

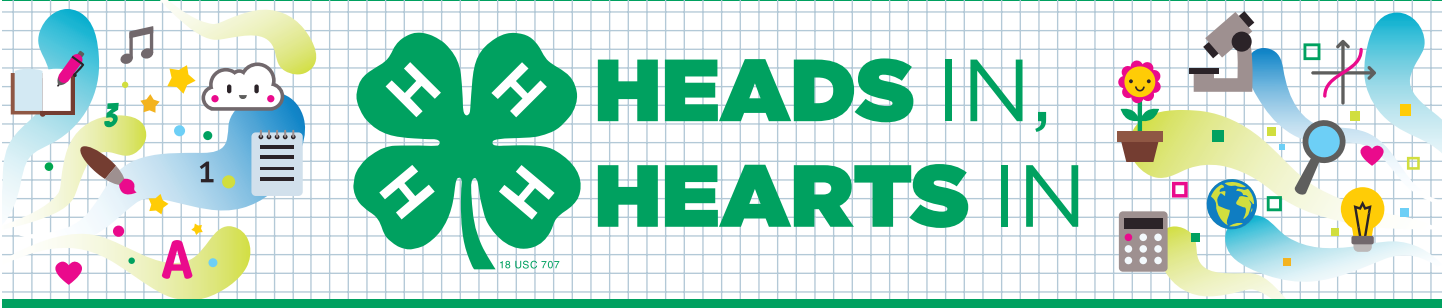
## Supplies

- ❑ “Guide for Families” handout
- ❑ Clear plastic standup display (optional)
- ❑ 10–15 different types of coins (pennies, nickels, dimes and quarters)
- ❑ 10–15 index cards, 3 inches by 5 inches
- ❑ Up to fifteen 9-ounce clear plastic cups
- ❑ Display table

## Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Set up display table with supplies.





# Coin Drop

## Guide for Families

### Learning Objectives

#### What you need to know:

Sir Isaac Newton defined the three laws of motion. The **first law of motion** states that an object at rest will stay at rest unless an external force is applied to it, and an object in motion tends to stay in motion with the same direction and speed unless an external force is applied to it.

**Gravity** is a force that pulls all objects towards the center of the earth.

**Friction** is a force that holds back the movement of a sliding object.

#### What you will do and learn:

You will experiment with friction, gravity and the law of motion by using coins, an index card and a cup.

### Instructions

1. Select a variety of 3 to 4 coins.
2. Place an index card on top of the cup.
3. Place the coins on top of the index card. Center the coins in the middle of the card but do not place them on top of each other.
4. Do you think you can remove the card so the coin falls in the cup?
5. Using your fingers, flick or pull the index card away from the cup. What happens to the coins?

Variations: Stack coins on top of each other. Use more or less fingers to flick the card.

The first law of motion helps us to understand why the coins drop directly into the cup. In this experiment, the coins are at rest while they sit on top of the card and cup. When you flick or pull the card out from under the coins, you enable **gravity** to act upon the coins and pull them into the cup. When the coins drop, the bottom of the cup stops the coins.

Why don't the coins stay with the card when the card goes flying? It's because of the lack of **friction**. There isn't enough friction between the coin and the card for the coin to stay with the card.