 1

22 48 52 53 57 62 63 71 72 72 75 77 86 89 91

15 items of data $\Rightarrow \frac{15 + 1}{4} = 4$

(i) LQ is 4th from left which is 53 **(ii)** UQ is 4th from right which is 77

(iii) $\therefore$ IQR = 24

Answer 2

31 43 45 46 49 50 54 55 58 62 63 63 66 66 68 73 75 92 100

19 items of data $\Rightarrow \frac{19 + 1}{4} = 5$

LQ is 5th from left which is 49 and UQ is 5th from right which is 68

$\therefore$ IQR = 19

Answer 3

73 44 67 64 63 45 45

(i) Data in order : 44 45 45 63 64 67 73

(ii) 7 items of data $\Rightarrow \frac{7 + 1}{4} = 2$

LQ is 2nd from left which is 45 and UQ is 2nd from right which is 67.

$\therefore$ IQR = 22.

Answer 4

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2 1 2 5 5 6 9 2 5 6 7 5 6 5 6

Data in order becomes;

1 2 2 2 5 5 5 5 5 6 6 6 6 7 9

15 items of data $\Rightarrow \frac{15 + 1}{4} = 4$

LQ is 4th from left which is 2 and UQ is 4th from right which is 6

$\therefore$ IQR = 4

Answer 5

123 89 112 105 74 118 96 101 93

Data in order becomes;

74 89 93 96 101 105 112 118 123

9 items of data $\Rightarrow \frac{9+1}{4} = 2.5$

(i) LQ is mean of 89 and 93 which is 91

(ii) UQ is mean of 118 and 112 which is 115

(iii) $\therefore$ IQR = 24

Answer 6

SENTENCE A : ***It is hypothesized that sentences containing substantial variation in word length are difficult to read.***

2 2 12 4 9 10 11 9 2 4 6 3 9 2 4

SENTENCE B : ***Are these words extraordinarily easy to read ?***

3 5 5 15 4 2 4

(a) Range of sentence A is 12 – 2 = 10

(b) Range of sentence B is 15 – 2 = 13

(c) Sentence B is predicted by the range to be harder to read.

(d) Sentence A data in order is;

2 2 2 2 3 4 4 4 6 9 9 9 10 11 12

15 items of data $\Rightarrow \frac{15+1}{4} = 4$

LQ is 4th item from left which is 2 and UQ is 4th item from right which is 9

$\therefore$ IQR = 7

(e) Sentence B data in order is;

2 3 4 4 5 5 15

7 items of data $\Rightarrow \frac{7+1}{4} = 2$

LQ is 2nd item from the left which is 3 and UQ is 2nd item from the right which is 5

$\therefore$ IQR = 2

(f) Sentence A is predicted by the IQR to be harder to read.

(g) Number of words in sentence.
Average (mean) word length.
Grammatical structure of sentence.
If words are technical, or scientific or otherwise specialist in some way.