

# DIY Inertia Walker



## FUN FACT

Inertia combined with the gravitational pull from the sun, is what keeps our planet, Earth, orbiting the sun.

## INERTIA

Newton's 1st law states an object at rest remains at rest, and an object in motion remains in motion unless acted on by an unbalanced force. In other words, we call the tendency of an object to do nothing or remain unchanged inertia.

We often experience inertia in our lives! Think about driving in a car and someone applies the brakes. Your body tries to keep moving forward, but the seatbelt holds you safely in place. Try looking at your chocolate milk while you are stirring it next time. Although you pull the spoon out, the milk keeps spinning and swirling in the cup.

## MATERIALS

- Inertia walker printout
- Scissors
- Tape
- Marble
- Ramp

## DIFFICULTY



**Why do dentists love riding roller coasters?**

\*Answer on the next page

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\*Joke Answer -  
They know how to  
BRACE themselves!

## DIY Inertia Walker

### EXPERIMENT

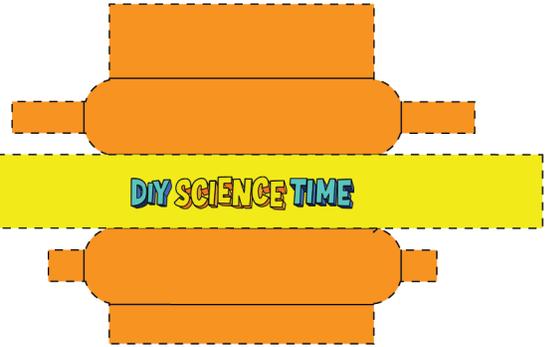
**Step 1:** Print and cut out the walker on the dashed line.

**Step 2:** Fold and crease the tabs on the solid lines.

**Step 3:** Tape the walker together where the tabs overlap. Place a marble inside the walker before taping closed.

**Step 4:** Build a ramp using books and a long flat surface such as a wood board or long box.

**Step 5:** Place your walker at the top of the ramp and release it!



### WHY IT WORKS

Objects in motion want to stay in motion, and the marble inside the walker wants to roll down the ramp. The marble has enough inertia to push and force the rounded end of the walker down the ramp. Without that extra force from the marble, the walker would not be able to overcome the friction between its long side and the ramp's surface. This allows the walker to tumble and turn all the way down the ramp!

### EXTEND YOUR LEARNING

- Could you design your own walker using household materials available to you?
- What happens if you use a larger or smaller marble? Can a smaller marble keep the walker moving?
- What other types of ramps could you test your walker on? Would it work on a slide at the park?
- Could you create a differently-shaped three dimensional object to be a walker? Would a cube work?

### WORKFORCE CONNECTION

Biomedical engineers called kinesiologists are scientists who study how people move. Kinesiologists can help athletes improve how they perform in their sports by showing them how their motions can enhance their physical fitness and reduce chances for injuries. They must understand motion and forces, like inertia and gravity, and how they impact athletes' bodies.