

Topic 14 Statistics 2 (Post-TT) [37] MARKSCHEME

1.

C1	C1 for frequencies used for heights or areas not proportional to frequencies
C1	C1 for 2 nd mistake - final bar of wrong width

2.

(a) $30 - 18$ M1

Using 4 1/2 method correctly

$= 12$ A1

$\Rightarrow 12.5$

(b) $(40 - 10)$ or $(40 - 28)$ or 30 or 12 M1

Or 10 and 28 seen or 38 seen in part (b)

$(40 - 10) + (40 - 28)$ or $30 + 12$ M1

Or $80 - (10 + 28)$

$= 42$ A1

[5]

3.

110 squares (little) M1

or 1 square = 0.4

or 10 squares = 4

Alternative method

4.4 cm^2 4, 4, 36 seen

or $1 \text{ cm}^2 = 10$ members

120 squares (≥ 55) M1

$4.8 \text{ cm}^2 \geq 55$ 32, 8, 8 seen

$\frac{120}{110} \times 44$ or 120×0.4 110 M1

or $\frac{120}{10} \times 4$

$\frac{4.8}{4.4}$ or 4.8×10 '4.4'

$= 48$ A1

$= 48$

[4]

4.			
(a)	Median at 28 $\pm \frac{1}{2}$ square <i>Clear vertical line drawn</i>	B1	
	Quartiles at 23 and 33 and box $\pm \frac{1}{2}$ square	B1	
	Whiskers at 16 and 40 and lines $\pm \frac{1}{2}$ square	B1	
(b)	Median is lower in June ($20 < 28$) Range is higher in June ($34 < 24$) January is symmetrical and June is skewed <i>Do not need to see value</i> <i>Any 2 differences</i>	B1 B1 B1	
			[5]
5.			
(a)	frequency density = freq \div width 0.13, 0.5, 0.1 Plotting heights and widths correctly Vertical scale and label	M1 A1 B1	
(b)	$7 + 15$ $= 22$	M1 A1 cao	
			[5]
6.			
(a)	Any value from 55 to 57 inclusive	B1	
(b)	$27 - 21$ <i>Attempt at correctly locating and subtracting quartiles</i> <i>Misreading scales is acceptable for M1 if evidence of reading off correctly and subtracting</i>	M1	
	$= 6 \pm 0.4$ <i>Must not come from incorrect values</i>	A1	
			[3]
7.			
(a)	Frequency density \times class width seen 20, 34, 28, 60 <i>2 or 3 correct A1</i>	M1 A2	
(b)	$\frac{1}{3} \times$ their "total" (= "74") <i>Not $\frac{1}{3}$ of 222 alone</i>	M1	
	$\frac{"74" - "60"}{"28"} = \frac{1}{2}$ of 10 minutes <i>Correct linear interpolation of T</i>	M1	
	25 minutes <i>Watch for incorrect working leading to 25</i>	A1	
			[6]

8.

(a) (i) 8, 38, 62, 75, 80 B1

Rest of question must be from an increasing cumulative frequency diagram (not linear)

(ii) Upper class boundaries used B1

$$\pm \frac{1}{2} \text{ square}$$

Their correct heights B1 ft

$$\pm \frac{1}{2} \text{ square}$$

Ignore (20, 0)

$$\text{Within class boundaries } \pm \frac{1}{2} \text{ sq}$$

Straight lines or smooth curve connective points B1

$$\pm \frac{1}{2} \text{ square}$$

Ignore curve before (30, 8)

(b) Locating and subtracting quartiles M1
ie "49" – "35"

If no working check graph

From 60, 20 or their quartiles

$$\text{eg } 17.5, 52.5 \text{ or } \frac{n+1}{4} \text{ methods}$$

= "14" A1 ft

(c) 50 B1 ft

$$\pm \frac{1}{2} \text{ square of reading at 45}$$

ft or correct (use table)

[7]