

1) **a** 2) **a** 3) **b**

4) a)  $v = v_f + v_i / 2 = 32 \text{ m/s} / 2 = \mathbf{16 \text{ m/s}}$

b)  $a = v_f - v_i / t = 20 \text{ m/s} - 12 \text{ m/s} / 4 \text{ s} = \mathbf{2 \text{ m/s}^2}$

5)  $v = d/t \rightarrow t = d/v = 60 \text{ ft} / 132 \text{ ft/s} = \mathbf{0.45 \text{ s}}$

6)  $v = d/t \rightarrow d = vt = (343 \text{ m/s})(5 \text{ s}) = \mathbf{1,715 \text{ m}}$  or **(5,635 ft)**

7)  $v = d/t \rightarrow t = d/v = 1.5 \times 10^{11} \text{ m} / 3 \times 10^8 \text{ m/s} = \mathbf{500 \text{ s}}$

8) a)  $v = d/t = 540 \text{ km} / 4.5 \text{ h} = \mathbf{120 \text{ km/hr.}}$

b)  $d = vt = (120 \text{ km/h})(8 \text{ h}) = \mathbf{960 \text{ km}}$

c)  $t = d/v = 200 \text{ km} / 120 \text{ km/h} = \mathbf{1.6 \text{ h}}$

9) **a**

10)  $a = v_f - v_i / t = 24 \text{ m/s} - 12 \text{ m/s} / 3 \text{ s} = \mathbf{4 \text{ m/s}^2}$

11) a)  $d = \frac{1}{2} at^2 = (0.5)(9.8 \text{ m/s}^2)(5 \text{ s})^2 = \mathbf{122.5 \text{ m}}$

b) Using  $a = v_f - v_i / t$  and knowing it starts from rest ( $v_i = 0$ ),

$v_f = at = (9.8 \text{ m/s}^2)(5 \text{ s}) = \mathbf{49 \text{ m/s}}$

12)  $1,600 \text{ ft/min} (1 \text{ mi.} / 5,280 \text{ ft})(60 \text{ min.} / 1 \text{ h}) = \mathbf{18.2 \text{ mi./h}}$