Sol^n 1:- (a) Circumference $= \pi d = \pi \times 1200 = 200\pi$ m

speed $= \frac{200\pi \text{ m}}{140 \text{ s}} = 5\pi$ m/s

distance travelled $= 5\pi$ m/s $\times 140$ s $= 700\pi$ m

displacement $= d = 200$ m

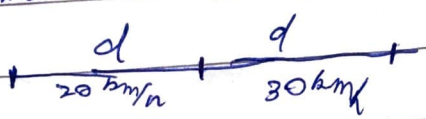
Sol^n 2:- (a) avg. speed $= \frac{\text{dist}}{\text{time}} = \frac{300 \text{ m}}{150 \text{ s}} = 2$ m/s

avg. velocity $= \frac{\text{disp}}{\text{time}} = \frac{300 \text{ m}}{150 \text{ s}} = 2$ m/s

(b) avg. speed $= \frac{\text{dist}}{\text{time}} = \frac{300 \text{ m} + 100 \text{ m}}{150 \text{ s} + 60 \text{ s}} = \frac{400 \text{ m}}{210 \text{ s}} = \frac{40}{21}$ m/s

avg. velocity $= \frac{\text{disp}}{\text{time}} = \frac{300 \text{ m} - 100 \text{ m}}{150 \text{ s} + 60 \text{ s}} = \frac{200 \text{ m}}{210 \text{ s}} = \frac{20}{21}$ m/s

Sol^n 3:- Let dist. between school & home be d



avg speed $= \frac{2d}{\frac{d}{20} + \frac{d}{30}} = \frac{2d}{\frac{5d}{60}} \times 12 = 24$ km/h

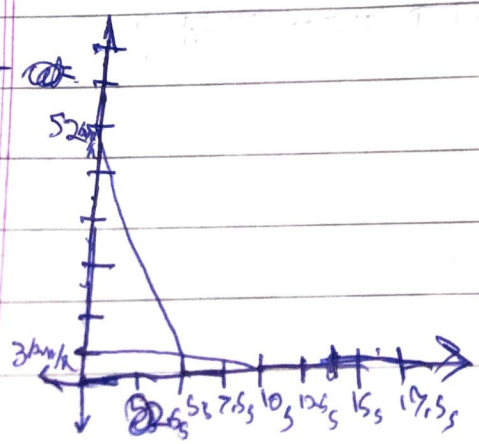
Sol^n 4:- $u = 0$ m/s

$a = 3$ m/s^2

$t = 8$ s

$s = ut + \frac{1}{2}at^2 = \frac{1}{2} \times 3 \times 8^2 = 32 \times 3 = 96$ m

Sol^n 5:-



Car 1	Car 2
$u_1 = 52$ km/h	$u_2 = 3$ km/h
$v_1 = 0$	$v_2 = 0$
$t_1 = 5$ s	$t_2 = 10$ s

Car 1

$a = \frac{v-u}{t} = 5 - \left(52 \times \frac{1}{10} \times \frac{1}{5}\right)$ m/s² $= -\frac{26}{9}$ m/s²

$s = ut + \frac{1}{2}at^2 = \frac{26}{9} \times 5 + \frac{1}{2} \times 0 \times \frac{-26}{9} \times 25$

$= \frac{26 \times 25}{9} + 0 - \frac{26 \times 25}{18}$

$= \frac{26 \times 25}{18} = 0 \; 325/9$ m

Car 2

$a = \frac{v-u}{t} = -\left(\frac{3 \times 5}{18} \times \frac{1}{2}\right)$ m/s² $= -\frac{1}{12}$ m/s²

$s = ut + \frac{1}{2}at^2 = \frac{5}{3} \times 5 + \frac{1}{2} \times -\frac{1}{12} \times 5 \times 5$

$= \frac{25}{3} + 0 - \frac{25}{6}$

$= \frac{25}{3}$ m

∴ Car 1 travels more distance

Sol^n 6:- (a) B travelled the fastest

(b) No

(c) $8 - \frac{16}{7} = \frac{56-16}{7} = \frac{40}{7} = 5\frac{5}{7}$ km

(d) $5\frac{1}{7}$ km

Sol^{n} 7:- $s = 20\ m$

$a = 10\ m/s^2$

$u = 0$

$v = \sqrt{u^2 + 2as} = \sqrt{2 \times 10 \times 20} = 20\ m/s$

$\Rightarrow v = u + at$

$\Rightarrow 20 = 0 + 10 \times t$

$\Rightarrow t = 2\ s$

Sol^{n} 8: (a) $r = 8$ units

area $= \pi r^2 = 64\pi$ units $= 64\pi \times \frac{1}{3}\ m = \frac{32\pi}{3}\ m$

(b) From 6s it shows uniform motion.

Sol^{n} 9: (a) It is possible. If a ball is thrown upwards then at its top height, the velocity is 0.

(b) It is not possible.

(c) It is possible in circular motion.

~~Sol^{n} 10:- speed~~

Sol^{n} 10:- Speed $= \frac{2\pi r}{t} = \frac{8250\ km}{24\ hr} = \frac{6875\pi}{2}\ km/h$