

Assignment ⑤

$$\text{Q). } \{-8, -1, 2, 4, 5, 6, 8, 15, 20, 120\}$$

find outlier from this dataset

using 5 Number Summary

draw box plot

A) Step ① :- Sort the dataset →
Already sorted.

Step ② :- Q_1 , Q_3 & IQR. Lower fence
higher fence.

$$Q_1 = 25 \times (n+1)$$

$$= \frac{25}{100} \times 11 = \frac{11}{4} = 2.75^{\text{th}} \text{ Index}$$

$$= \frac{1+2}{2} = 1.5$$

$$Q_3(75\%) = \frac{75}{100} \times 11 = \frac{33}{4} = 8.25^{\text{th}} \text{ Index}$$

$$= \frac{15+20}{2} = \frac{35}{2} = 17.5$$

$$= 17.5$$

$$\text{IQR} = Q_3 - Q_1$$

$$= 17.5 - 1.5$$

$$= 16.0$$

$$\text{Lower fence} = Q_1 + 1.5(\text{IQR})$$

$$= 1.5 + (1.5 \times 16)$$

$$= 1.5 + 24$$

$$= 25.5$$

$$\text{Higher fence} = Q_3 + 1.5(\text{IQR})$$

$$= 17.5 + (1.5 \times 16)$$

$$= 17.5 + 24$$

$$= 41.5$$

(lower fence)
-22.5

(higher fence)
41.5

∴ element, which is not present
in this range (lower - higher)
will be treated as an
outlier.

∴ 120 is outlier.

$$\text{Minimum} = -8$$

$$Q_1 = 1.5$$

$$\text{Median} = 6+5/2 = 5.5$$

$$Q_3 = 17.5$$

$$\text{Maximum} = 20 \text{ (after removing outlier)}$$

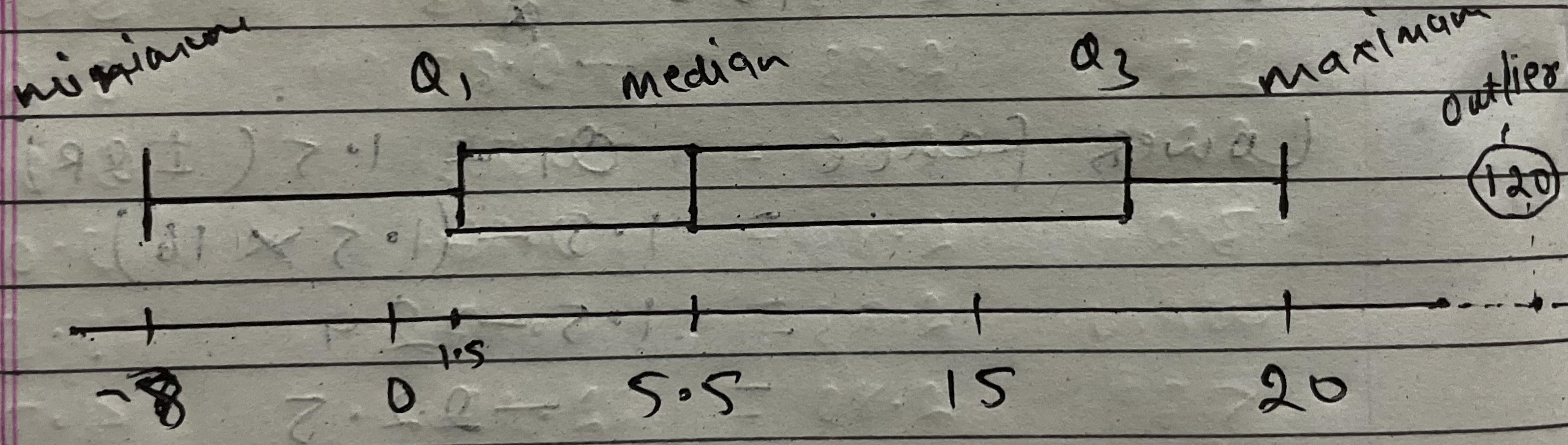
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box plot — $Q_1 - Q_3 = 90$

$2.1 - 2.51 =$

$0.31 - 0.31 =$



$(Q_1 + Q_3) + 1.5 = \text{outlier}$

$(2.1 + 2.51) + 1.5 =$

5.11