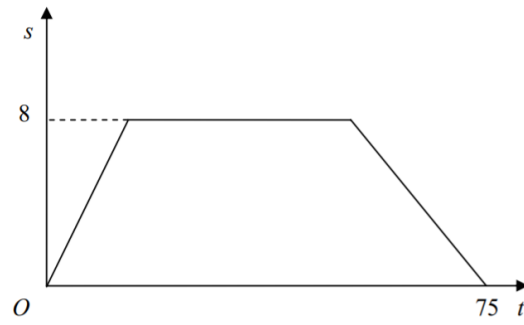


Solutions

1a.



First two line segments	M1
Third line segments	M1
8, 75	M1

1b.

$\frac{1}{2} \times 8 \times (T + 75)$	M1
$\frac{1}{2} \times 8 \times (T + 75) = 500$	M1
$4T + 300 = 500$	M1
$4T = 200$	M1
$T = 50 \text{ s}$	M1

Solutions

1a.

$\frac{10-8}{5} = 0.4$	M1
Therefore, $t = (2 - 0.4)$ $= 1.6\text{s}$	M1

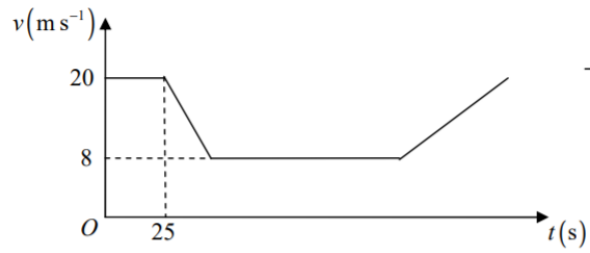
1b.

$S_B = \frac{1}{2} \times 8 \times 2$	M1
$S_A = 10 \times 1.6 + \frac{1}{2} \times (10 + 8) \times 0.4$	M1
$S_A = 19.6$	M1
$AB = 19.6 - 8 + 1$	M1
$AB = 12.6 \text{ m}$	M1



Solutions

1a.



First half correctly drawn	M1
Second half correctly drawn	M1
Points marked, 20, 8, 25	M1

1b.

$v = u + at$ $8 = 20 - 0.4t$	M1
$t = 30 \text{ s}$	M1

1c.

$1960 = (25 \times 20) + (30 \times 8) + \left(\frac{1}{2} \times 30 \times 12\right) + (60 \times 8) + (8 \times t) + \left(\frac{1}{2} \times t \times 12\right)$	M1 M1 M1
$1960 = 500 + 240 + 180 + 480 + 14t$	M1
$t = 115 + 40$	M1
$t = 155 \text{ s}$	M1

Solutions

1a.

$240 = \frac{1}{2}(u + 34)10$	M1
$u = 14 \text{ ms}^{-1}$	M1

1b.

$34 = 14 + 10a$ $a = 2$	M1
$120 = 14t + \frac{1}{2} \times 2 \times t^2$ $t^2 + 14t - 120 = 0$	M1
$t = -20$ $t = 6$	M1
as $t > 0$, $t = 6$.	M1



Solutions

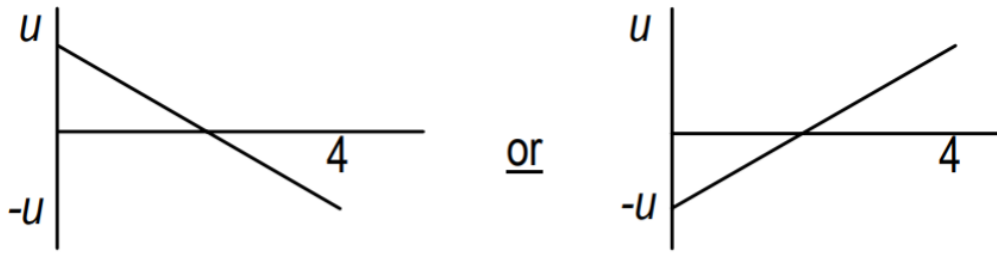
1.

$s = 45$ $u = ?$ $v = \text{not needed}$ $a = ?$ $t = 2$	M1
$45 = 2u + \frac{1}{2}a2^2$ $45 = 2u + 2a$	M1
$s = 165$ $u = ?$ $v = \text{not needed}$ $a = ?$ $t = 6$	M1
$165 = 6u + \frac{1}{2}a6^2$ $165 = 6u + 18a$	M1
Solving by elimination/simultaneously.	M1
$u = 20 \text{ ms}^{-1}$	M1
$a = 2.5 \text{ ms}^{-2}$	M1



Solutions

1a.



Shape	M1
Values	M1

1b.

$s = \frac{1}{2}(u + v)t$	M1
$19.6 = \frac{1}{2} \times 2 \times u$	M1
$u = 19.6 \text{ ms}^{-1}$	M1

Solutions

1a.

$v^2 = u^2 + 2as$	M1
$0^2 = 21^2 - 2 \times 9.8 \times h$	M1
$h = 22.5 \text{ m}$	M1

1b.

$v^2 = u^2 + 2as$	M1
$v^2 = 0^2 + 2 \times 9.8 \times 2.4$	M1
$v = 22 \text{ ms}^{-1}$	M1

1c.

$v = u + at$	M1
$-22 = 21 - 9.8t$	M1 M1
$t = 4.4\text{s}$	M1



Solutions

1a.

$v^2 = u^2 + 2as$	M1
$28^2 = u^2 + 2 \times 9.8 \times 17.5$	M1
$u = 21 \text{ ms}^{-1}$	

1b.

$s = ut + \frac{1}{2}at^2$	M1
$19 = 21t - 4.7t^2$	M1
$4.9t^2 - 21t + 19 = 0$	M1
$t = 2.99$	M1
$t = 1.30$	M1

1c.

$4g - 5000 = 4a$	M1
$a = -1240.2$	M1
$v^2 = u^2 + 2as$	M1
$0^2 = 28^2 - 2 \times 1240.2 \times s$	M1
$s = 0.316\text{m}$	M1

