(ii) $v^2 = u^2 + 2as$

$0 = (27)^2 + 2(a)(54)$

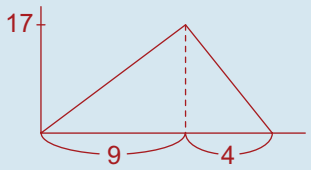
$a = -6\frac{3}{4}$ m/s^2

(iii) 2nd part:

$v = u + at$

$0 = 27 + \left(-6\frac{3}{4}\right)t$

$t = 4$ s



Distance = Area under the curve

$= \frac{1}{2}(13)(27)$

$= 175\frac{1}{2}$ m

$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}}$

$= \frac{175\frac{1}{2}}{13}$

$= 13\frac{1}{2}$ m/s

(iv) First part:

$v = u + at$

$15 = 0 + 3t$

$t = 5$ s

2nd part:

$v = u + at$

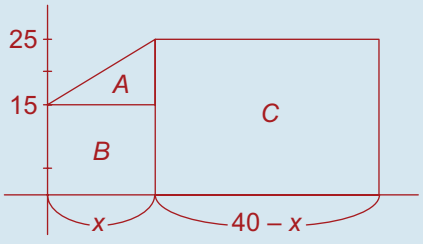
$15 = 27 + \left(-6\frac{3}{4}\right)t$

$t = 1\frac{7}{9}$ s

Answer: After 5 seconds and

after $\left(9 + 1\frac{7}{9}\right) = 10\frac{7}{9}$ s

Q. 7.



Area under the curve = 980

$\frac{1}{2}(x)(10) + (15)(x) + (40 - x)(25) = 980$

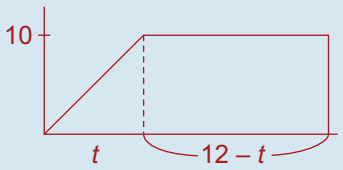
$x = 4$ s

$v = u + at$

$25 = 15 + (a)(4)$

$a = 2\frac{1}{2}$ m/s^2

Q. 8.



Let t = time spent accelerating

$\frac{1}{2}(t)(10) + (12 - t)(10) = 100$

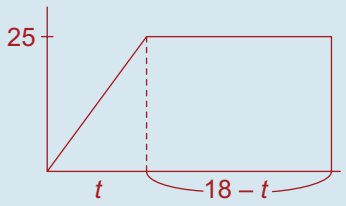
$5t + 120 - 10t = 100$

$20 = 5t$

$t = 4$

$\therefore a = \frac{10}{4} = 2.5$ m/s^2

Q. 9.



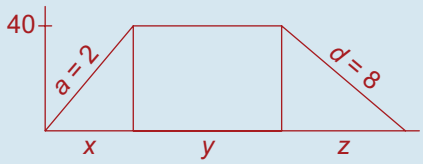
$\frac{1}{2}(t)(25) + (18 - t)(25) = 350$

$12.5t + 450 - 25t = 350$

$\therefore 100 = 12.5t$

$\therefore t = 8$ s

Q. 10.



$x = \frac{40}{2} = 20$

$z = \frac{40}{8} = 5$

Area = 700

$\therefore \frac{1}{2}(20)(40) + 40y + \frac{1}{2}(5)(40) = 700$

$\therefore 400 + 40y + 100 = 700$

$\therefore y = 5$

$\therefore$ Time = 20 + 5 + 5 = 30 s

Q. 11. (i)