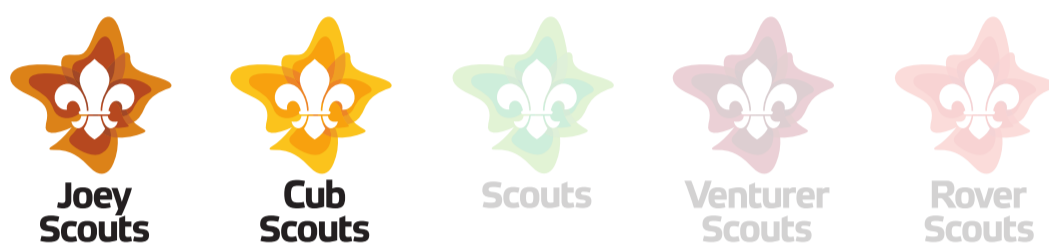


# Coin Cleaning

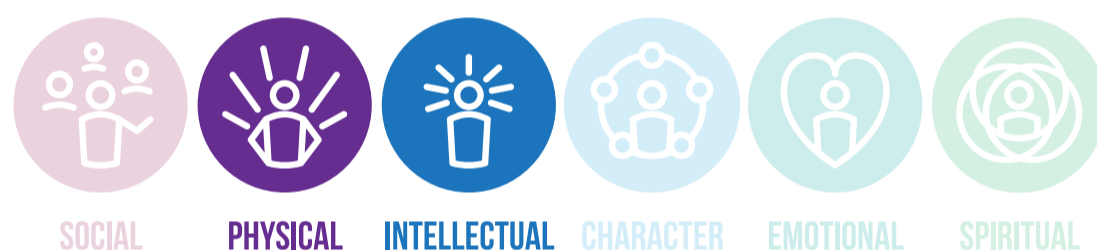
## Special Interest Areas



## Sections



## SPICES Growth Areas



## Challenge Areas



## Scout Method Elements



# The Adventure

Explore the chemistry of household acids and bases and how they react with coins. <https://www.gallykids.com/cleaning-coins-experiment>

## Plan

1. Investigate acids and their properties. Try identifying some household acids and bases and see if you can rank these from weakest to strongest.
2. Consider and investigate what makes copper coins look dirty over time.
3. Collect the materials required for the experiments and recording your results. Communicate with your patrol and leaders if you need to bring items from home.
4. Develop hypotheses regarding which liquids will clean the coins best and why.
5. Read the safety requirements and discuss with your leaders/adult supervisors what supervision and safety requirements might be needed.

## Do

1. Set up the experiment and record materials and hypotheses. Make labels where appropriate.
2. Make sure everyone is aware of the safety rules.
3. To 7 different cups, add  $\frac{1}{4}$  cup of one of the liquids: tomato sauce, Coke, apple juice, water, vinegar, and vinegar + salt, and lemon juice.
4. To make the vinegar + salt, add salt to a  $\frac{1}{4}$  cup of vinegar, and still until no more salt will dissolve.
5. Submerge a copper coin (e.g. Australian 1 cent piece) into each of the liquids and leave it for 10 minutes.
6. Remove the coins safely and wipe clean. Evaluate which coin is the cleanest. What liquids seems to work the best? Why? Record your results.
7. Using only the 2 best cleaners, put their coins back in the liquid and leave them for another 10 minutes.
8. Remove the coins and without wiping clean, leave them to air dry on some paper towel.
9. After 30 minutes look at your coins again. What has happened to them? Why might this have happened?

## Review

1. Evaluate your hypotheses. Which liquids cleaned the coins best, why? Was this what you had predicted?
2. What other household chemicals could clean coins? Would these be better or worse than the liquids you tested?
3. Can you think of any examples of these reactions occurring in the real world?
4. If you were to do this activity again, what would you do the same? What would you do differently?
5. For help understanding some of the reactions that occurred visit: <https://www.gallykids.com/cleaning-coins-experiment/>

## Safety

- Chemicals warning: Some of the chemicals used and produced in reactions may irritate skin. Make sure everyone takes care to wash their hands after handling the chemicals. Those with known sensitivities, particularly to copper, may wish to use gloves.

## Variations

- Try keeping the coins in the liquids for shorter or longer times. Does time affect how clean the coins are?
- A larger program can be build using other 'Acid and Bases' or chemistry challenge cards.
- Consider pre-preparing cups of the liquids for younger sections.
- Using what you have learnt, patrols could have a competition to find the best household or food liquid for cleaning coins.