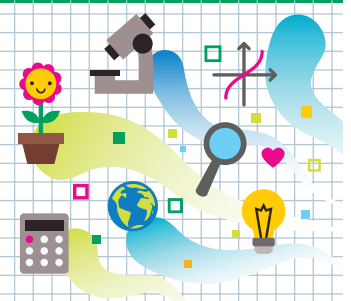




# HEADS IN, HEARTS IN

## Penny Scrubber

### Instructions for Set-Up



### Supplies

- ☐ “Guide for Families” handout
- ☐ Clear plastic standup display (optional)
- ☐ 1 gallon vinegar
- ☐ Small bowl
- ☐ 1 container of salt
- ☐ Plastic spoon
- ☐ Pennies (the dirtier, the better)
- ☐ 1/2 teaspoon measuring spoon
- ☐ 3–4 Styrofoam plates
- ☐ Waste bin (to pour out vinegar and salt solution)
- ☐ Display table

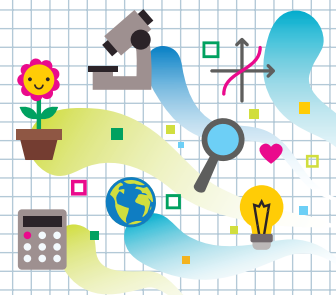
### Activity Preparation

- Purchase or locate items on the 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 appropriate supplies.





# HEADS IN, HEARTS IN



## Penny Scrubber Guide for Families

### Learning Objectives

#### What you need to know:

Pennies are made of **copper**. As a penny gets older the copper reacts with **oxygen** in the air and this causes it to tarnish or dull. The reaction of copper and oxygen mixing creates a substance called **oxide**.

#### What you will do and learn:

You will observe an acidic reaction and describe what happened.

### Instructions

1. Choose a penny.
2. Observe:
  - What does the penny look like?
  - What colors do you see on the penny?
  - Does the front of the penny look exactly like the back of the penny? What are the similarities? What are the differences?
3. Pour a small amount of vinegar into a bowl, just enough to cover the bottom of the bowl.
4. Add  $\frac{1}{2}$  teaspoon of salt to the bowl.
5. Mix with plastic spoon.
6. Add the penny to the bowl and use the plastic spoon to carefully stir the mixture, being sure that the penny is completely covered.
7. Remove the penny from the bowl using the plastic spoon, and place it on the Styrofoam plate.
8. Observe what happened.
9. Discuss:
  - What does the penny look like?
  - What colors do you see on the penny?
  - Does the front of the penny look exactly like the back of the penny? What are the similarities? What are the differences?

You have removed the oxide. The vinegar (**acetic acid**) and salt (**sodium chloride**) mixed to create **hydrochloric acid**. The hydrochloric acid “ate” or reacted with the oxide to leave you with a shiny penny that looks new again.