

Gravity

The Lowdown on Gravity

Supplies

30 marbles

Scissors

One large plastic milk container
(clean and dry)

One wide rubber band

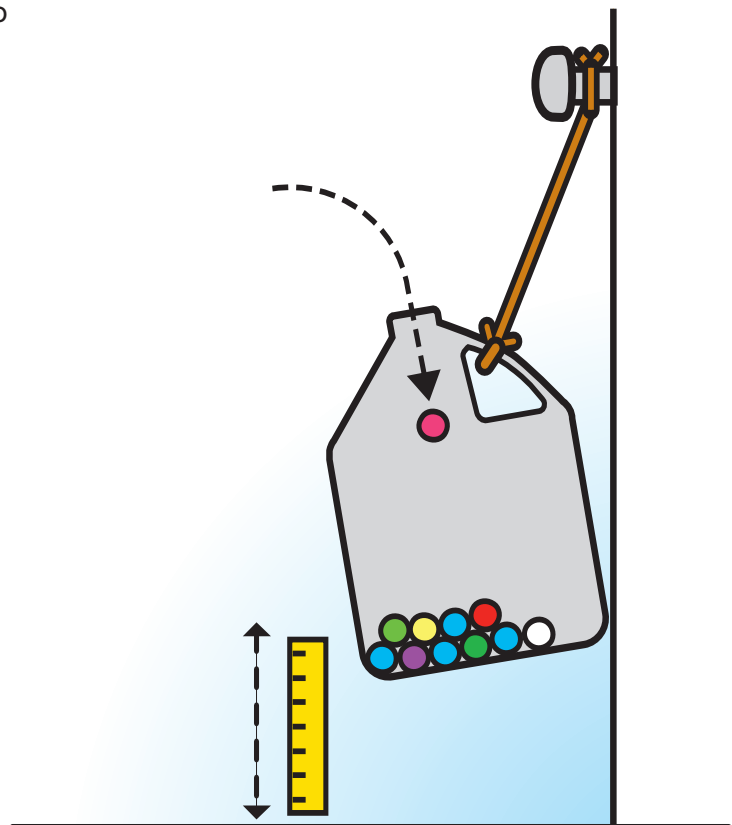
Procedure

1. Hang the plastic milk container: Cut across the rubber band to make a single strip. Tie one end of the rubber band to the container and the other to a door handle or coat hook.
2. Drop 10 marbles into the container. Measure the distance from the container to the floor.
3. Repeat: Add 10 marbles and measure the distance to the floor; then add the final 10 marbles and measure again.

Questions

What were your results?

How does this demonstrate the force of gravity?



Gravity

Galileo's Race

Supplies

One chair

One coin

Two shoes

Procedure

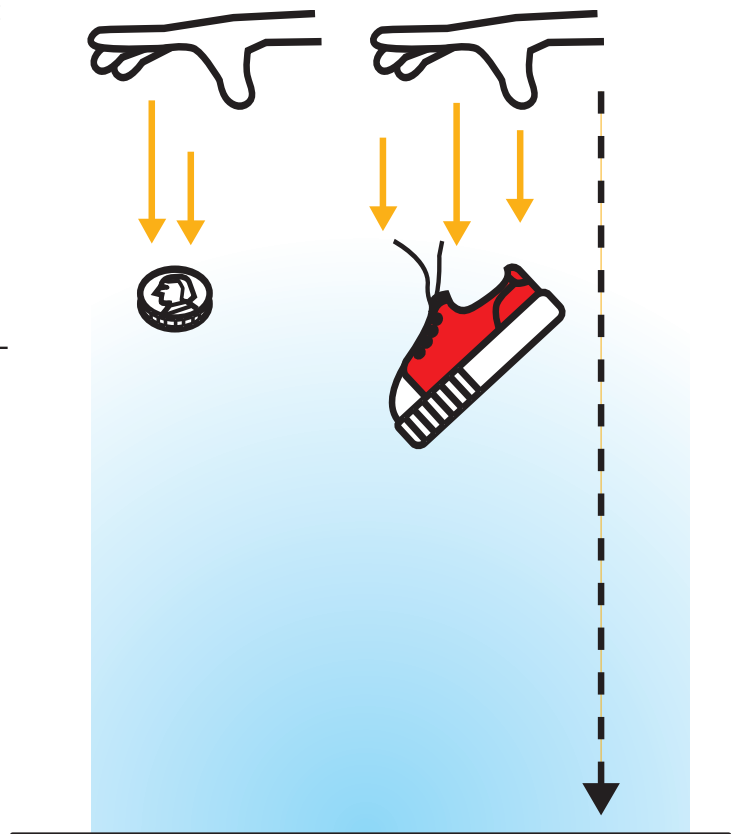
1. Ask each member of your group to predict which object will fall faster: a heavy one or a light one. Record their answers.
2. Stand on the chair while your partners lie on the floor to measure the time of impact.
3. Hold the two shoes, one in each hand. Extend your arms straight out from your body so that each shoe is the same height from the floor. Release both shoes at the same time. Did they hit the floor at the same time? Record your observation.
4. Stand in the same position, but this time hold a shoe in one hand and a coin (or some other smaller and lighter object) in the other hand. Release both of these objects at the same time. Did they hit the floor at the same time? Record your observations.

Questions

What were your results?

Were your predictions accurate?

What do you think would happen if you dropped the same objects from 20 feet in the air?



Gravity

Newton's Ball Drop

Supplies

One large foam ball

30 feet of string

One marker

A stopwatch

Each group should have a teacher and three students: a timer, a measurer, and a recorder.

Procedure

1. Measure 5 feet of string and mark the 5-foot point with a black marker.
2. Your teacher stands on a chair, holds the ball 5 feet off the ground as measured by the string, and drops the ball.
3. Measure the amount of time it takes the ball to fall 5 feet. Record the number. Repeat two more times at 5 feet and record the numbers.
4. Repeat the experiment three times each at 10 feet up, 20 feet up, and 30 feet up, if possible. Your teacher can drop the ball from the gym bleachers, if necessary.
5. With your teacher's help, calculate the average time for the drop from each height and plot the averages on a graph of time versus distance. Draw a best-fit line to chart the effects of gravity.

Questions

What were your results?

What happened to the sponge's velocity as it fell from greater heights?

What results would you expect if you dropped the sponge from 100 feet, 500 feet, or 1,000 feet?

