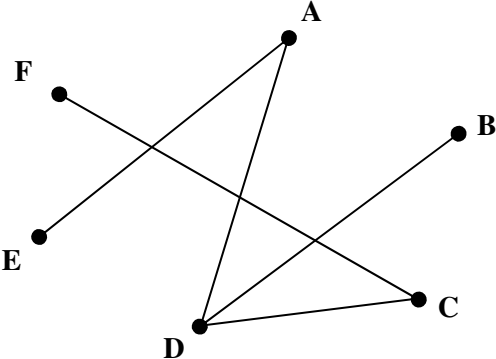


Question Number	Scheme	Marks
Q1 (a) (b) (c)	AD, AE, DB; DC, CF  Weight 595 (km)	M1 A1; A1 (3) B1 (1) B1 (1) [5]
Q2 (a) (b) (c)	$\frac{230}{60} = 3.8\dot{3} \text{ so 4 needed}$ Bin 1: 32 17 9 Bin 2: 45 12 Bin 3: 23 28 Bin 4: 38 16 Bin 5: 10 e.g. Bin 1: 32 28 Bin 2: 38 12 10 Bin 3: 45 9 Bin 4: 23 17 16	M1 A1 (2) M1 A1 A1 A1 (4) M1 A1 A1 (3) [9]

Question Number	Scheme	Marks
Q3		
(a)	$H - 2 = M - 5 = R - 4$ change status to give	M1 A1
(b)	$C = 3$ (E unmatched) $H = 2$ $M = 5$ $R = 4$ $S = 1$	A1 (3)
(c)	e.g. C is the only person who can do 3 and the only person who can do 6	B1 (1)
	e.g. $E - 5 = M - 2 = H - 1 = S - 3 = C - 6$ change status to give	M1 A1
	$C = 6$ $E = 5$ $H = 1$ $M = 2$ $R = 4$ $S = 3$	A1 (3)
		[7]

Question Number	Scheme	Marks																																																																		
Q4	<table><tr><td>M</td><td>J</td><td>E</td><td>K</td><td>H</td><td>B</td><td>L</td><td>P</td><td>N</td><td>D</td><td>B</td></tr><tr><td>B</td><td>M</td><td>J</td><td>E</td><td>K</td><td>H</td><td>L</td><td>P</td><td>N</td><td>D</td><td>H</td></tr><tr><td>B</td><td>E</td><td>D</td><td>H</td><td>M</td><td>J</td><td>K</td><td>L</td><td>P</td><td>N</td><td>D L</td></tr><tr><td>B</td><td>D</td><td>E</td><td>H</td><td>J</td><td>K</td><td>L</td><td>M</td><td>P</td><td>N</td><td>(E) K P</td></tr><tr><td>B</td><td>D</td><td>E</td><td>H</td><td>J</td><td>K</td><td>L</td><td>M</td><td>N</td><td>P</td><td>(J) N</td></tr><tr><td>B</td><td>D</td><td>E</td><td>H</td><td>J</td><td>K</td><td>L</td><td>M</td><td>N</td><td>P</td><td>(M)</td></tr></table> Sort completed $\left[\frac{1+10}{2} \right] = 6$ Katie reject left $\left[\frac{7+10}{2} \right] = 9$ Natsuko reject right $\left[\frac{7+8}{2} \right] = 8$ Miri reject right 7 = Louis name found	M	J	E	K	H	B	L	P	N	D	B	B	M	J	E	K	H	L	P	N	D	H	B	E	D	H	M	J	K	L	P	N	D L	B	D	E	H	J	K	L	M	P	N	(E) K P	B	D	E	H	J	K	L	M	N	P	(J) N	B	D	E	H	J	K	L	M	N	P	(M)	M1 1A1 2A1ft 3A1ft 4A1 (5) M1 1A1 2A1ft 3A1 (4) [9]
M	J	E	K	H	B	L	P	N	D	B																																																										
B	M	J	E	K	H	L	P	N	D	H																																																										
B	E	D	H	M	J	K	L	P	N	D L																																																										
B	D	E	H	J	K	L	M	P	N	(E) K P																																																										
B	D	E	H	J	K	L	M	N	P	(J) N																																																										
B	D	E	H	J	K	L	M	N	P	(M)																																																										
Q5 (a)	CD + EG = 45 + 38 = 83 CE + DG = 39 + 43 = 82 ← CG + DE = 65 + 35 = 100 Repeat CE and DG Length 625 + 82 = 707 (m) DE (or 35) is the smallest So finish at C. New route 625 + 35 = 660 (m)	M1 1A1 2A1 3A1 4A1ft 5A1ft (6) M1 A1ft A1ft=1B1 (3) [9]																																																																		

Question Number	Scheme	Marks
Q6		
(a)	Route: A E H I Shortest distance from A to G is 28 km	M1 1A1 2A1ft 3A1ft 4A1ft 5A1 B1ft [7]

Question Number	Scheme	Marks
Q7 (a)	$7x + 5y \leq 350$	M1 A1 (2)
(b)	$y \leq 20$ e.g. make at most 20 small baskets $y \leq 4x$ e.g. the number of small (y) baskets is at most 4 times the number of large baskets (x). {E.g if $y = 40$, $x = 10, 11, 12$ etc. or if $x = 10$, $y = 40, 39, 38$ }	B1 B1 (2)
(c)	(see graph next page) Draw three lines correctly Label R	B3,2,1,0 B1 (4)
(d)	(P=) $2x + 3y$	B1 (1)
(e)	Profit line or point testing. $x = 35.7$ $y = 20$ precise point found. Need integers so optimal point in R is (35, 20); Profit (£)130	M1 A1 B1 B1;B1 (5)
		[14]

Question Number	Scheme	Marks
(c)	(Question 7 continued) The graph is plotted on a grid with the x-axis labeled 'x large' and the y-axis labeled 'y small'. The x-axis ranges from 0 to 70 with major grid lines every 10 units and minor grid lines every 2 units. The y-axis ranges from 0 to 70 with major grid lines every 10 units and minor grid lines every 2 units. The feasible region R is shaded and bounded by the following lines: $y = 4x$ (a straight line passing through (0,0) and (17.5, 70)) $y = 20$ (a horizontal line) $7x + 5y = 350$ (a straight line passing through (50, 0) and (0, 70)) A dashed line labeled 'Profit line' is also shown, passing through (0, 20) and (30, 0).	

Question Number	Scheme	Marks
Q8	(a) 	M1 A1 M1 A1 (4)
	(b) A C J L	B1 (1)
	(c) Total float for M = 56(ft) – 46 – 9 = 1 Total float for H = 47 – 12 – 21 = 14	M1 A1ft B1 (3)
	(d) 	M1 A1 M1,A1 (4)
	(e) 1pm day 16: C 1pm day 31: C F G H	B1ft B2ft,1ft,0 (3) [15]