

Secret Writing

Hide Your Messages in Plain Sight

When you're sending secret messages to other Motley Agents, sometimes you want to make sure B.O.R.E.D doesn't see them! One way you can do that is by using Secret Writing — or Invisible Ink — to write your messages! In this Motley Mission, we're going to practice some Secret Writing with things you can find around the house.

You will need:

- ♥ A paintbrush or cotton swab to write with
- ♥ Paper to write on
- ♥ Small bowls to mix your inks in
- ♥ Ink making supplies depending on your secret ink!

O1: Hidden Heat

You will need:

- ♥ Lemon juice or apple cider vinegar
- ♥ An iron or another source of heat

Send it: Use the lemon juice or vinegar to write your secret message and let it dry.

Receive it: Set your iron on high heat (no steam) and iron your paper slowly. You should see the secret message turning brown after 20-30 seconds of heat.

How does it work?

The sugars in the vinegar or lemon juice turn brown (caramelize) when heated to a much lower temperature than the paper does.

O2: Basic Brilliance

You will need:

- ♥ 1 tsp of baking soda
- ♥ 1 tsp of water
- ♥ Grape juice or grape juice concentrate (100% juice!)

Send it: Mix the baking soda and water together in a small bowl and use this mixture to write your message. Let it dry all the way

Receive it: Use a paintbrush to cover the paper with grape juice. Your message should turn pink.

How does it work?

Grape juice is an indicator, which is a substance that changes color when it's exposed to an acid or base. It reacts with the baking soda, which is a base, and turns pink.

03: White on White

You will need:

- ♥ A white crayon (this can also be done with a colorless wax stick, or a candle would do in a pinch)
- ♥ Grape juice or watercolor paints

Send it: Write your message on white paper with a white crayon

Receive it: Paint grape juice or dark colored paint (make sure it is water-based paint) over the paper and see the message appear!

How it works:

Crayons are made of wax, which is *hydrophobic*. That means that water doesn't stick to it. The grape juice and watercolor paints don't stick to the wax either (they're mostly water) and the colors will show up on the paper everywhere except where the wax sticks.

04: Bonus Secret Writing

Motley Agents who have our Craftables Kit will find a Secret Agent Pen in their briefcase. This pen uses a special type of ink that fluoresces (glows) under ultraviolet light to write secret messages that can only be seen when using an ultraviolet light.

If you have access to an ultraviolet light, look around your household for things you could use to write secret messages!

- ♥ Spies and secret agents used Secret Writing and invisible inks during the Revolutionary War.
- ♥ What kind of messages can you send with Secret Writing?
- ♥ How will you let the other Motley Agents know what to use to reveal it?