

Topic 2 Part 4 [47 marks]

1a. [1 mark]

Markscheme

$45 \leq t < 60$ (A1)

[1 mark]

Examiners report

Many candidates who had survived the previous two unit penalties, fell here with omission of units for the mean and standard deviation. The modal group was answered well. Part (b), finding the mean and standard deviation by GDC, was answered very poorly. Most did put the midpoints in one list and the frequencies in a second list but then either used the 2-Var stats button or 1-var stats button but only named L1 instead of L1, L2. Candidates who showed midpoints in their working did at least score a method mark.

1b. [3 marks]

Markscheme

Unit penalty (UP) is applicable in question part (i)(b) **only**.

(UP) 42.4 minutes (G2)

21.6 minutes (G1)

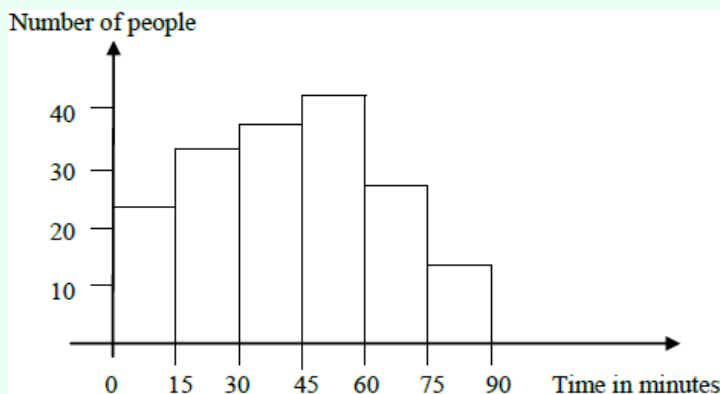
[3 marks]

Examiners report

Many candidates who had survived the previous two unit penalties, fell here with omission of units for the mean and standard deviation. The modal group was answered well. Part (b), finding the mean and standard deviation by GDC, was answered very poorly. Most did put the midpoints in one list and the frequencies in a second list but then either used the 2-Var stats button or 1-var stats button but only named L1 instead of L1, L2. Candidates who showed midpoints in their working did at least score a method mark.

1c. [4 marks]

Markscheme



(A4)

[4 marks]

Examiners report

Many candidates who had survived the previous two unit penalties, fell here with omission of units for the mean and standard deviation. The modal group was answered well. Part (b), finding the mean and standard deviation by GDC, was answered very poorly. Most did put the midpoints in one list and the frequencies in a second list but then either used the 2-Var stats button or 1-var stats button but only named L1 instead of L1, L2. Candidates who showed midpoints in their working did at least score a method mark.

1d.

[3 marks]

Markscheme

	Drama	Comedy	Film	News
Males	58	119	157	52
Females	86	98	120	61

(M1)(M1)(A1)

[3 marks]

Examiners report

The chi-squared question was answered well by the majority of candidates and almost all found the chi-squared statistic correctly by GDC, though many could not look up the correct critical value.

1e.

[1 mark]

Markscheme

H_0 : favourite TV programme is independent of gender or no association between favourite TV programme and gender

H_1 : favourite TV programme is dependent on gender (*must have both*) (A1)

[1 mark]

Examiners report

The chi-squared question was answered well by the majority of candidates and almost all found the chi-squared statistic correctly by GDC, though many could not look up the correct critical value.

1f.

[2 marks]

Markscheme

$$\frac{365 \times 217}{751} \quad (M1)$$

$$= 105 \quad (A1)(ft)(G2)$$

[2 marks]

Examiners report

The chi-squared question was answered well by the majority of candidates and almost all found the chi-squared statistic correctly by GDC, though many could not look up the correct critical value.

1g.

[3 marks]

Markscheme

$$12.6 \text{ (accept 12.558)} \quad (G3)$$

[3 marks]

Examiners report

The chi-squared question was answered well by the majority of candidates and almost all found the chi-squared statistic correctly by GDC, though many could not look up the correct critical value.

1h. [3 marks]

Markscheme

(i) 3 (AI)

(ii) reject H_0 or equivalent statement (e.g. accept H_1) (AI)(ft)

[3 marks]

Examiners report

The chi-squared question was answered well by the majority of candidates and almost all found the chi-squared statistic correctly by GDC, though many could not look up the correct critical value.

2a. [1 mark]

Markscheme

47.5 (cm) (AI)

Examiners report

[N/A]

2b. [4 marks]

Markscheme

(i)

45.85 (cm) (G2)

Note: Accept

45.9 .

(ii)

17.1 (17.0888...) (G1)

(iii)

47.5 (cm) (G1)

Examiners report

[N/A]

2c. [2 marks]

Markscheme

$62.5 - 32.5 = 30 \quad (M1)(A1)(G2)$

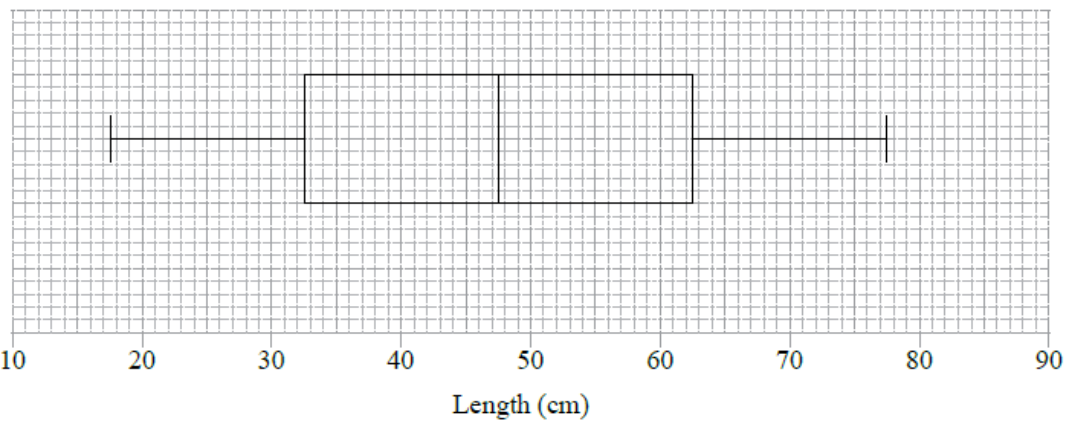
Note: Award *(M1)* for correct quartiles seen.

Examiners report

[N/A]

2d. [4 marks]

Markscheme



(A1) for correct label and scale
(A1)(ft) for correct median
(A1)(ft) for correct quartiles and box
(A1) for endpoints at 17.5 and 77.5 joined to box by straight lines $(A1)(A1)(ft)(A1)(ft)(A1)$

Notes: The final *(A1)* is lost if the lines go through the box. Follow through from their parts (b) and (c).

Examiners report

[N/A]

2e. [2 marks]

Markscheme

$\varepsilon = \left| \frac{43 - 45.85}{45.85} \right| \times 100\% \quad (M1)$

Note: Award *(M1)* for their correct substitution in % error formula.

$= 6.22\% \quad (6.21592\dots) \quad (A1)(ft)(G2)$

Notes: Follow through from their answer to part (b)(i). Accept 6.32% with use of 45.9 .

Examiners report

[N/A]

3a. [2 marks]

Markscheme

(i) 19.2 (GI)

(ii) 1.45 (GI)

[2 marks]

Examiners report

(i) Generally well done but many lost an AP here

(ii) Only correct if the candidate knew how to use their GDC and even then several gave the wrong standard deviation.

3b. [1 mark]

Markscheme

$r = 0.942$ (GI)

[1 mark]

Examiners report

Again, only correct if the candidate could use their GDC. Many answers given were greater than 1 and the candidates did not see anything wrong with this.

3c. [2 marks]

Markscheme

Strong, positive correlation. (AI)(ft)(AI)(ft)

[2 marks]

Examiners report

Many received a ft mark for this part. The word “positive” was often omitted.

3d. [2 marks]

Markscheme

(i)

$d = 11.5$ (GI)

(ii)

$n = 11.5 \times 19.6 - 100$

$= 125$ (accept

126) (AI)(ft)

Note: Answer must be a whole number.

[2 marks]

Examiners report

- (i) Most candidates substituted the first set of points into the equation instead of finding the regression line on their GDC.
- (ii) Most managed to score a ft point here. But some did not give their answer as a whole number.

3e.

[1 mark]

Markscheme

It is unreliable to extrapolate outside the values given (outlier). **(R1)**

[1 mark]

Examiners report

Not many candidates mentioned the idea of an outlier. Most came up with some creative reason, albeit wrong, as to why the answer might be unreliable. Some of them made interesting reading.

4a.

[1 mark]

Markscheme

Unit penalty (UP) is applicable where indicated in the left hand column.

(UP)

26cm **(A1)** **(C1)**

[1 mark]

Examiners report

This was done well by most candidates. Some did not realise what the inter-quartile range was, and just quoted the quartiles.

4b.

[2 marks]

Markscheme

Unit penalty (UP) is applicable where indicated in the left hand column.

33 – 19 for identifying correct quartiles. **(A1)**

(UP)

= 14 cm . **(A1)(ft)** **(C2)**

Note: (ft) on their quartiles.

[2 marks]

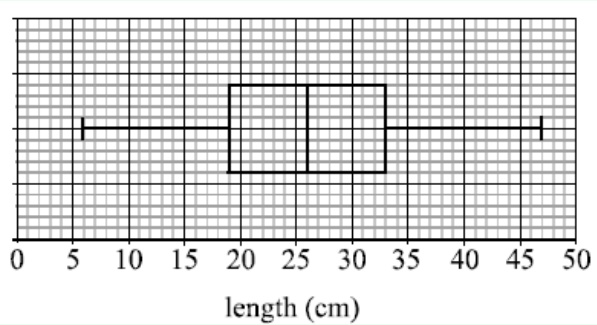
Examiners report

This was done well by most candidates. Some did not realise what the inter-quartile range was, and just quoted the quartiles.

4c.

[3 marks]

Markscheme



correct median (A1)(ft)
correct quartiles and box (A1)(ft)
endpoints at
6 and
47, joined to box by straight lines. (A1) (C3)

[3 marks]

Examiners report

This was done well by most candidates. Some did not realise what the inter-quartile range was, and just quoted the quartiles.