

STEM Showdown

An Adelaide University, School of Education
STEMpire program

Who Ate the Teacher's Lunch?

Name: _____

The STEM Showdown is a series of STEM challenges to solve by the end of the season. You can complete the tasks individually or in small groups (up to 3 people). Make sure you write all the names of the people in your group above. The student with the most tasks completed over the season will be crowned the Adelaide University STEM Showdown Champion. Good Luck.

Who ate the teacher's lunch?

Lunches have been going missing in the staff room, in particular the cheese sandwiches. Can you help solve this mystery? Find the code to unlock the security footage.

Your Task

Predicting who the culprit is.

- You will need to make some invisible ink using bicarb soda and water. Mix half a teaspoon of bicarb soda with a small amount of water until it is a paste.
- On a piece of paper write down your suspect using your secret invisible ink.
- Leave it to dry.

Solve the mystery

- Make a mixture of hand sanitiser and turmeric and use this to paint over the supplied code card. This will reveal three numbers.
- Use the table to create all the combinations that can be made from those three numbers, one combination will open the lock and reveal the security footage.

What three numbers did you reveal on the mystery solving card? _____

Use the table to work out all possible combinations of those three numbers.

Which combination unlocked the footage _____

The culprit revealed in the footage is _____

Use the same turmeric and hand sanitiser solution to expose your prediction and show the Umpire – 3 bonus points if you guessed right.

STEM Showdown Umpire Comments	Completed (STEM Showdown Umpire to sign)

Extension task

Once you have completed the task you can try the extension activity.

This invisible ink works because of an acid base reaction.

The bicarb soda used to make invisible ink is a base, to expose the ink you must react it with an acid solution. The turmeric is slightly acidic.

Investigate other household solutions to find more chemicals that act as acids or bases. Fill in this table when you find an acid or base to collect extra points.

TESTING SOLUTION	ACID or BASE? (Acids will reveal invisible ink)

STEM Showdown Umpire Comments	Completed (STEM Showdown Umpire to sign)

Make sure you hand up your signed sheet to the umpire at the end of the session to have your points allocated to the leaderboard