Question	Scheme	
5 (a)	<table><tr><th>Speed (km/h)</th><th>Number of cars</th><th>fd</th></tr><tr><td>20 ,, $x < 25$</td><td>54</td><td>10.8</td></tr><tr><td>25 ,, $x < 30$</td><td>90</td><td>18</td></tr><tr><td>30 ,, $x < 40$</td><td>60</td><td>6</td></tr></table>	M1
	$90x = 54 \times 10$ or $18x = 10.8 \times 10$	M1
	height of 2nd tallest bar = 6 (cm)	A1
		(3)
(b)	$30 + 15 + \frac{2}{15} \times 6$ = 45.8 , therefore **<u>46</u>** cars.	M1, A1
		(2)
(c)	$[Q_2 = 25 +] \frac{58.5}{90} \times 5$	M1
	= 28.25 awrt **<u>28.3</u>**	A1
		(2)
(d)(i)	$[Q_3 = 30 +] \frac{24.75}{60} \times 10$	M1
	= 34.125 awrt **<u>34.1–34.3</u>**	A1
(ii)	"34.125" – 25.14	M1
	= 8.99 awrt **<u>9.0 – 9.1</u>**	A1
		(4)
(e)	$Q_2 - Q_1 (3.11) < Q_3 - Q_2 (5.875)$	M1
	therefore, positively skewed	A1
		(2)
(f)	The suggestion is **not suitable** as part (e) shows the data is **skewed/not symmetric**.	B1ft
		(1)
		Total 14

(a)	M1 for evidence of fd = f/w <u>or</u> for identifying/using 25 ,, $x < 30$ as the tallest bar <u>or</u> 20 ,, $x < 25$ as the 2nd tallest bar <u>or</u> an answer of awrt 3.33
	M1 identifying/using 25 ,, $x < 30$ as the tallest bar **and** 20 ,, $x < 25$ as the 2nd tallest bar. Implied by correct working seen or correct answer. Allow equivalent ratio equation.
	A1 6 cao Be careful the f.d. of the 3rd bar is 6, so 60 ÷ 10 = 6 on its own is M1M0A0. Answer only scores M1M0A0
(b)	M1 for 30 + 15 + k where 0.5 ,, k ,, 1 (implied by 45.8) or $k + 219 - (54 + 90 + 30)$
	A1cao 45 or 46 (must be an integer). Correct answer only scores 2 out of 2.
(c)	M1 for $\frac{58.5}{90} \times 5$ or $\frac{m - 25}{112.5 - 54} = \frac{30 - 25}{144 - 54}$ or $\frac{31.5}{90} \times 5$ or $\frac{30 - m}{144 - 112.5} = \frac{5}{90}$ Allow use of 113 instead of 112.5
	A1 for awrt 28.3
(d)(i)	M1 for $\frac{24.75}{60} \times 10$ or $\frac{Q_3 - 30}{168.75 - 144} = \frac{40 - 30}{204 - 144}$ or $\frac{35.25}{60} \times 10$ or $\frac{40 - m}{204 - 168.75} = \frac{10}{60}$ Allow use of any value from 168.75 to 169.5
	A1 awrt 34.1 to awrt 34.3 an answer in this range scores 2 out of 2 unless obvious incorrect working
(ii)	M1 for "their (d)(i)" substituted into "Q_3" – awrt 25.1
	A1 awrt 9.0 or awrt 9.1 Allow 9 if correct working seen.
(e)	M1 A correct comparison which must follow from their figures. Must have 25.14 < " Q_2"< "Q_3"
	A1 dep on M1 **and** dep on their figures being consistent with positive skew. Negative skew is A0. Allow calculation of estimated mean awrt 30.6 > "28.3" so +ve for M1A1
(f)	B1ft For not suitable **and** a correct supporting reason which is consistent with "their (e)"