Question Number	Scheme	Marks
3 (a)	Width = **2.5 (cm)**	B1
	1.5 cm^2 for freq of 5 so $6\times1.5 = 9$ cm^2 for freq of 30 or fd $=\frac{5}{3}$ $w\times h = 9$	M1
	So $h = 9 \div 2.5$ or $6\div\frac{5}{3}$ = **3.6 (cm)**	A1
		(3)
(b)	$Q_2 = [12] + \frac{16}{25}\times 3$ allow use of $(n+1)$ giving $[12]+\frac{16.5}{25}\times 3$	M1
	$= 13.92 =$ awrt **13.9**	A1
		(2)
(c)(i)	$\sum fx = 5\times6.5 + 13\times9 + 16\times11 + 25\times13.5 + 30\times17.5 + 11\times24 = 1452$	M1
	$\bar{x} = 14.52 =$ awrt **14.5**	A1
		(2)
(ii)	$\sum fx^2 = 6.5^2\times5 + 9^2\times13 + 11^2\times16 + 13.5^2\times25 + 17.5^2\times30 + 24^2\times11 = 23\,280$	M1
	$\sigma_x = \sqrt{\frac{"23280"}{100} - ("14.52")^2}$ or $\sqrt{21.9696}$	M1
	$\sigma_x = 4.687\ldots =$ awrt **4.69**	A1
		(3)
(d)	$\frac{1}{2}\times13 + 16 + 25 + 30 + \frac{1}{4}\times11$	M1
	So proportion is 80.25 % or 0.8025 awrt **0.803**	A1
		(2)
(e)	Profit = $2.2\times"0.8025" + 0.8\times\frac{0.75\times11}{100} - 1.2\times"\left(1-\left[0.8025+\frac{0.75\times11}{100}\right]\right)"$	M1
	$= 1.6935$ awrt **1.7 (p)**	A1 (2)
	Notes	**[14 marks]**

(a)
B1 for width = 2.5 (cm)
M1 for sight of 9 cm^2 or $w\times h = 9$ or fd $=\frac{5}{3}$ (o.e.)
A1 for height = 3.6 (cm)

(b)
M1 for $\frac{16}{25}\times3$ or $\frac{9}{25}\times3$ or $\frac{m-12}{15-m}=\frac{16}{9}$
For any correct equation leading to Q_2 or correct fraction as part of Q_2
A1 for awrt 13.9 (use of $(n+1)$ giving 13.98 = awrt 14.0)

(c)(i)
M1 for attempt at Σfx with at least 3 correct terms or $900 < \Sigma fx < 1800$
for info $\Sigma fx = 32.5 + 117 + 176 + 337.5 + 525 + 264$
A1 for awrt 14.5 (correct answer only 2/2)

(ii)
1st M1 for attempt at Σfx^2 with at least 3 correct terms or $20\,000 < \Sigma fx^2 < 26\,000$
for info $\Sigma fx^2 = 211.25 + 1053 + 1936 + 4556.25 + 9187.5 + 6336$
2nd M1 for a correct expression including $\sqrt{}$ (ft their Σfx^2 if clear it is Σfx^2) Do not allow $(\Sigma fx)^2$ for Σfx^2
A1 for awrt 4.69 (allow s = 4.7107… awrt 4.71) (correct answer only 3/3)

(d)
M1 for attempt at a correct expression (allow 1 error or omission) eg $100-\left(5+\frac{13}{2}\right)-\frac{33}{4}$
A1 for awrt 80.3% or 0.803

(e)
M1 for a correct expression ft their 0.8025 o.e. eg
$\left[2.2\times(100-11.5-8.25)+0.8\times8.25-1.2\times11.5\right]\div100$
Condone $\left[2.2\times"80"+0.8\times(8)-1.2\times(12)\right]\div100$
A1 for awrt 1.7 Allow £0.017 (this must have units)