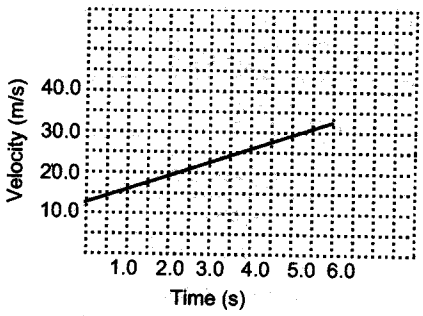
8. a) Acceleration = slope

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$
$$= \frac{(32.5-10.0)\text{ m/s}}{(10.0-0)\text{ s}}$$
$$= 2.25\text{ m/s}^2\text{ east}$$

b) Displacement = area

$$\text{area} = (l \times w) + \frac{1}{2}(l \times w)$$
$$= (10.0\text{ s} \times 10.0\text{ m/s}) + \frac{1}{2}(10.0\text{ s} \times 22.5\text{ m/s})$$
$$= 213\text{ m east}$$

9. a) Velocity-Time Graph



b) i) Acceleration = slope

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$
$$= \frac{(31.8-12.0)\text{ m/s}}{(6.0-0.0)\text{ s}}$$
$$= \approx 3.3\text{ m/s}^2\text{ north}$$

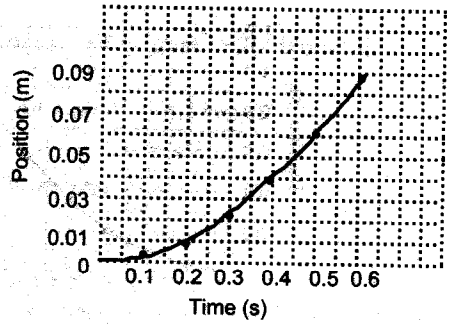
ii) Displacement = area

$$\text{area} = (l \times w) + \frac{1}{2}(l \times w)$$
$$= (6.0\text{ s} \times 12.0\text{ m/s}) + \frac{1}{2}(6.0\text{ s} \times 20.0\text{ m/s})$$
$$= 1.3 \times 10^2\text{ m north}$$

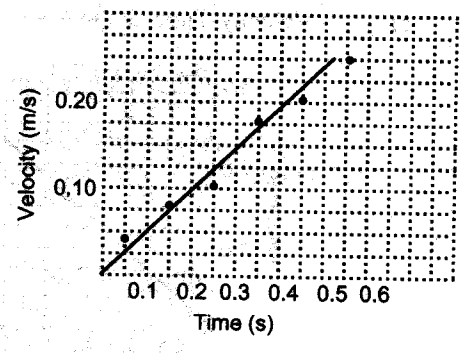
10. a)

time (s)	displacement from t = 0 (m)	displacement during time interval (m)	average velocity during time interval (m/s)
0	0		
0.10	0.0025	0.0025	0.025
0.20	0.0095	0.007	0.07
0.30	0.022	0.012	0.12
0.40	0.039	0.017	0.17
0.50	0.061	0.022	0.22
0.60	0.086	0.025	0.25

b) Position-Time Graph



c) Velocity-Time Graph



d) Acceleration = slope of velocity-time graph

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$
$$= \frac{(0.22-0)\text{ m/s}}{(0.45-0)\text{ s}}$$
$$= 0.49\text{ m/s}^2\text{ west}$$