Question Number	Scheme	Marks
8.(a)	Yes – it is a finite **sequence of edges**, with the **end vertex of one edge the start vertex of the next** and **no vertex appears more than once**. Or Yes – as it is **a walk** with **no vertex repeated.**	B1 B1 **(2)**
(b)	Possible pairings QS + RT (not possible as minimum 4 arcs) QR + ST (either 2 or 3 arcs) QT + RS (either 2 or 3 arcs)	B1
	QR using 2 arcs $(x + 8) + (2x + 1) < 4x + 4$ or $3x + 9 < 4x + 4$ or $3x + 34 < 4x + 29$ $x > 5$ RS using 2 arcs $(3x + 1) + (2x - 1) < 4x + 8$ or $5x < 4x + 8$ or $5x + 22 < 4x + 30$ $x < 8$	M1 A1 M1 A1
	$(5 < x < 8)$	**(5)**
(c)	$5x + 22 = 3x + 34$ or $21x + 257 = 19x + 269$ $x = 6$ Length = 383 (m)	M1 A1 A1
		(3)
		10 Marks

	Notes for Question 8
a1B1	Yes plus reason – must mention, or imply, sequence of edges and no vertex repeated, but be generous and give BOD, or mentions walk and indicates no vertex repeated
a2B1	CAO – must include the three statements in bold or both a walk and no vertex repeated
b1B1	**Ignore labelling (a), (b) and (c) and give credit wherever correct working is seen.** Considers 3 possible pairings of odd nodes Q, R, S and T (QS & RT may be seen crossed out as are 4 arcs minimum)
b1M1	Forms an inequality with QM + MR < QR
b1A1	CAO $x > 5$
b2M1	Forms an inequality with RP + PS < RS
b2A1	CAO $x < 8$ (note combined inequality not required)
c1M1	Forms an equation using the correct possible repeats, which may include network length. (Equation formed from RPS + QT = QMR + ST)
c1A1	CAO x
c2A1	CAO the length of the route