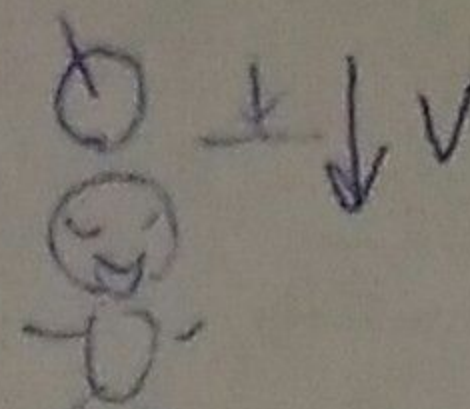
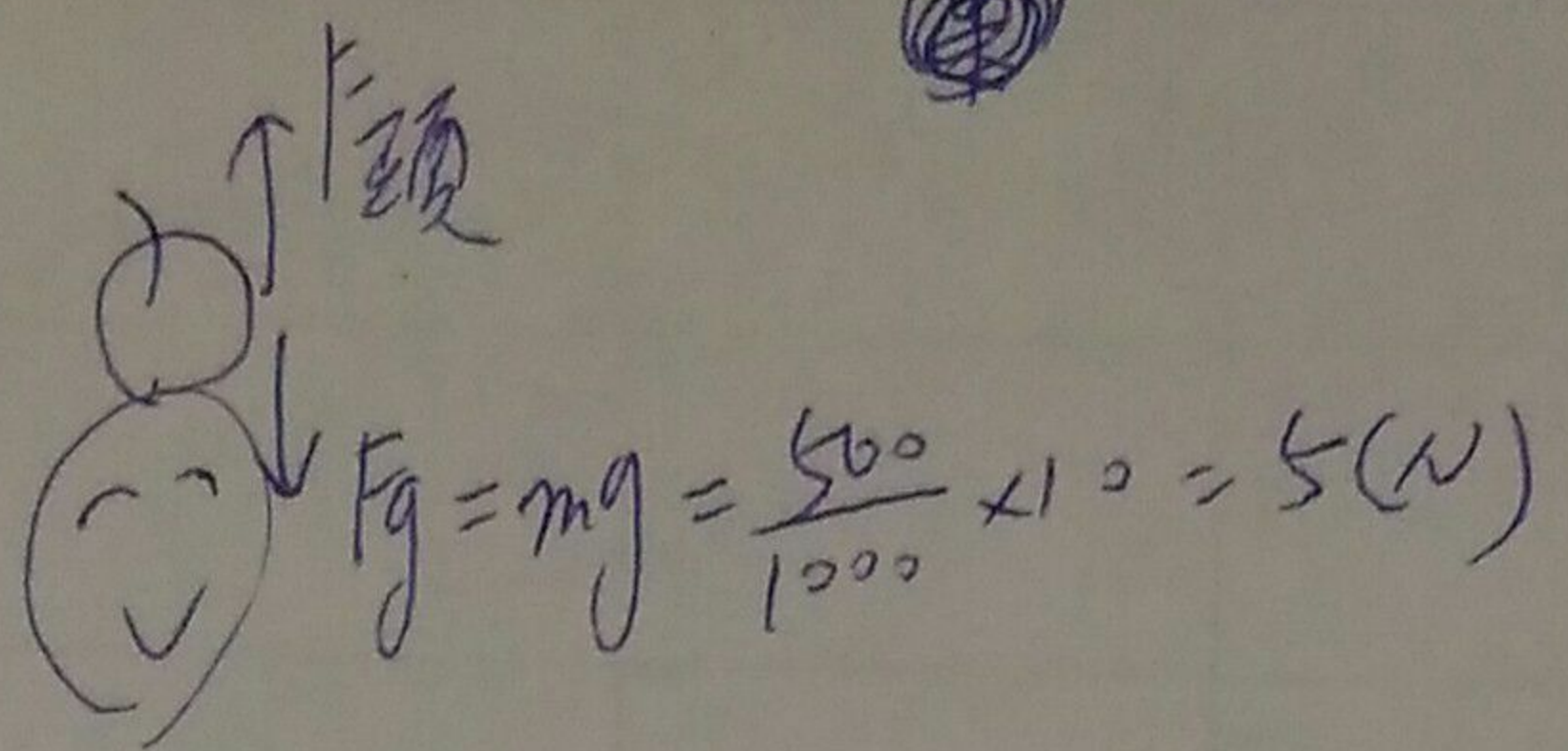


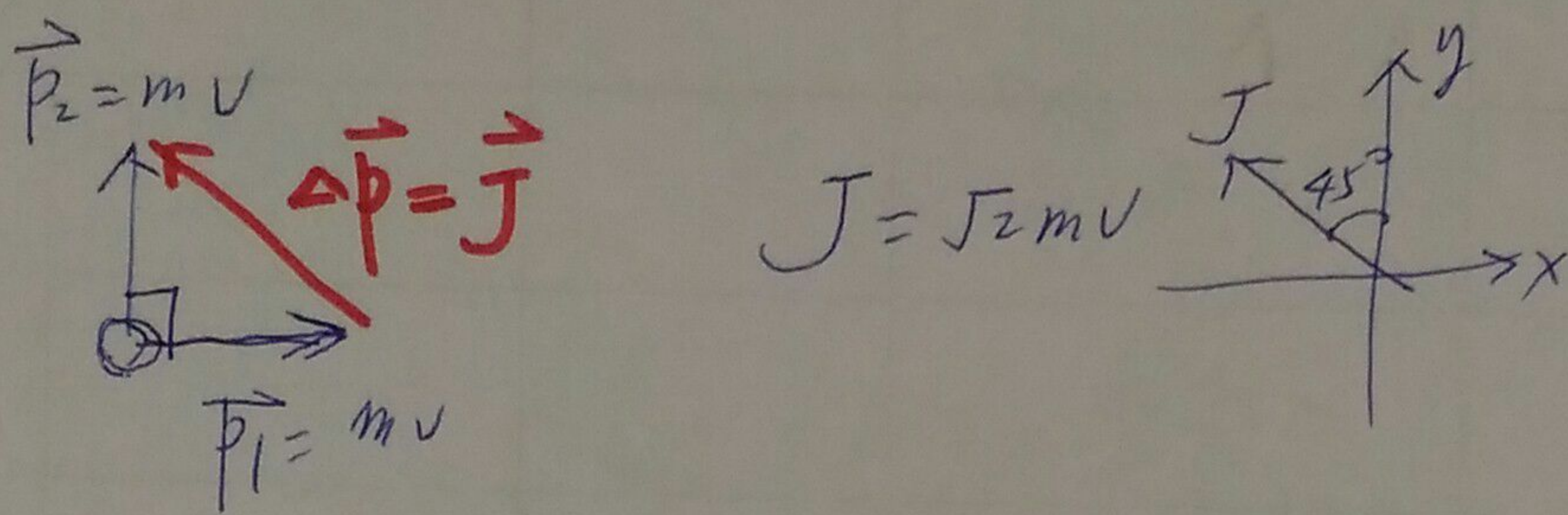
1. (1) $v = \sqrt{2gh} = \sqrt{2 \times 10 \times 2} = 2\sqrt{10}$

2m

 $F = \frac{\Delta p}{\Delta t} = \frac{\frac{500}{1000} \times 2\sqrt{10}}{0.1} = 10\sqrt{10} \text{ (N)}$

(2) 果: $\vec{F}_{\text{合力}} = \vec{F}_g + \vec{F}_{\text{頭}} \rightarrow 10\sqrt{10} = F_{\text{頭}} - 5$

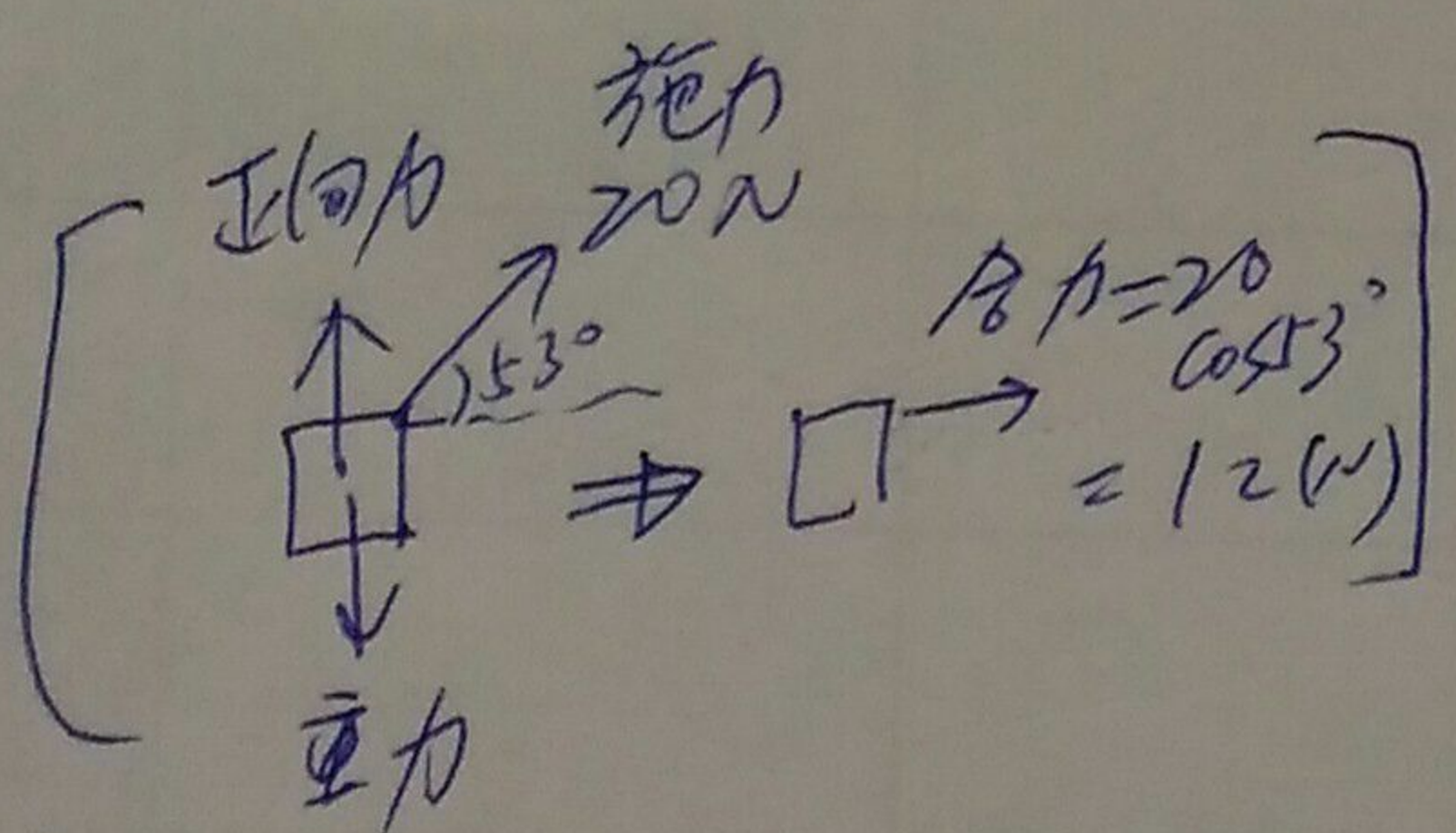
$\rightarrow F_{\text{頭}} = 10\sqrt{10} + 5 \text{ (N)}$ #



2. $\vec{p}_2 = m\vec{v}$

 $\Delta \vec{p} = \vec{J}$
 $J = \sqrt{2}mv$

3. (1) $\vec{J}_{\text{施力}} = \vec{F}_{\text{施力}} \Delta t = 20 \times 5 = 100 \text{ (N}\cdot\text{s)}$

(2) $\vec{J}_{\text{合力}} = \Delta \vec{p} = \vec{J}_{\text{合力}} = \vec{F}_{\text{合力}} \Delta t$

$\left[\begin{array}{l} \text{正功} \\ \text{施力 } 20\text{N} \\ \text{重力} \end{array} \right] = (\vec{F}_{\text{施力}} + \vec{F}_{\text{重力}} + \vec{F}_{\text{正功}}) \Delta t$

 $\Rightarrow \left[\begin{array}{l} \text{合力} = 20 \\ \cos 53^\circ \end{array} \right] = 20 \cos 53^\circ \times 5$
 $= 60 \text{ (kg}\cdot\text{m/s)}$ #

4. (1) $\Delta p = F-t \text{ 面積} = \frac{1}{2} \times (2+4) \times 10 = 30$

$5V_4 - 5 \times 5 = 30 \therefore V_4 = 11 \text{ (m/s)}$

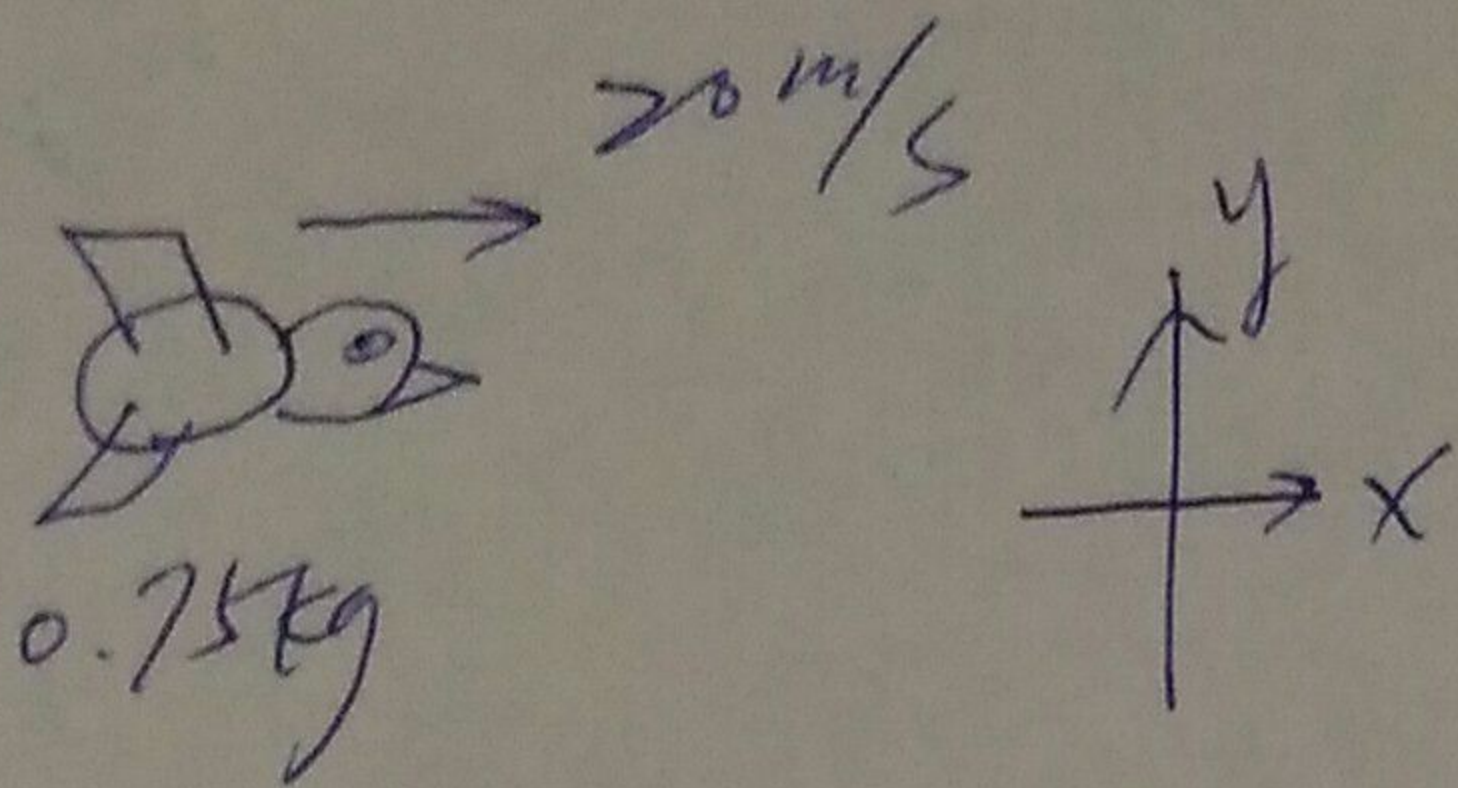
(2) $F = \frac{\Delta p}{\Delta t} = \frac{30}{4} = 7.5 \text{ (N)}$

5. $A+B$: 動量守恆 \Rightarrow
令向東為正

$$1500 \times 20 - 1000 \times 10 = (1500 + 1000) V$$

$$V = \frac{20000}{2500} = 8 \text{ (m/s)} \text{ 向東}$$

6.



動量守恆:

$$0.75 \times 20 \hat{i} + 0.1 \times 150 \hat{j} \\ = (0.75 + 0.1) \vec{V}$$

$$\vec{V} = \frac{15}{85} \times 20 \hat{i} + \frac{10}{85} \times 150 \hat{j} \\ = \frac{300}{17} \hat{i} + \frac{300}{17} \hat{j}$$

$$\rightarrow V = \frac{300}{17} \sqrt{2} \text{ (m/s)}$$