# IGCSE Cumulative Frequency Answers 

0 min
0 marks
1.

(a) $160<h \leq 170$
(b) (i) Mid values $125,135,145,155,165,175$, 185, 195
Allow 1 slip
$(15 \times 125+24 \times 135+36 \times 145+45$
$\times 155+50 \times 165+43 \times 175+37 \times 185$
$+20 \times 195$ )
Dep on mid values $\pm 0.5$, allow 1 slip in midvalues
(43830)
$\div 270$
Dep on previous method
162 or better
(162.333..) www4
(ii) Mid-values are an estimate of each interval o.e.
e.g. exact values not given
(c) $p=15, q=39, r=75$

B1 for 2 correct.
If no labels, take in order given
(d) Correct scales S1

9 points correctly plotted $\mathrm{ft} \quad \mathrm{P} 3 \mathrm{ft}$
P 2 ft for 7 or 8 correct acc. 1 mm
P1 ft for 5 or 6 correct
Curve or line through 9 points
Dep on ' $S$ ' shape within $1 / 2$ small square of points
(e) (i) 162 to 164
(ii) 176 to 178 ..... B1
(iii) 28 to 30 ..... B1
(iv) 167.5 to 168.5 ..... B1
(f) Uses 240 or 241 on cumul, freq. axis ..... M1
e.g. annotates graph or shows values inworking
186.5 to 188 ..... A1
ww2
2. (i) $\mathbf{1 4}$ to $\mathbf{1 4 . 2}$ c.a.o. B1
(ii) 6 c.a.o. B1
(iii) 28 c.a.o. B1
$\begin{array}{lll}\text { (iv) } & \mathbf{2 2} & \text { B1 ft } \\ \text { their (iii) - their (ii) dep on both values being } & \\ \text { less than } 50 \text { and (iii) is greater than (ii) } & \end{array}$
(v) 31.5 to $32 \quad$ B1
(vi) $\mathbf{6 0}$ c.a.o. B1
3. (a) $1.5<x \leq 2$
(b) $(8 \times 0.25+27 \times 0.75+45 \times 1.25+\ldots \ldots \ldots$ M1
For mid-values (allow two slips)
$\ldots . . . . . . .3 \times 3.75$ ) M1
For $\Sigma f x$ (allow two slips) dep on first M1, or mid-values $\pm 0.05$
their $345.5 \div 200 \quad$ M1
for $\div 200$ dep on second M1
$1.7275,1.727,1.728$ or 1.73 cso A1
www 4
(c) $8,35,80,130,169,190,197,200$ B2
If B0, allow M1 for clear attempt to add accumulatively
(d) axes correct scale

Not reversed and must reach 200
vertically, even if not labelled
8 points plotted ft part (c)
$(0.5,8),(1,35),(1.5,80),(2,130),(2.5$, 169), $(3,190),(3.5,197)$, $(4,200)$
dep on at least M1 in (c)
8 points from their values
For $x$-values (upper boundary values),
points must touch grid line For
$y$-values, even, must touch grid line, odd must be inside square.
P 2 for 6 or 7 points ft
P1 for 4 or 5 points ft
curve (or polygon) either correct or through 8 points and correct shape
Allow 1 mm tolerance
Ignore any bars drawn if they do not compromise the points and graph
(e) (i) $1.65-1.75 \quad$ B1
(ii) 1.5 B1
$\begin{array}{lll}\text { (iii) } & 23-29 \text { integers only } & \text { B2 } \\ \text { If B0 allow SC1 for non-integer in } & \\ \text { correct range, or } 172-177 \text { seen (may } & \\ \text { be written on graph) } & \end{array}$
(f) $54-56.5$

SC1 for figures 108-113 or 87-92
Accept if written on graph
www 2
4. (a) 3.365 to $3.375 \quad 1$

Inclusive
$\begin{array}{ll}\text { (b) } & 0.26 \text { to } 0.27 \\ \text { M1 } 3.52 \text { and } 3.25 \text { to } 3.26 \text { seen (even on diagram) } & 2^{*}\end{array}$
(c) 55,56 or $57 \quad 1$
5. (a) (i) $\mathbf{3 6}(36.0-36.4) \quad$ B1
(ii) $50(50.0-50.4) \quad$ B1
(iii) 29 (28.6-29.4) B1
$\begin{array}{ll}\text { (iv) } \mathbf{2 0} & \text { B2 }\end{array}$
If $\mathrm{B} 0, \mathrm{SC} 1$ for 19 or 21 or 180 seen
(b)
(i) $p=16, q=4$
B1, B1
If B0, SC1 if $\boldsymbol{p}$ and $\boldsymbol{q}$ add up to 20
(ii) $\left(\frac{7220}{200}\right)=\mathbf{3 6 . 1}$ cso www4 $\quad$ B4

Answer 36 scores 4 marks after some correct working shown with no incorrect working seen
M1 for using mid-values at least four correct from 5, 15, 25, 35, 45, 55, 65, 75 M1 (dep on correct mid values or midvalues $\pm 0.5$ ) for $\Sigma f x$ (at least four correct products) M1 (dependent on $2^{\text {nd }} \mathrm{M} 1$ ) for dividing sum by 200 or $180+$ their $p+$ their $q$
(c) $\mathbf{8 . 2}(8.19-8.20), \mathbf{1 1 . 4}, \mathbf{5}(5.00-5.01)$ B4
B3 for 2 correct or $\mathbf{B 2}$ for 1 correct
After B0, SC2 for fd's $2.7(3 \ldots)$ o.e., 3.8 o.e, 1.6(6...) o.e.
or SC1 for 2 of fd's correct
6. (a) (i) $\mathbf{1 7 4}$ to $\mathbf{1 7 4 . 2 5}(\mathrm{cm})$ c.a.o. B1
(ii) $167(\mathrm{~cm})$ c.a.o. B1
(iii) $\mathbf{1 2 ( c m )}$ c.a.o. B1
$\begin{array}{lll}\text { (iv) } & \mathbf{3 7} \text { c.a.o. } & \text { B2 } \\ \text { If } B 0, B 1 \text { for } 63 \text { seen in working space } & \end{array}$
(b) (i) $\mathbf{1 0}, \mathbf{2 5}$ B1
s.o.i. allow 1 slip
(their $10 \times 155+$ their $25 \times 165+47 \times 175$
$+18 \times 185$ )
Use of $\Sigma f x$ where the $x$ 's are in/on their intervals (allow one more slip) (17 230)
$\div 100$
M1
(dependent on second M) $\div 100$
$\mathbf{1 7 2}$ or $\mathbf{1 7 2 . 3 ( c m ) ~ c . a . o . ~ w w w ~} 4$
A1

