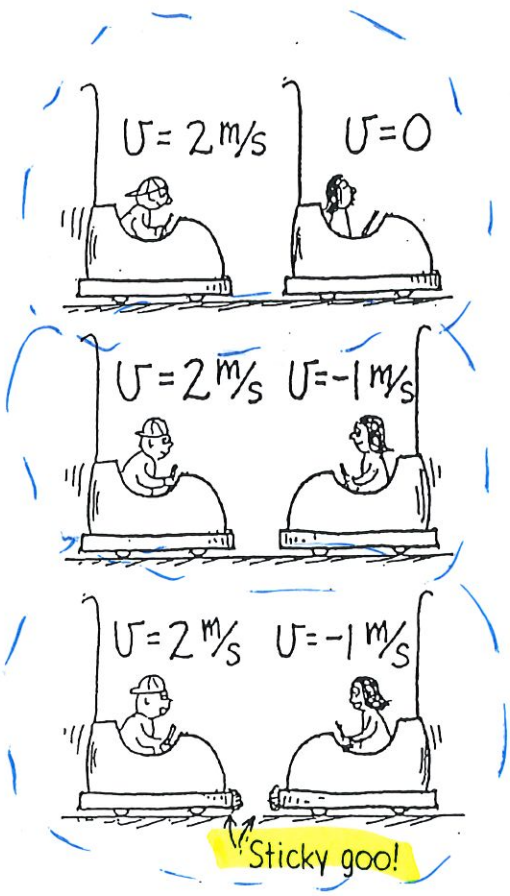
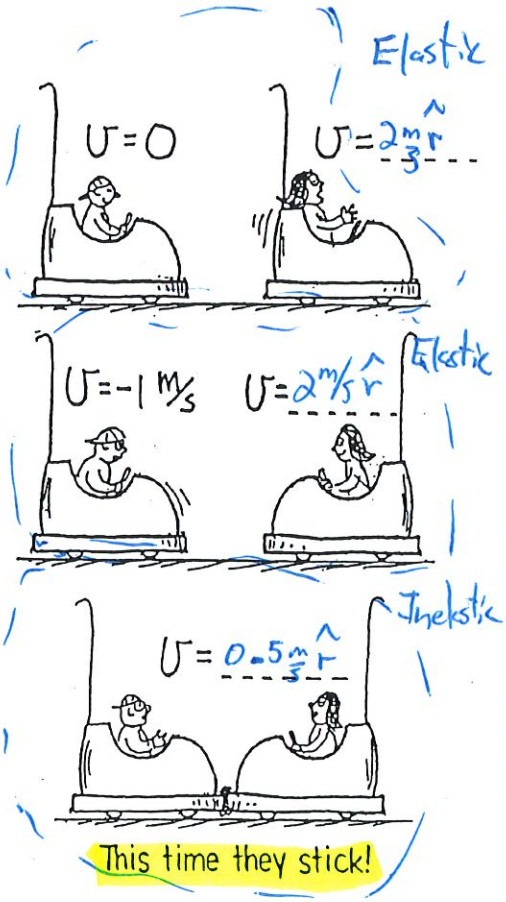
Chapter 6 Momentum
Momentum Conservation

Momentum conservation for colliding balls, freight cars, and fish are worked out in the textbook. Here we consider more collisions. In the table below, fill in the numerical values for total momentum before and after the collisions of the two-body systems. Also fill in the blanks for velocity.

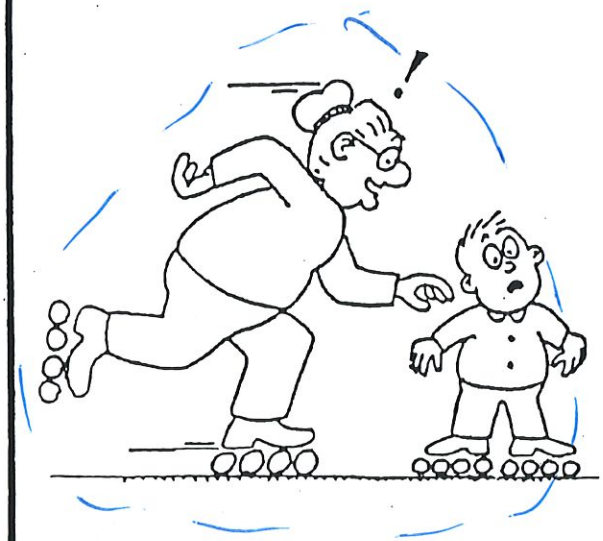
1. Bumper cars are fun. Assume each car with its occupant has a mass of 200 kg.



Momentum of Two-Car System	
BEFORE	AFTER
$400 \frac{kg\,m}{s}\hat{r}$	$400 \frac{kg\,m}{s}\hat{r}$
$200 \frac{kg\,m}{s}\hat{r}$	$200 \frac{kg\,m}{s}\hat{r}$
$200 \frac{kg\,m}{s}\hat{r}$	$200 \frac{kg\,m}{s}\hat{r}$



2. Granny whizzes around the rink and is suddenly confronted with Ambrose at rest directly in her path. Rather than knock him over, she picks him up and continues in motion without "braking."



DATA

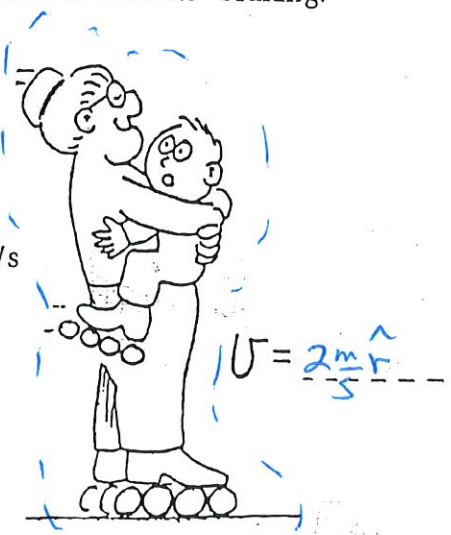
Granny's mass; 50 kg

Granny's initial speed; 3 m/s

Ambrose's mass; 25 kg

Ambrose's initial speed; 0 m/s

Momentum of Granny-Ambrose System	
BEFORE	AFTER
$150 \frac{kg\,m}{s}\hat{r}$	$150 \frac{kg\,m}{s}\hat{r}$



Inelastic