

# 5.

$$\begin{array}{r}
 1.70 \times 10^4 \\
 + 1.44 \times 10^4 \\
 \hline
 3.14 \times 10^4 \\
 \text{North } - .06 \times 10^4 \\
 \hline
 \end{array}
 \left. \vphantom{\begin{array}{r} 1.70 \times 10^4 \\ + 1.44 \times 10^4 \\ \hline 3.14 \times 10^4 \\ \text{North } - .06 \times 10^4 \\ \hline \end{array}} \right\} = \text{South}$$

To Combine  
You need  
Same Power  
Was  $6.0 \times 10^2$

$$V = \frac{\Delta X}{\Delta T} = \frac{3.08 \times 10^4 \text{ km}}{122 \text{ days}}$$

$$\frac{30,800 \text{ km}}{122 \text{ days}} = 252 \frac{\text{km}}{\text{day}}$$

#6  $X_1 + X_2 + X_3 + X_4 = 40 \text{ km}$

$$\frac{40 \text{ km}}{1}$$

$$\frac{60 \text{ min}}{1} / \frac{1 \text{ hr}}{60 \text{ min}} \quad 40 \text{ km} / \text{hr}$$

East

$$\#7 \quad V = \frac{\Delta X}{\Delta t} \quad \Delta t = \frac{-V \Delta t_{rest}}{V_{avg} - V}$$

Solve for  $\Delta X \rightarrow \Delta X = V \Delta t$

$$V_{avg} \Delta t = V \Delta t - V \Delta t_{rest}$$

$$V_{avg} \Delta t - V \Delta t = -V \Delta t_{rest}$$

$$\frac{\Delta t (V_{avg} - V)}{\div V_{avg} - V} = \frac{-V \Delta t_{rest}}{\div V_{avg} - V}$$

ISOLATE  $\Delta t$  (LLP)

#7 Cont

$$\Delta t = \frac{V \Delta t_{rest}}{V - V_{avg}}$$
$$\frac{(89.5 \text{ km/h})(22.0 \text{ min})\left(\frac{1 \text{ h}}{60 \text{ min}}\right)}{89.5 \text{ km/h} - 77.8 \text{ km/h}}$$
$$\frac{(89.5 \text{ km/h})(22.0 \text{ min})\left(\frac{1 \text{ h}}{60 \text{ min}}\right)}{11.7 \text{ km/h}}$$
$$\Delta t = 2.80 \text{ h} = 2 \text{ h } 48 \text{ min}$$

$\cdot 8 \times 60 \text{ min} = 48 \text{ min}$

$$\#8 \quad \Delta X = V \Delta t = (-6.50 \text{ m/s})(34.0 \text{ s}) = -221 \text{ m} =$$

$$V = \frac{\Delta X}{\Delta t}$$


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$$\#9 \quad V_h \Delta t + \underbrace{-2.00 \text{ min}}_{221 \text{ m downward}} V_h + 20 \text{ cm}$$

$$V_h \Delta t + V_h \Delta t = -2 V_h + 20 \text{ cm}$$

$$+20 - (200 \text{ cm})(120 \text{ sec}) = 20 - 2.4 \times 10^4$$

$$\frac{23980 \text{ cm}}{-190 \text{ cm/sec}} = (126 \text{ sec})$$

#10

$$\Delta x_{\text{race}} = \Delta x_f = V + \Delta t_f =$$

$$(10 \text{ cm/sec}) (126 \text{ s}) =$$

$$1.26 \times 10^3 \text{ cm} = 12.6 \text{ m}$$

$$1260 \text{ cm} = 12.6 \text{ m}$$