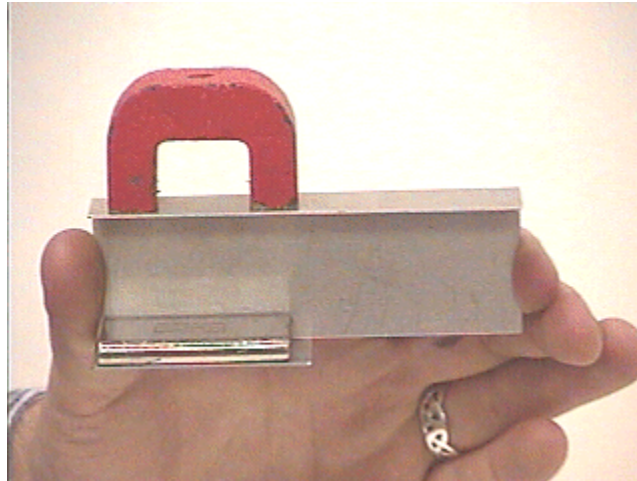


## Answer #107

The answer is (c): the magnet will accelerate faster. In fact, almost immediately after they are released the magnet and the keeper are pulled together, as seen in an mpeg video by clicking your mouse on the photograph below. Note that the video moves at one-fifth speed so that the action can be observed more clearly.



Both the magnet and the keeper begin to accelerate downward with the acceleration of gravity as soon as they are released. However, there is an additional force, namely the magnetic force between them that pulls them together as they fall.

Another way to view this is to look at the sequence of events in the frame of reference of the accelerating magnet and keeper. Because they are in free fall subject to the acceleration of gravity, the coordinate system accelerating with them is a "local inertial frame of reference." In this system the magnet and the keeper "appear" weightless, so the magnetic force between them immediately pulls them together.

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For questions and comments regarding the *Question of the Week* contact [Dr. Richard E. Berg](#) by e-mail or using phone number or regular mail address given on the [Lecture-Demonstration Home Page](#).