

Speed and Large vs Small Mass Lab



Does a larger ball with the same force move faster or slower than a smaller ball?

What You Need:

- 1** A larger ball and a smaller ball made of a similar material.
- 2** A smooth floor area.

What To Do:

Predict which ball will travel faster (have greater acceleration) to the end point and explain why you think that.

On the floor, mark a starting and end point. Practice with a partner using the same size balls first to ensure you can apply the same amount of force with your 'gentle push'.

(Same force occurs when the balls roll to the end point at the same time.) Then, at the same time each person gives a gentle push using the same force, on the large and small balls. Observe to see which ball gets to the ending point first.

Background Information

Speed and Large vs Small Mass

If you apply equal forces to two objects, the one with the smaller mass will accelerate more. Students may have to try the lab a few times to see this result. In order to have the larger ball go at the same acceleration as the smaller ball, the larger ball will need to have a greater force.