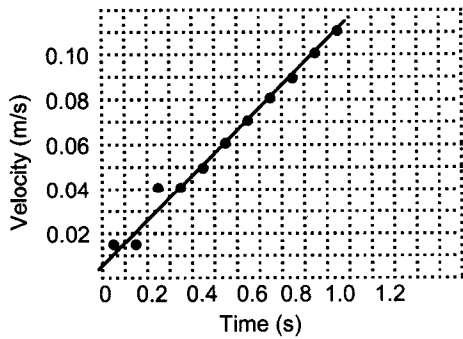


c) Velocity-Time Graph



d) i) slope = 0

$$\begin{aligned} \text{ii) slope} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{(0.10 - 0.01) \text{ m/s}}{(0.95 - 0.05) \text{ s}} \\ &= 0.10 \text{ m/s}^2 \end{aligned}$$

8. We are asked to find the horizontal component.

Find t from the vertical component

v_0	v_f	a	d	t
0	X	9.80 m/s^2	85.0 m	?

$$d = v_0 t + \frac{1}{2} a t^2$$

$$85.0 \text{ m} = \frac{1}{2} (9.80 \text{ m/s}^2) t^2$$

$$t = 4.16 \text{ s}$$

Horizontal

$$\begin{aligned} v &= \frac{d}{t} \\ &= \frac{67.8 \text{ m}}{4.16 \text{ s}} \\ &= 16.3 \text{ m/s} \end{aligned}$$

Additional Exercises

1. a) $v = \frac{d}{t}$

$$\begin{aligned} d &= vt \\ &= (1.7 \text{ m/s})(6.0 \text{ min} \times 60 \text{ s/min}) \\ &= 6.1 \times 10^2 \text{ m} \end{aligned}$$

b) 0

2. a) Displacement during first 1.25 h

$$\begin{aligned} v &= \frac{d}{t} \\ d &= vt \\ &= (95 \text{ km/h})(1.25 \text{ h}) \\ &= 118.75 \text{ km north} \end{aligned}$$

Displacement during second 1.75 h

$$\begin{aligned} v &= \frac{d}{t} \\ d &= vt \\ &= (75 \text{ km/h})(1.75 \text{ h}) \\ &= 131.25 \text{ km south} \end{aligned}$$

Total displacement = 12.5 km south

$$\begin{aligned} v_{\text{average}} &= \frac{d}{t} \\ &= \frac{12.5 \text{ km}}{3.00 \text{ h}} \\ &= 4.2 \text{ km/h south} \end{aligned}$$

b) Total distance is $2.50 \times 10^2 \text{ km}$

$$\begin{aligned} v_{\text{average}} &= \frac{d}{t} \\ &= \frac{2.50 \times 10^2 \text{ km}}{3.00 \text{ h}} \\ &= 83 \text{ km/h} \end{aligned}$$

3.

v_0	v_f	a	d	t
0	?	-9.80 m/s^2	-11.0 m	X

$$\begin{aligned} v_f^2 &= v_0^2 + 2ad \\ &= 2(-9.80 \text{ m/s}^2)(-11.0 \text{ m}) \\ v_f &= -14.7 \text{ m/s} \end{aligned}$$

4.

v_0	v_f	a	d	t
9.0 m/s	?	-9.80 m/s^2	?	1.5 s

$$\begin{aligned} \text{a) } d &= v_0 t + \frac{1}{2} a t^2 \\ &= (9.0 \text{ m/s})(1.5 \text{ s}) + \frac{1}{2} (-9.80 \text{ m/s}^2)(1.5 \text{ s})^2 \\ &= 2.5 \text{ m} \end{aligned}$$