FUNNY FORCES

STUDENT WORKBOOK

ACCELERATE

ACTIVITY 1

PING-PONG PHENOMENON

Have you ever seen a flying object that looks like it's hovering in mid-air? Can you keep a ball in the air without touching it?

1 FREE FLOATING

WHAT YOU NEED:

FROM THE KIT:

- Foam ball
- Ping-pong ball
- Straw
- Wood ball

OTHER ITEMS:

- Marker

WARNING:

Choking Warning – Small parts. Keep away from children under 3 years old.

WHAT TO DO:

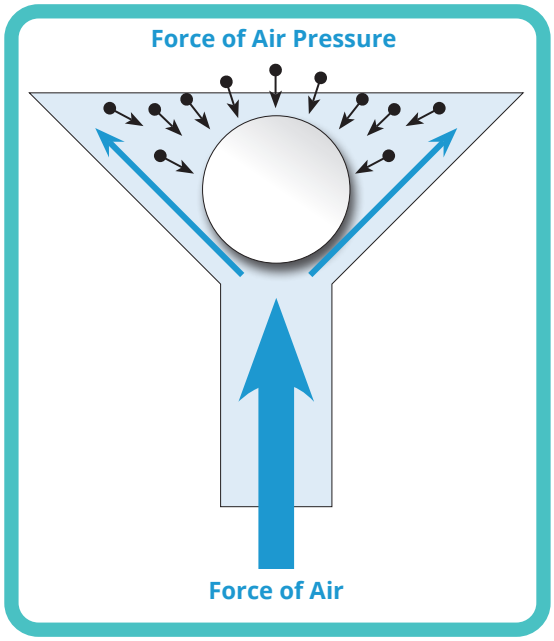
STEP 1

Open the flexible straw and bend it at a right angle. Place the long end of the straw in your mouth, so that the short end is pointing straight up in the air.

STEP 2

Hold the ping-pong ball above the short end of the straw and blow a steady stream of air to push the ball up in the air. Let go of the ball. What happens?

STEP 3 Use a marker to draw a design on the ball. Repeat Step 2, paying close attention to the design you made.



This is where pressure comes in, pushing and shoving! All those air molecules on top push into the space with fewer air molecules. The difference in pressure forces the ball back down into the funnel no matter how hard you blow. Even when you turn the funnel sideways or upside down, the air pressure is strong enough to keep the ping-pong ball in the funnel.

THINK ABOUT IT!

1. Describe the motion of the ball when you blow fast and slow through the funnel.

2. Draw a picture of the ball and the funnel pointed sideways. Add arrows in your picture to show the forces interacting with the ping-pong ball.

How Does a Wheel and Axle Work?

Many of the wheels you see in the world spin around an axle. The wheel spins around a fixed axle to move a vehicle forward or catch the motion of wind or water. This spinning motion can be used to store energy – like a wind turbine. Other wheel and axle machines move or lift an object – like pulling water up from a well.

Wind turbine

A wind turbine is turned by the wind, similar to the pinwheel in your experiment. The turbine changes the kinetic energy of the wind into stored, electrical energy.

Bicycle wheels

The bike rider pushes on pedals that turn the wheels of a bicycle, to move forward. Often, vehicles have wheels and axles that are powered by a motor that turns the wheels.

Gears

Instead of turning wheels over the ground, gears are wheels that connect to turn in place. Gears are helpful to increase or decrease the speed at which a wheel turns.

WHAT IS AN INCLINED PLANE?

II

Inclined Plane Experiment

WHAT YOU NEED:

FROM THE KIT:

- ■ Box the kit came in
- ■ Masking tape roll
- ■ Ruler
- ■ String

OTHER ITEMS:

- ■ Scissors

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Kit	SU-FUNFOR
Instructions	IN-FUNFORS
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