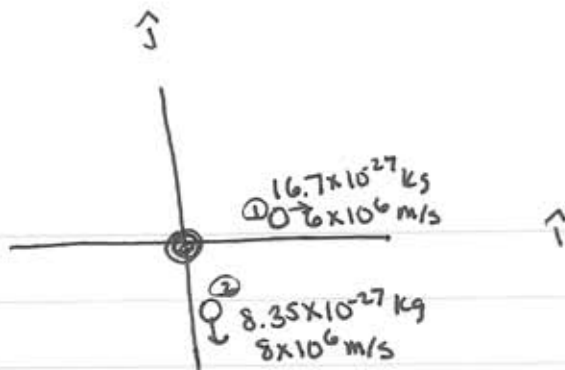


9-110



	$\hat{x}$	$\hat{y}$
Before	0	0
After 1	$(16.7 \times 10^{-27})(6 \times 10^6)$	0
2	0	$(8.35 \times 10^{-27})(-8 \times 10^6)$
3	$(11.7 \times 10^{-27})V_{3x}$	$(11.7 \times 10^{-27})V_{3y}$
Total	$1.00 \times 10^{-19} + 11.7 \times 10^{-27} V_{3x}$	$-6.68 \times 10^{-20} + 11.7 \times 10^{-27} V_{3y}$

$$\hat{x}: 1.00 \times 10^{-19} + 11.7 \times 10^{-27} V_{3x} = 0$$

$$V_{3x} = -8.55 \times 10^6 \text{ m/s}$$

$$\hat{y}: -6.68 \times 10^{-20} + 11.7 \times 10^{-27} V_{3y} = 0$$

$$V_{3y} = 5.71 \times 10^6 \text{ m/s}$$

$$|V_3| = \sqrt{(8.55 \times 10^6)^2 + (5.71 \times 10^6)^2}$$

$$V_3 = (-8.55 \times 10^6 \hat{x} + 5.71 \times 10^6 \hat{y}) \text{ m/s} = 10.3 \times 10^6 \text{ m/s}$$

$E_{\text{kinetic, before}} = 0$

$$E_{\text{kinetic, after}} = \frac{1}{2} m_1 v_1^2 + \frac{1}{2} m_2 v_2^2 + \frac{1}{2} m_3 v_3^2$$

$$= \frac{1}{2} (16.7 \times 10^{-27}) (6 \times 10^6)^2 + \frac{1}{2} (8.35 \times 10^{-27}) (8 \times 10^6)^2 + \frac{1}{2} (11.7 \times 10^{-27}) (10.3 \times 10^6)^2$$

$$= 3.01 \times 10^{-13} + 2.67 \times 10^{-13} + 6.21 \times 10^{-13}$$

$$= 11.89 \times 10^{-13} \text{ Joule}$$