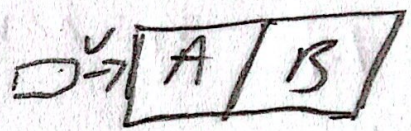
22



木块 A, B 的速率?

$I = F\Delta t$

$$F\Delta t_1 = (m_1 + m_2) V_A$$

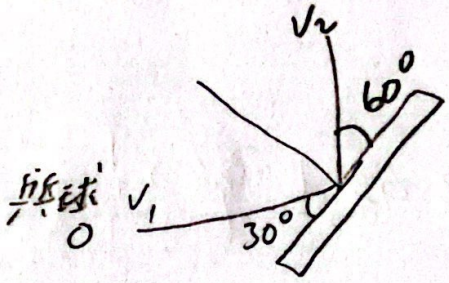
$$V_A = \frac{F\Delta t}{m_1 + m_2}$$

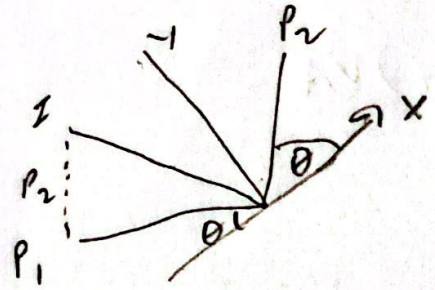
再B么 V_B $\quad F\Delta t_2 = m_2 V_B - m_2 V_A$

$$V_B = \frac{F\Delta t_2}{m_2} + V_A = F\left(\frac{\Delta t_2}{m_2} + \frac{\Delta t_1}{m_1 + m_2}\right)$$

2.33 50g 乒乓球 $v_2=8m/s$

$v_1=10m/s$





$P=mv$

(1) 乒乓球的冲量为

$$I=\Delta P=P_2-P_1=(P_{2x}-P_{1x})i+(P_{2y}-P_{1y})j$$

- $P_{2x}-P_{1x}=mv_2\cos\theta_2-mv_1\cos\theta$.

$=0.05\cdot(8\times\sin 60°+10(\sin 30°)$

$=0.05\cdot(6.9+5)=$ **0.60 Ns**

- I 的大小

$$|\Delta P|=\sqrt{(P_{2x}-P_{1x})^2+(P_{2y}-P_{1y})^2}$$

$=(0.23^2+0.60^2)=$ **0.64 Ns**

- I 的方向

$$\alpha=\arctan\frac{\Delta P_y}{\Delta P_x}=\arctan\left(-\frac{0.60}{0.23}\right)=$$ **111°**

(2) 乒乓的平均冲力

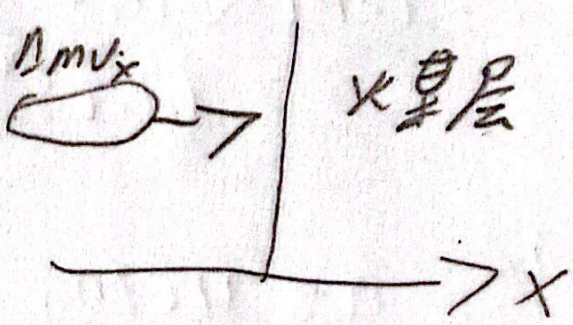
$$|\bar{F}|=\frac{|\Delta P|}{\Delta t}=\frac{0.717}{0.1}$$ **N=7.17N**

2.5

$D=30mm$

$V=56m/s$

$p=mv$



$\Delta m=\rho\Delta V=\frac{1}{4}\rho\pi D^2$ $\Delta x=\frac{1}{4}\rho\pi D^2 v\Delta t$

- 设水速 $v'=0$ 煤层对水柱的平均冲力为?

$$\overline{F}=\frac{\Delta mv'-\Delta mv}{\Delta t}=-\frac{\Delta mv}{\Delta t}\Rightarrow\frac{1}{4}\rho\pi D^2v^2=-2.22\times10^3N$$

- 水柱对煤层的平均冲力 $\overline{F'}=-\overline{F}=2.22\times10^3N$