#79 $\bar{V} = \frac{\Delta d}{\Delta t} = \frac{d_f - d_i}{t_f - t_i}$

E: $\Delta d = \bar{V}\,\Delta t$

(a)

G: $\bar{V}_1 = 40\ km/h$

$\Delta t_1 = 2\ h$

$\bar{V}_2 = 60\ km/h$

$\Delta t_2 = 2\ h$

U:

$\bar{V} = \_\_\_\_\ \frac{km}{h}$

$\Delta d_1 = \_\_\_\ km$

$\Delta d_2 = \_\_\_\ km$

S: $\Delta d_1 = \bar{V}_1\,\Delta t_1$

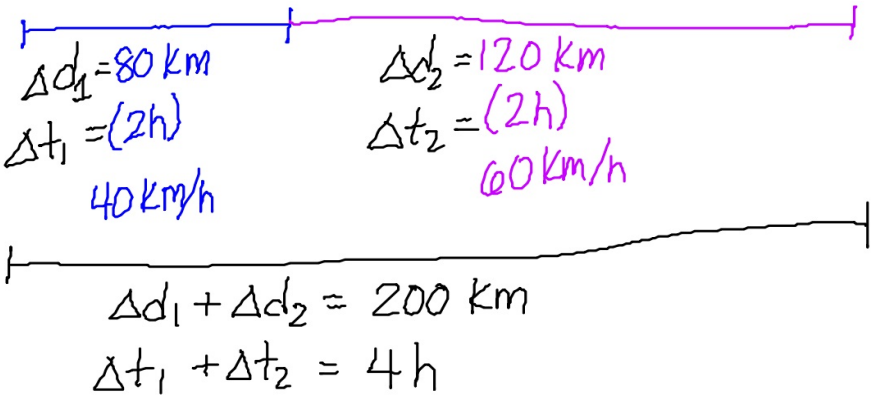
$\Delta d_1 = \left(40 \frac{km}{h}\right)(2h)$

$\Delta d_1 = 80\ km$

$\Delta d_2 = \bar{V}_2\,\Delta t_2$

$\Delta d_2 = \left(60 \frac{km}{hr}\right)(2h)$

$\Delta d_2 = 120\ km$



$\bar{V} = \frac{\Delta d}{\Delta t} = \frac{200\ km}{4h} = \boxed{50\ km/h}$ (a)

#79(b)

G: (1.0×10^{2})

$\Delta d = 100\ km$

$\bar{V}_1 = 40\ km/h$

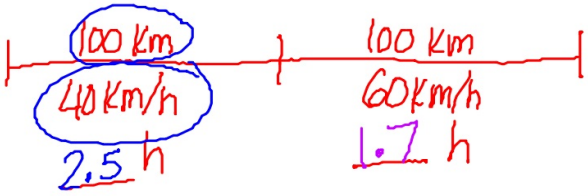
$\bar{V}_2 = 60\ km/h$

U:

$\bar{V} =$ ___ km/h

$\Delta t_1 =$ ___ h

$\Delta t_2 =$ ___ h



E: $\Delta t = \dfrac{\Delta d}{\bar{V}}$

S: $\Delta t_1 = \dfrac{100\ km}{40\ km/h}$

$\Delta t_1 = 2.5\ h$

$\Delta t_2 = \dfrac{100\ km}{60\ km/h}$

$\Delta t_2 = 1.7\ h$

$\bar{V} = \dfrac{\Delta d}{\Delta t}$

$= \dfrac{100\ km + 100\ km}{2.5 + 1.7\ h}$

$= \dfrac{200\ km}{4.2\ h}$

(b) $\bar{V} = 48\ km/h$

#80.

G:

$\Delta t = 8.0\ s$

$v_i = 32\ m/s$

$v_f = 96\ m/s$

U:

$\bar{a} =$ ___ m/s^2

E: $\bar{a} = \dfrac{v_f - v_i}{t_f - t_i}$

S: $\bar{a} = \dfrac{96\frac{m}{s} - 32\frac{m}{s}}{8.0s - 0.0s} = \dfrac{64\frac{m}{s}}{8.0s}$

S: $\bar{a} = 8.0\frac{m}{s^2}$

#81

E: $v_f = v_i + \bar{a}\Delta t$

G:

$v_i = 22\frac{m}{s}$

$\bar{a} = 1.6\frac{m}{s^2}$

$\Delta t = 6.8s$

S: $v_f = (22\frac{m}{s}) + (1.6\frac{m}{s^2})(6.8s)$

S: $\boxed{v_f = 33\frac{m}{s}}$

U:

$v_f = \_\_\_\frac{m}{s}$

#82(e)

Determine the displacement for each interval.

0-5s: $5s \cdot 30m/s = 150m/2 = 75m$

5-10s: $5s \cdot 30m/s = \boxed{150m}$

10-15s: $\frac{1}{2}(5s \cdot 10m) + (5s \cdot 20 =$ $\boxed{d = 125m}$

15-20s: $20.0m/s \cdot 5.0s = \boxed{100m}$

20-25s: $\frac{1}{2}(20.0m/s)(5.0s)$ $\boxed{d = 50m}$

Time(s)	Position(m)
0	0 +75
5	75 +150
10	225 +125
15	350 +100
20	450 +50
25	500

19. 120 km/h

21. 9.0 s

23. 2.7×10^2 km/h
    270 km/h

25. 1800 m (distance)
    25 min (time)

27. 363 m

29. $a = 1.5\ m/s^2$
    $v_f = 0.75\ m/s$

31. $d_1 = 9.0$ $d_2 = 18$ m

33. $d = 4902$ m
    $\bar{a} = 0.071\ m/s^2$

Exam Overview:

Ch. 1:

- Dimensional Analysis (Conversions)
- Significant Figure (SF)
- Best-fit lines and equations

Ch. 2:

- motion diagrams (particle models)
- position (distance vs. displacement)
- scalar vs. vector
- speed vs. velocity
- position vs. time graphs
- average speed vs. average velocity

Ch. 3

- velocity vs. time graphs
- acceleration
- Kinematic equations

① $d_f = d_i + \bar{v}t$

② $v_f = v_i + \bar{a}t$

③ $d_f = d_i + v_i t + \frac{1}{2}\bar{a}t^2$

④ $(v_f)^2 = (v_i)^2 + 2\bar{a}(d_f - d_i)$

#19

$30.0\frac{km}{h} \cdot \frac{1000m}{1km} \cdot \frac{1h}{3600s} = 8.3\frac{m}{s}$

G:

$v_i = 30.0\,km/h = 8.3\,m/s$

$\bar{a} = 3.5\,m/s^2$

$t = 6.8s$

E: $v_f = v_i + \bar{a}t$

S: $v_f = 8.3\frac{m}{s} + 3.5\frac{m}{s^2}(6.8s)$

S: $v_f = 32.1\frac{m}{s}$

U:

$v_f =$ ____ km/h

$32.1\frac{m}{s} \cdot \frac{1km}{1000m} \cdot \frac{3600s}{1h}$

115.56 km/hr

120 km/h

#21

G:

$v_i = 22 \frac{m}{s}$

$v_f = 30 \frac{m}{s}$

$\bar{a} = -2.1 \frac{m}{s^2}$

U:

$t_f = \_\_\_ s$

E:

$v_f = v_i + \bar{a}t$

$t_f = \frac{v_f - v_i}{\bar{a}}$

S:

$t_f = \frac{30 \frac{m}{s} - 22 \frac{m}{s}}{-2.1 \frac{m}{s^2}}$

$t_f = 9.0 s$

#27

G:

$d_i = 0 m$

$v_i = 44 \frac{m}{s}$

$v_f = 22 \frac{m}{s}$

$\Delta t = 11 s$

$t_i = 0 s$

U:

$d_f = \_\_\_ m$

$\bar{a} = \_\_\_ m/s^2$

E:

$\bar{a} = \frac{v_f - v_i}{t_f - t_i} = \frac{v_f - v_i}{\Delta t}$

S:

$\bar{a} = \frac{22 \frac{m}{s} - 44 \frac{m}{s}}{11 s}$

$\bar{a} = -2.0 \frac{m}{s^2}$

E:

$d_f = d_i + v_i t + \frac{1}{2} a t^2$

$d_f = 0 m + 44 \frac{m}{s} (11 s) + \frac{1}{2} \left(-2.0 \frac{m}{s^2}\right) (11 s)^2$

$d_f = 363 m$