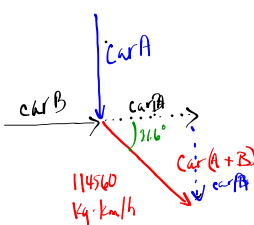


MP/509
37. 

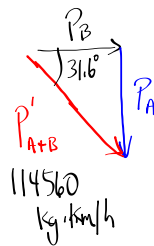
$M_A = 1750 \text{ kg}$
 $M_B = 1450 \text{ kg}$
 $M_{A+B} = 3200 \text{ kg}$
 $V'_{A+B} = 35.8 \text{ km/h}$
 $[E 31.6^\circ S]$

	BEFORE		AFTER	
	x	y	x	y
car B	x	0	car(A+B)	97574
car A	0	y		-60028
TOTAL	97574	-60028	TOTAL	97574
				-60028

Car A: $x = 97574 \text{ kg}\cdot\text{km/h}$
 $V = \frac{97574 \text{ kg}\cdot\text{km/h}}{1450 \text{ kg}}$
 $\vec{v} = 67.3 \text{ km/h [E]}$

Car B: $\frac{60028}{1750 \text{ kg}}$
 34.3 km/h [S]

Momentum Vector Addition Diagram:




38. 4.5 m/s 89.8° CW from +x-axis.

39. $E_{KA} = 12.1 \text{ J}$
 $E'_{Ktotal} = 10.2 \text{ J}$ } not elastic

$\frac{1}{2}(0.155 \text{ kg})(9.56 \frac{\text{m}}{\text{s}})^2 + \frac{1}{2}(0.155 \text{ kg})(6.33 \frac{\text{m}}{\text{s}})^2$

40. $\vec{P}_{AB} = 1.24 \times 10^5 \text{ kg}\cdot\text{km/h}$ [CW 59.5°]

had to find using 2D mom. conserv.



$E_{ktotal} = 3.60 \times 10^6 \text{ kg}\cdot\text{km}^2/\text{h}^2$
 $E'_{ktotal} = 1.80 \times 10^6 \text{ kg}\cdot\text{km}^2/\text{h}^2$ NOT ELASTIC.