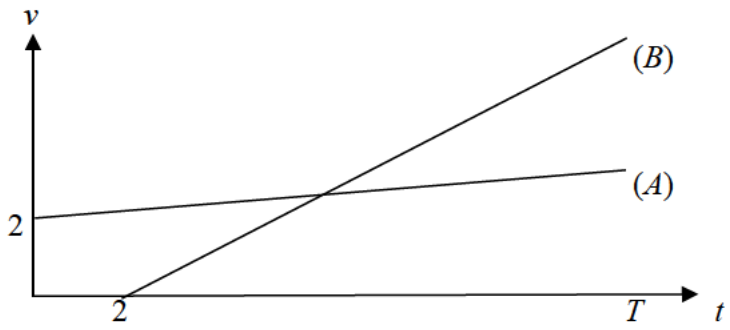
| Question | Scheme | Marks | AOs |
|---|---|---|---|
| 1(a) |  | B1 (*A*)<br>B1 (*B*) | 3.4<br>3.4 |
| | | **(2)** | |
| 1(b) | Lines must cross before time $T$ seconds, since area under each graph must be equal. | B1 | 2.4 |
| | | **(1)** | |
| 1(c) | Use equal speeds and *suvat* to set up an equation in $t$ only: $2+2t=6(t-2)$ | M1 | 3.1b |
| | $t=3.5$ oe | A1 | 1.1b |
| | | **(2)** | |
| 1(d) | Use equal areas and *suvat* to set up an equation in $T$ only | M1 | 2.1 |
| | $\frac{1}{2}T(2+(2+2T))=\frac{1}{2}(T-2)6(T-2)$<br>**OR**: $2T+\frac{1}{2}T\times 2T=\frac{1}{2}(T-2)6(T-2)$ | A1 | 1.1b |
| | $T=6$ only | A1 | 1.1b |
| | Solve the problem by substituting for $T$ in either expression for distance | M1 | 3.1b |
| | 48 (m) | A1 | 1.1b |
| | | **(5)** | |
| | | | **(10 marks)** |

**Notes:**

| | | |
|---|---|---|
| **1a** | B1 | Correct graph for *A* including 2 and *T* |
| | B1 | Correct graph for *B* including 2, intersecting the graph for *A*. |
| **1b** | B1 | Any equivalent appropriate statement |
| **1c** | M1 | Complete method to give equation in *t* only |
| | A1 | cao |

| | | |
|---|---|---|
| **1d** | M1 | Complete method using either areas with correct structure or *suvat* to give a quadratic in $T$ |
| | A1 | Correct unsimplified equation |
| | A1 | cao (A0 if they include $T = 1$) |
| | M1 | Must be substituting into a quadratic expression |
| | A1 | cao |