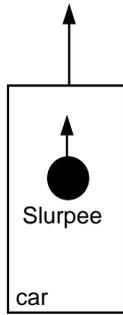
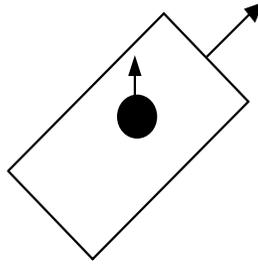


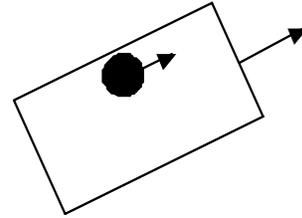
Procedure Step 2
Figure A



The car and Slurpee move together in a straight line before the turn.



Friction force exerted by the road on the car is directed toward the center of the car's circular path and causes the car to accelerate (turn). But there is little friction between the Slurpee and the dashboard, so the Slurpee does not accelerate. It continues to move in a straight line. The Slurpee thus runs into the left wall of the car.



After the Slurpee hits the car, the car exerts a force on the Slurpee that is directed toward the center of the car's circular path. This force causes the Slurpee to accelerate (turn) along with the car.

Procedure Step 4
Figure B



Procedure Step 7
Figure C

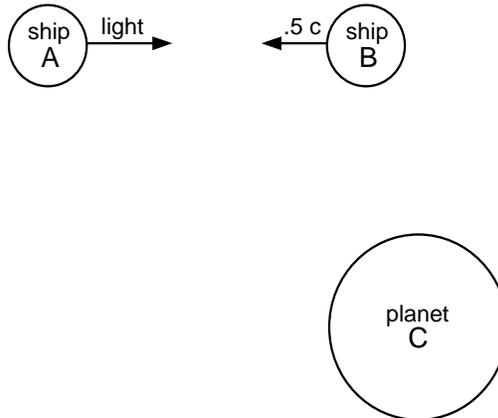


Figure A
**Centrifugal
 Force
 Rubric**

Criteria	highest				lowest	not applicable
	5	4	3	2	1	
Motion of Slurpee is described in the driver's reference frame.						
Motion of Slurpee is explained in the driver's reference frame.						
Students explain that centrifugal force has to be invoked in the driver's reference frame because this frame is accelerating.						
Motion of Slurpee is described in an inertial reference frame.						
Motion of Slurpee is explained in an inertial reference frame.						
Students explain that you may correctly argue that centrifugal force is real or fictitious.						
Students explain why centrifugal force is not mentioned in many physics texts.						
Arguments were well presented, using good grammar and speaking skills.						
Students are attentive and courteous while others contribute to the debate.						

Figure B
**Skit
 Rubric**

Criteria	highest				lowest	not applicable
	5	4	3	2	1	
Effect of relativistic speed on the passage of time was addressed.						
Effect of relativistic speed on observed length was addressed.						
Effect of relativistic speed on observed mass was addressed.						
Communication problems that arise when the ship is far from earth were illustrated.						
Performers made effective use of make-up and/or other props.						
Attention was paid to details. Relativistic effects illustrated in the skit correspond to the stated speed of the ship.						
The skit was well presented. Performers used good grammar and speaking skills.						
Students were attentive and courteous while others were performing.						