Textbook
HW Day 2 Position, Displacement + Velocity in 1D

pg 8 & 1.1 P1-3, pg 13 S#3, 1.2 P#1 pg 16

1. $\Delta\vec{d}_R = ?$

$\Delta\vec{d}_1 = 40.0\text{m [N]}$

$\Delta\vec{d}_2 = 20.0\text{m [N]}$

$\Delta\vec{d}_3 = 100.0\text{m [N]}$

$\Delta\vec{d}_R = \Delta\vec{d}_1 + \Delta\vec{d}_2 + \Delta\vec{d}_3$

$= 40.0\text{m [N]} + 20.0\text{m [N]} + 100.0\text{m [N]}$

$= 160.0\text{m [N]}$

2. $\Delta\vec{d}_1 = 0.75\text{m [R]}$

$\Delta\vec{d}_2 = 3.50\text{m [L]}$

$\Delta\vec{d}_R = ?$

Let R = +

$\Delta\vec{d}_R = \Delta\vec{d}_1 + \Delta\vec{d}_2$

$= 0.75\text{m} + (-3.50\text{m})$

$= -2.75\text{m}$

$= 2.75\text{m [L]}$

3. $\Delta d = 1.70\text{m}$ back + forth

$\Delta\vec{d}_R = ?$

$\Delta d_T = ?$

$\Delta d_T = 4\Delta d = 4(1.70\text{m})$

$= 6.80\text{m}$

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

Pg 13 S#3 Camper in a Kayak

$\Delta\vec{d}_1 = 16\text{ km [E]}$

$\Delta\vec{d}_2 = 23\text{ km [W]}$

$\Delta\vec{d}_R = ?$

$\vec{d}_f = ?$

E +

b) $\Delta\vec{d}_R = \Delta\vec{d}_1 + \Delta\vec{d}_2$

$= 16\text{m [E]} + 23.\text{ km [W]}$

$= 16\text{m} - 23\text{ km}$

$= -8.0\text{ km}$

$= 8.0\text{km [W]}$

a) $\vec{d}_f = 8.0\text{km [W]}$ of campsite

c) $\Delta d_T = \Delta d_1 + \Delta d_2$

$= 16\text{m} + 23\text{m}$

$= 39\text{m}$

∴ total distance is greater than displacement as he went East + West.

1.2
Pg 16 P 1, 2

1) $\Delta\vec{d}_1 = 10.0\text{m [E]}$
$\Delta\vec{d}_2 = 5.0\text{m [E]}$ let E = +
$\Delta\vec{d}_3 = 30.0\text{m [W]}$
$\Delta t = 2.0\text{s} + 1.5\text{s} + 5.0\text{s}$
$= 8.5\text{s}$
$\vec{V}_{av} = ?$ $\Delta\vec{d}_R = ?$

$\Delta\vec{d}_R = \Delta\vec{d}_1 + \Delta\vec{d}_2 + \Delta\vec{d}_3$
$= 10.0\text{m} + 5.0\text{m} + (-30.0\text{m})$
$= -15.0\text{m}$
$= 15.0\text{m [W]}$

$V_{av} = \frac{\Delta\vec{d}_R}{\Delta t} = \frac{15.0\text{m [W]}}{8.5\text{s}} = 1.76\text{ m/s [W]}$
$\sim 1.8\text{ m/s [W]}$

2) $\Delta\vec{d}_1 = 100.0\text{m [F]}$
$\Delta t_1 = 9.84\text{s}$
$\vec{V}_{av_1} = \frac{\Delta\vec{d}_1}{\Delta t_1}$
$= 10.2\text{m/s [F]}$

$\Delta\vec{d}_2 = 200.0\text{m [F]}$
$\Delta t = 19.32\text{s}$
$\vec{V}_{av_2} = \frac{200.0\text{m [F]}}{19.32\text{s}}$
$= 10.352\text{ m/s [F]}$
$\simeq 10.3\text{ m/s [F]}$

$\Delta\vec{d}_3 = 400.0\text{m [F]}$
$\Delta t_3 = 1.90\text{min}$
$= 114\text{s}$
$\vec{V}_{av_3} = \frac{\Delta\vec{d}_3}{\Delta t_3}$
$= \frac{400.0\text{m [F]}}{114\text{s}}$
$= 3.51\text{m/s [F]}$

$\vec{V}_{av} = \frac{\Delta\vec{d}_t}{\Delta t_t} = \frac{(100.0\text{m} + 200.0\text{m} + 400.0\text{m})\text{ [F]}}{9.84 + 19.32 + 114\text{s}}$

$= \frac{700.0\text{m [F]}}{257.16\text{s}}$

$= 4.89\text{ m/s [F]}$