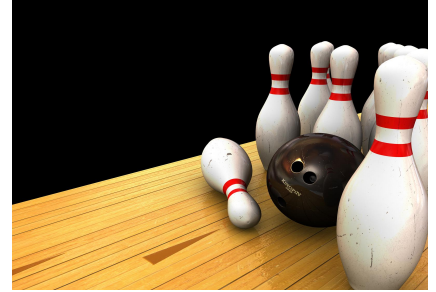


Reflect



Imagine a bowling ball rolling very slowly down a bowling alley. Now imagine the same bowling ball rolling very quickly down a bowling alley. Will the slow-moving bowling ball or the fast-moving bowling ball knock over more pins? Why do you think so?

It may not be pleasant to think about, but chances are we have all been hit by a ball, a water balloon, or something else while playing with our friends. Picture yourself being accidentally hit by a basketball while playing. Would you rather be hit by a slow-moving basketball or a fast-moving basketball? Why?

Chances are you would rather be hit by a slow-moving basketball. A slow-moving basketball will likely hurt much less than a fast-moving basketball. Do you know why?

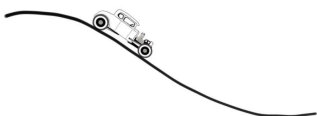
Speed and energy are related.

The slow-moving basketball will likely hurt less, because it has less energy. There is a relationship between speed and energy.

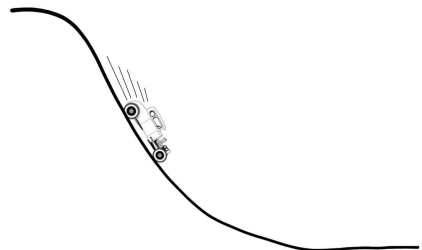
If two objects are the same size and weight, then the object moving quickly has more energy than the object moving slowly.

What Do You Think?

Look at the two pictures below. In which picture do you think the car has the most energy? Why do you think so? Go to the next page for the answer.



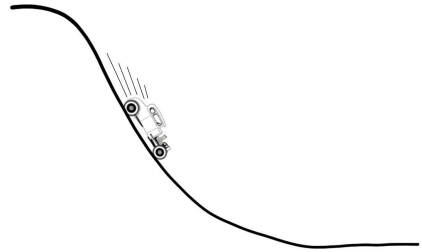
A



B

Energy and Speed

The car in image B will have more energy. As we know, the faster an object moves, the more energy it has. Since car B is moving faster than car A, it will have more energy.



Now think back to our original bowling ball example. Do you think the fast-moving or the slow-moving bowling ball will do more damage to the pins?

If you said the fast-moving bowling ball would do more damage to the pins, you are correct. If everything else stays the same, such as the mass of the bowling ball and the mass of the pins, then the fast-moving bowling ball will have more energy than the slow-moving bowling ball and will likely knock down more pins. Knocking down more pins is the evidence we can use to claim that the fast-moving ball has more energy. It had more energy to pass on to the pins, causing more to be knocked over!

Try Now

Read each pair of statements and discuss with a partner which one you think describes the object with more energy.

1. A race car on a racetrack moving 20 miles per hour
OR
an identical race car moving 40 miles per hour
2. A skydiver who is falling at 80 kilometers per hour
OR
the same skydiver falling at 95 kilometers per hour
3. A baseball thrown by a professional baseball pitcher
OR
a baseball thrown by a child