

Connecting With Your Child

Energy and Collision at Home

This activity will help your child explore the transfer of energy between objects that are at rest and objects that are moving as they collide.

The only materials you will need are two balls and different types of flat surfaces. You may use any surface on which to roll the balls; however, the smoother the surface, the more movement you will observe in the balls as they roll toward each other. The balls can be different sizes and masses, but make sure they do not bounce as you begin to roll them. Before each situation below, have your child predict what each ball will do after the collision.

1. Keep one ball still, and roll the other ball toward it. Observe both balls' accelerations and directions of travel after the collision. How does this compare with your prediction?
2. Roll both balls toward each other from opposite directions. Observe both balls' accelerations and directions of travel after the collision. How does this compare with your prediction? Which way did both balls move after the collision?
3. Roll both balls in the same direction (one after another). You should roll one ball slowly and the other ball at a faster speed. Observe both balls' accelerations and directions of travel after the collision. How does this compare with your prediction? Did the slower ball accelerate after the collision? Which way did the balls move after the collision?

How did the positions of the balls affect the directions and movements after they impacted each other? Objects of different masses and varied velocities have different amounts of momentum. The varied momentums change the behaviors and directions of the objects with which they come into contact as the energy transfer happens.

Here are some questions to discuss with your child:

1. Which forces acted on the balls?
2. What is acceleration?
3. Why did one ball stop and the other ball roll when they hit each other?
4. Did the acceleration of the balls change how they both reacted when they collided?
5. What other forms of energy were produced when the balls collided?