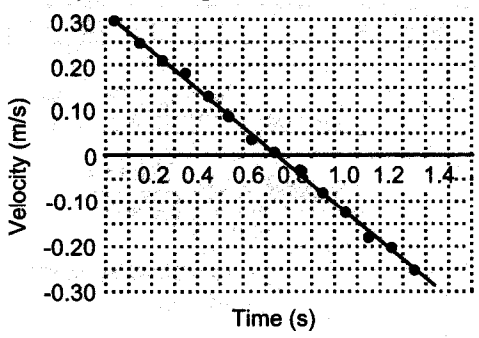
c) Velocity-Time Graph



d) i) Velocity = slope position-time graph.

Draw a tangent line at 0.40 s and 1.10 s

- 0.40 s

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{(0.120 - 0.032)\text{ m}}{(0.56 - 0)\text{ s}}$$
$$= 0.16\text{ m/s}$$

- 1.10 s

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{(0.020 - 0.120)\text{ m}}{(1.60 - 0.95)\text{ s}}$$
$$= -0.15\text{ m/s}$$

ii)Displacement = area of velocity-time graph

$$\text{area above axis} = \frac{1}{2}(l \times w)$$
$$= \frac{1}{2}(0.71 \times 0.30)$$
$$= 0.107\text{ m}$$
$$\text{area below axis} = \frac{1}{2}(l \times w)$$
$$= \frac{1}{2}(0.64 \times -0.26)$$
$$= -0.083\text{ m}$$

$$\text{Total} = 0.107\text{ m} - 0.083\text{ m}$$
$$= 0.024\text{ m}$$

iii)Acceleration = slope of velocity time-graph

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{(-0.25 - 0.30)\text{ m/s}}{(1.35 - 0.050)\text{ s}}$$
$$= 0.42\text{ m/s}^2$$

1.

v_0	v_f	a	d	t
14.0 m/s	X	–9.80 m/s^2	?	1.80 s

$$d = v_0 t + \frac{1}{2}at^2$$
$$= (14.0\text{ m/s})(1.80\text{ s}) + \frac{1}{2}(-9.80\text{ m/s}^2)(1.80\text{ s})^2$$
$$= 9.32\text{ m}$$

2.

v_0	v_f	a	d	t
9.8 m/s	X	?	1.9 m	2.7 s

$$d = v_0 t + \frac{1}{2}at^2$$
$$1.9\text{ m} = (9.3\text{ m/s})(2.7\text{ s}) + \frac{1}{2}(a)(2.7\text{ s})^2$$
$$a = \frac{1.9\text{ m} - (9.3\text{ m/s})(2.7\text{ s})}{\frac{1}{2}(2.7\text{ s})^2}$$
$$= -6.4\text{ m/s}^2$$

3.

v_0	v_f	a	d	t
11.0 m/s	–7.3 m/s	?	X	9.3 s

$$a = \frac{v_f - v_0}{t}$$
$$= \frac{-7.3\text{ m/s} - 11.0\text{ m/s}}{9.3\text{ s}}$$
$$= -2.0\text{ m/s}^2$$