Exercises

Ans° 1. $d = 200m$

$r = \frac{200}{2} = 100m$

$C = \pi d = \frac{22}{7} \times 200 =$

Distance travelled in 1 round, $s = \frac{22}{7} \times 200m$

$\text{Speed} = \frac{22}{7} \times \cancel{200}^{5} \times \frac{1}{40} = \frac{110}{7}\ m/s$

Distance covered in 2 min 20s
$= 140s$ = Speed x time

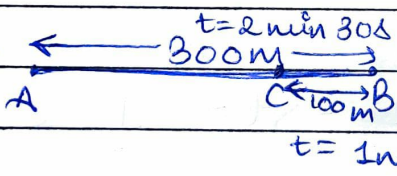
$\Rightarrow S_1 = \frac{110}{7} \times 140.20 = 2200\ m$

In 40s — 1 round

in 140s — $\frac{1}{40} \times 140 = \frac{31}{2}$ round

Displacement = diameter of track = 200 m

Ans° 2.



(a) from A to B

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

$= \frac{300}{150} = 2\ m/s$

Average velocity = $\frac{\text{Total displacement}}{\text{Total time}}$

$= \frac{200}{150} = 2\ m/s$

(b) from A to C

Average speed = $\frac{300+100}{150+60} = \frac{400}{210}$

$= \frac{40}{21}\ m/s$

Average velocity $= \frac{300-100}{210}$

$= \frac{200}{210} = \frac{20}{21}$ m/s

Ans 3. $V_{avg} = \frac{2 v_1 v_2}{v_1 + v_2} = \frac{2 \times 20 \times 30}{20+30}$

$= \frac{2 \times 20 \times 30}{50} = 24$ Km/h

Ans 4. $u = 0$

$a = 3 m/s^2$

$t = 8$ s

$s = ut + \frac{1}{2} a t^2 \Rightarrow s = \frac{1}{2} \times 3 \times 8 \times 8$

$\Rightarrow s = 96$ m

Ans 5. 52 Km/h = 14.4 m/s

3 Km/h = 0.8 m/s

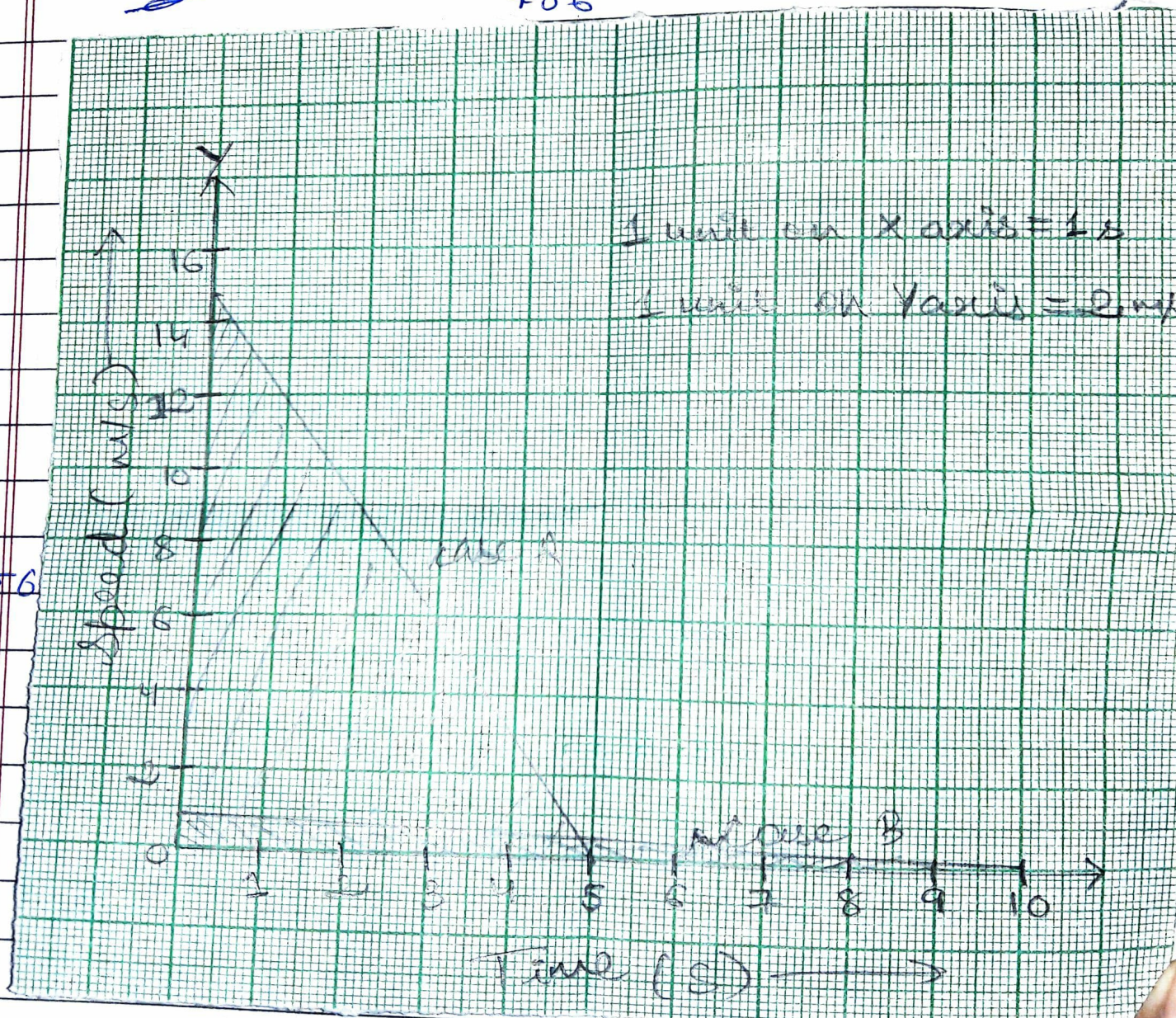
Distance travelled by 1st car

$= \frac{1}{2} \times 5 \times 5.2 \times \frac{5}{9} = 36.11$ m

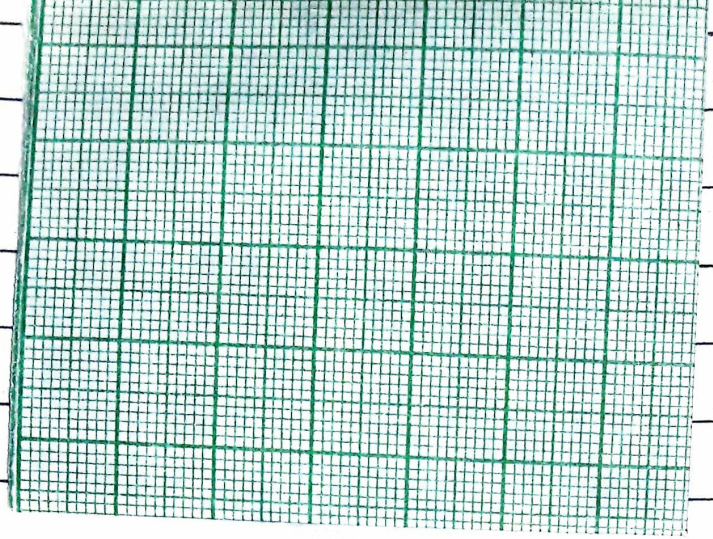
Date
Page

~~Dis~~ Distance ~~travelled~~ by 2nd car

$= \frac{1}{2} \times 10^5 \times 3 \times \frac{5}{186} = 4.16$ m



Ans = 6



Ans 6. (a) Object B

(b) No

(c) 7 small boxes = 4 Km

$\therefore$ 1 small box = $\frac{4}{7}$ Km

C is 4 small boxes away from the origin = $\frac{4 \times 4}{7} = \frac{16}{7}$ Km

When B passes A, distance travelled by C = $8 - \frac{16}{7} = \frac{56-16}{7} = \frac{40}{7}$ Km

(d) B has travelled 9 small boxes by the time it passes C.

Distance travelled $= 9 \times \frac{4}{7} = \frac{36}{7}$ km

Ans 7. $s = 20$m

$a = 10 m/s^2$

$u = 0$

$v = ?$

$v^2 - u^2 = 2as$

$\Rightarrow v^2 - 0 = 2 \times 10 \times 20$

$\Rightarrow v^2 = 400 \Rightarrow v = 20 m/s$

$s = \cancel{ut}^{0} + \frac{1}{2} a t^2$

$\Rightarrow \cancel{20}^{4} = \frac{1}{\cancel{2}} \times \cancel{10}^{5} \times t^2 \Rightarrow t = \sqrt{4} = 2s$

sol's 8. (a) $S = \frac{1}{2} \times 4 \times 6 = 12$m

(b) The part of the graph from 6s to 10s represents uniform motion of the car.