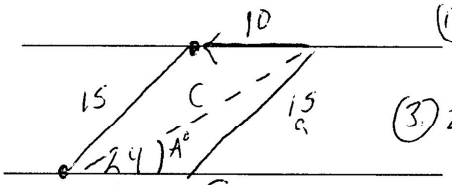
5. In order to reach the dock on the far side a man would have to row his boat 24º upstream 15km/hr in still waters. If the current is 10km/hr, what speed and direction must he row to reach his goal?

24.5 km/hr

14.4° upstream



(1.) $\angle C = 180 - 24$
$156°$

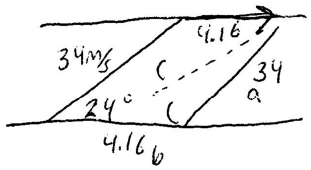
(3.) $2^{ND} \sin A = \frac{15 \sin 156}{24.5}$
$14.4°$

HONORS PHYSICS ONLY (2.) $C = \sqrt{15^2 + 10^2 - 2 \cdot 15 \cdot 10 \cos 156}$ $C = 24.5$ km/hr

6. A crocodile swam at a 24º angle downstream and a speed of 34m/s to reach the other side. If the current is 15km/hr and is 700m wide, how long would it take the crocodile to cross the stream and how far downstream will it have traveled?

50.5 s

1777.1 m



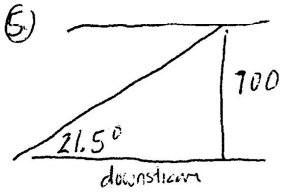
(1.) $15 \times .277 = 4.16$

(2.) $\angle C = 180 - 24$
$\angle C = 156$

(3.) $C = \sqrt{34^2 + 4.16^2 - 2 \cdot 34 \cdot 4.16 \cos 156}$
$C = 37.8$ m/s

(4.) $2^{ND} \sin A = \frac{34 \sin 156}{37.8}$
$A = 21.45°$

(5.)

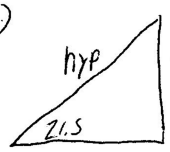


$\tan 21.5 = \frac{700}{down}$

$down = \frac{700}{\tan 21.5}$

$down = 1777.1$

(6.)



$\sin 21.5 = \frac{700}{hyp}$

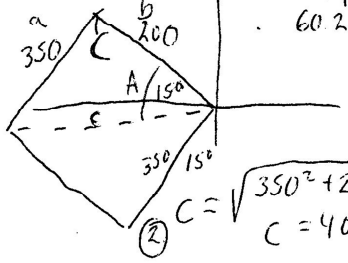
$hyp = \frac{700}{\sin 21.5}$

$hyp = 1909.9$

7. Three men argue over a sandwich. The first pulls with a force of 200n 15º Nof W. The second pulls with a force of 350n 15º W of S. The third pulls with a force of 458n 10º N of E. What is the resultant force and direction of the sandwich?

265.6 n

38.9 E of S

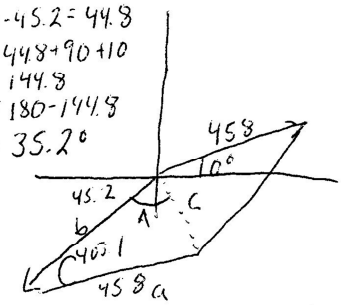


(1.) $\angle C = 90$

(3.) $2^{ND} \sin A = \frac{350 \sin 90}{403.1}$
$A = 60.2°$
$60.2 - 15 = 45.2$ S of W

(2.) $C = \sqrt{350^2 + 200^2 - 2 \cdot 350 \cdot 200 \cos 90}$
$C = 403.1$

(4.) $90 - 45.2 = 44.8$
$= 44.8 + 90 + 10$
144.8
$\angle C = 180 - 144.8$
$\angle C = 35.2°$



(5.) $C = \sqrt{458^2 + 403.1^2 - 2 \cdot 458 \cdot 403.1 \cos 35.2}$
$C = 265.6$ N

(6.) $2^{ND} \sin A = \frac{458 \sin 35.2}{265.6}$
$A = 83.7$

(7.) $83.7 + 45.2$
128.9
$128.9 - 90$
38.9 E of S

(7.) $V = 37.8$
$X = 1909.9$
$t = ?$
$V = \frac{X}{t}$
$t = X/V$
$t = 1909.9 / 37.8$
$t = 50.5$