

Stats 1 Answers

1)

Median = middle value $\Rightarrow b = 11$

(A1)

$$\text{Mean} = \frac{a+b+c}{3} = \frac{a+11+c}{3} = 9 \Rightarrow a+11+c = 27$$

(M1)

$$\Rightarrow a+c = 16$$

(A1)

Range = $c - a = 10$

(M1)(A1)

Solving equations simultaneously gives $a = 3$

(A1)

(C6)

[6 marks]

2)

x	f	$\sum f$
4	2	2
5	5	7
6	4	11
7	3	14
8	4	18
10	2	20
12	1	21

(a) $m = 6$

(A2)

(C2)

(b) $Q_1 = 5$

(A2)

(C2)

(c) $Q_3 = 8$

(A1)

IQR = $8 - 5$

(M1)

= 3 (accept $5 - 8$ or $[5, 8]$)

(C2)

3)

(a) Mean = $\frac{\sum fx}{\sum f}$

$$\sum fx = (1)(0) + (2)(4) + (3)(6) + (4)(k) + (5)(8) + (6)(6) + (7)(6)$$

(A1)

$$\sum f = k + 30$$

(A1)

Using mean $4.6 = \frac{144 + 4k}{k + 30}$

(M1)

$$4.6k + 138 = 144 + 4k$$

(A1)

$$0.6k = 6$$

$$k = 10$$

(A1)

(C5)

(b) Mode = 4 (accept 5, if $k < 8$)

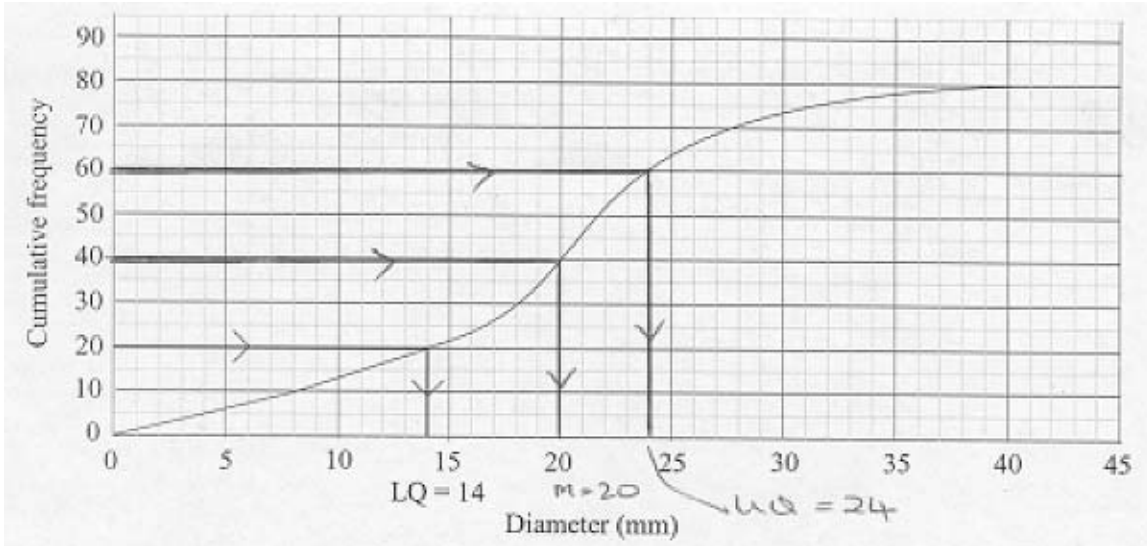
(A1)

(C1)

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4)

QUESTION 1



- (a) (i) Correct lines drawn on graph, median = 20 A1 C1
A1 C1
- (ii) Correct lines drawn on graph, UQ = Q_3 = 24 A1 C1
A1 C1
- (b) IQR = $Q_3 - Q_1$ (or UQ - LQ) (M1)
= 10 (accept 14 to 24) A1 C2

Note: Accept 14 to 24, 24 to 14, 14 - 24 or 24 - 14 .

5)

(a)

Mark (x)	$0 \leq x < 20$	$20 \leq x < 40$	$40 \leq x < 60$	$60 \leq x < 80$	$80 \leq x < 100$
Number of Students	22	50 (± 1)	66 (± 1)	42 (± 1)	20

(A1)(A1)(A1) (C3)

- (b) 40th Percentile \Rightarrow 80th student fails, (mark 42 %) (M2)
Pass mark 43 % (Accept mark > 42 .) (A1) (C3)

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6)

(a)

Age range	Frequency	Mid-interval value
$0 \leq \text{age} < 20$	40	10
$20 \leq \text{age} < 40$	70	30
$40 \leq \text{age} < 60$	100	50
$60 \leq \text{age} < 80$	50	70
$80 \leq \text{age} \leq 100$	10	90

AIAI

N2

(b) For attempting to find $\sum f x$

(MI)

Correct substitution

(AI)

e.g. $40 \times 10 + \dots + 10 \times 90 = 11900$

For dividing by 270

(MI)

e.g. $\frac{11900}{270}$

Mean = 44.1

AI

N4

7)

(a) 3

AI

N1

(b) 6

A2

N2

(c) Recognising the link between 6 and the upper quartile

(MI)

e.g. 25 % scored greater than 6,

0.25×32

(AI)

8

AI

N3

8)

(a) (i) $m = 165$

AI

N1

(ii) Lower quartile (1st quarter) = 160

(AI)

Upper quartile (3rd quarter) = 170

(AI)

IQR = 10

AI

N3

(b) Recognize the need to use the 40th percentile, or 48th student

(MI)

e.g. a horizontal line through (0, 48)

$a = 163$

AI

N2

9)

(a) A = 18, B = 19, C = 23, D = 31, E = 36

AIAIAIAIAI

N5

(b) IQR = 12

AI

N1