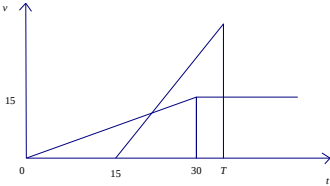
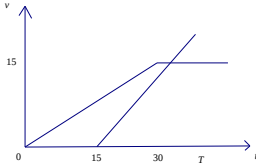


Question	Scheme	Marks	AOs
1(a)			
	One line correct	B1	3.4
	Condone Second line correct and with correct start relative to the first line and steeper gradient 	B1	1.1b
	Key values shown	B1	1.1b
		(3)	
1(b)	Equate distances	M1	3.4
	Car: $\frac{1}{2} \times 30 \times 15 + 15(T - 30)$	A1	1.1b
	Motorbike: $\frac{1}{2} \times (T - 15) \times \frac{3}{2} (T - 15) \left(= \frac{3}{4} (T - 15)^2 \right)$ $\Rightarrow \frac{3}{4} (T - 15)^2 = 15^2 + 15(T - 30)$	A1	1.1b
	$T^2 - 50T + 525 = 0$, $T = 35$	M1	1.1b
	Speed = $(35 - 15) \times 1.5$	M1	1.1b
	= 30 (m s ⁻¹)	A1	2.2a
		(6)	
	(9 marks)		

Notes:**1(a)**

B1

Either line correct

B1

Second line in correct position to the first and both continue until after the car reaches constant speed.

B1

15, 30, T and 15 shown**1(b)**

M1

Use the fact that to catch up they must both have travelled the same distances.

A1

One distance expressed correctly in terms of T

A1

Both distances correct. Correct equation in T in any equivalent form

M1

Create and solve a quadratic in T .

M1

Use their T to find the required speed.

A1

Correct only. If speed = 0 seen then it must be rejected.