Motion Worksheet

① a. A AT REST FOR 1 s.

B ACCELERATES FORWARD TO 1.5 m/s IN 1.5 s.

C MOVES FORWARD AT A CONSTANT 1.5 m/s FOR 1.5 s.

D DECELLERATES (-ve ACCEL) TO 0 IN 1 s.

E AT REST FOR ~3 s.

F ACCELERATES BACKWARDS TO -2.5 m/s IN 0.75 s.

G MOVES BACKWARDS AT A CONSTANT 2.5 m/s FOR 3.5 s.

H DECELLERATES (+ve ACCEL) TO 0 IN 1 s.

I AT REST FOR 4 s.

b. A $\vec{a} = 0$

B $a = \frac{+1.5 \text{ m/s}}{1.5 \text{ s}}$

$\vec{a} = +1.0 \text{ m/s}^2$

C $\vec{a} = 0$

D $a = \frac{-1.5 \text{ m/s}}{1 \text{ s}}$

$\vec{a} = -1.5 \text{ m/s}^2$

E $\vec{a} = 0$

F $a = \frac{-2.5 \text{ m/s}}{0.75 \text{ s}}$

$\vec{a} = 3.3 \text{ m/s}^2$

G $\vec{a} = 0$

H $a = \frac{+2.5 \text{ m/s}}{1 \text{ s}}$

$\vec{a} = +2.5 \text{ m/s}^2$

I $\vec{a} = 0$

(b) a. $\vec{\Delta d}$ = AREA

$= +(2 \times 80) + \frac{1}{2}(1)(80)$

$= +160 + 40$

$\boxed{\vec{\Delta d} = +200 \text{ m}}$

b. $\vec{\Delta d}$ = AREA

$\boxed{\vec{\Delta d} = 0}$

c. FOR $t = 5$ TO 12

$\vec{\Delta d}$ = AREA

$= \frac{1}{2}(3)(-40) + (3)(-40) + \frac{1}{2}(1)(-40)$

$= (-60) + (-120) + (-20)$

$\vec{\Delta d} = -200 \text{ m}$

TOTAL $\vec{\Delta d} = (+200) + 0 + (-200) + 0$

$\boxed{\vec{\Delta d} = 0}$

d. $\vec{a}$ = SLOPE

$= \frac{-40 \text{ m/s}}{3 \text{ s}}$

$\boxed{\vec{a} = -13.\overline{3} \text{ m/s}^2}$

③ $\vec{\Delta d}$ = AREA

$= \frac{1}{2}(5)(120) + (5)(120) + (12.5)(-60)$

$= (+300) + (+600) + (-750)$

$\boxed{\vec{\Delta d} = +150 \text{ m}}$

④ A $a = \frac{+4 \text{ m/s}}{2 \text{ s}}$

$\boxed{\vec{a} = +2 \text{ m/s}^2}$

B $\boxed{\vec{a} = 0}$

C $a = \frac{-7 \text{ m/s}}{3.5 \text{ s}}$

$\boxed{\vec{a} = -2 \text{ m/s}^2}$

D $\boxed{\vec{a} = 0}$

E $a = \frac{+3 \text{ m/s}}{3 \text{ s}}$

$\boxed{\vec{a} = +1 \text{ m/s}^2}$