A 130 m wide river flows West at 2.1 m/s. A ferry that can travel 4.0 m/s in still water needs to make a direct crossing to the North.

a. What heading should the ferry take in order to travel directly North across the river? (Include a vector diagram)

b. What total velocity does the ferry travel at?

c. How long does it take to cross the river?

 $V_2 = 2.1 \text{ mls}$ 130m  $V_2 = 4.0 \text{ m/s}$ a.)  $V_{2} = 2.1 \text{ m/s}$   $V_{1} = \frac{2.1}{4.0}$   $V_{1} = 4.0 \text{ m/s}$  $\theta = \sin^{-1}\left(\frac{2.1}{9.0}\right) = 32^{\circ} E \circ F N$ (or 58° NofE)  $b.) \quad V_{1}^{2} = V_{T}^{2} + V_{2}^{2}$  $V_{T} = \sqrt{V_{1}^{2} - V_{2}^{2}} = \sqrt{40^{2} - 20^{2}} = 3.404 = \sqrt{3.4 \text{ m/s}}$ c.)  $V = d + = d = \frac{130m}{3.404mls} = \frac{38s}{5.404mls}$