What’s hiding in black ink?

Ages 5–7 with a grown-up · 10–15 minutes · Separate a mixture

https://kiddos.ai/explorations/learning-with-gina-and-ollie/whats-hiding-in-black-ink

Wonder together

Just black? Gina made one black dot. What might water reveal?

Materials

A white paper coffee filter, suitable water-soluble washable black marker, plastic plate, blunt teaspoon and a little room-temperature water.

Adult setup — read before trying

Follow the marker age/use label. Adult controls caps and helps drops; keep materials from mouths/eyes. Water only: no permanent markers, alcohol or solvents. Protect the surface; no tasting or using the filter for food. Wash hands/equipment and dispose of water afterward.

Try together

1. Make a black dot on a dry white coffee filter. Rest it on a plastic plate.
2. Drop water onto the dot. Just a few drops. Wait a few minutes.
3. What colors can you see? Try another washable marker on a fresh filter.

Keep the comparison clear

Keep fixed: The same dot and filter as water moves outward.

What changes: Adding a few drops of water, then waiting.

Look for: Look for differently placed bands, lighter areas or colors in the spreading ink.

Explain with care

Water carries mobile colorants through paper. Different interactions with water and paper can separate some components of the ink.

Water does not create colors. Marker formulas differ: the story’s blue, pink and gold are one example, not a promised result.

Talk about it

Just black? Gina made one black dot. What might water reveal?

Answer cue: Welcome a guess before reading the result. No correct prediction is required.

What appeared as the water spread?

Answer cue: Describe any bands or light/dark areas, even when few colors separate.

Were the revealed colors made by the water?

Answer cue: No. They were components already in the ink.

© 2026 Kiddos LLC · Shared family & classroom discovery

A parent move: Accept descriptions of shapes and light/dark without requiring exact color names.

Start simply: Make a solid dot about 1 cm across, then use just a few small drops.

Explore further: Compare another suitable marker on a fresh filter, keeping dot size and water similar.

Return to it: Look at a dried filter and tell the before-and-after story.

In the classroom

Flexible 20-minute small-group session; pause or shorten as needed.

3 min · Wonder

Read pages 1–2. Invite a prediction with words, pointing or a sketch; keep the result hidden.

4 min · Notice the story

Read pages 3–5. What appeared as the water spread? Separate the observation from the explanation.

9 min · Try together

Use the materials and adult setup on this guide, then follow the activity steps in this guide. Look for differently placed bands, lighter areas or colors in the spreading ink.

4 min · Make meaning

Were the revealed colors made by the water? Invite a drawing, a description or an adult-written note. Accept descriptions of shapes and light/dark without requiring exact color names.

Understanding check

Were the revealed colors made by the water?

Answer guidance: No. They were components already in the ink.

Participation choices: Make a solid dot about 1 cm across, then use just a few small drops. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

mixture — Different things together.

chromatography — A way to separate parts of a mixture as a liquid or gas carries them through another material.

Full adult notes and honest limits

Prepare together. Use a white paper coffee filter, a child-appropriate black water-soluble washable marker, a plastic plate, a blunt teaspoon and a small amount of room-temperature water in a plastic cup. Read the marker label and follow its age and use instructions. This version uses water only: do not substitute permanent markers, rubbing alcohol or other solvents. No cutting, glass or heated water is needed. Protect the surface; ink can stain. An adult stays beside the activity, controls marker caps and helps with drops. Keep ink, wet paper and caps away from mouths and eyes. Do not taste the water or use the wet filter for food. Wash hands and the plate/spoon afterward and dispose of leftover water promptly.

Try the reveal. Flatten the dry filter on the plate. Make one solid black dot about 1 cm across at its center, then cap the marker. Ask for a prediction before adding water. Put a little water in the teaspoon and let a

© 2026 Kiddos LLC · Shared family & classroom discovery

few small drops fall onto the dot with adult help. Add water slowly rather than pouring a spoonful. Pause as it soaks through the paper; observe for a few minutes. Add another drop or two if the damp patch stops spreading before any separation appears. Stop before the filter is flooded or a puddle forms. Keep the plate still. The first and later pictures represent the same filter as time passes.

Understand the result. Many black marker inks contain several colorants. Water dissolves mobile components and carries them through the paper. Their differing interactions with the water and paper can separate them into visible bands: paper chromatography. Water does not create the colors. The illustrated blue, pink and gold are one example, not a guaranteed set, order or timing. Some washable markers separate only a little; paper type and ink formulation also matter. A permanent marker that does not move in water is not evidence that it contains only one color. Describe the result without blame. If needed, start again with a fresh filter and another suitable washable marker; never add another solvent.

Give the child a role. Welcome guesses without ranking them. Children can add drops with adult help, point to a band, compare its position, describe light and dark regions or draw what changed. No exact color name is required. Ask “What changed after we added water?” and “Were those colors already in the ink?” For a small group, prepare one supervised plate per turn and let children record a before/after sketch. To compare markers, keep the filter type, dot size and water amounts as similar as practical; change only the marker. Dry filters can become a record of the observation, kept away from younger children.

Read on. The Fizzy Volcano follows Gina and Ollie through a separate baking-soda-and-vinegar story. It does not contain this marker experiment. The current carousel separates an existing mixture; it does not claim that chromatography is the fizzy chemical reaction in that story. Illustrations and diagrams are editorial examples; no live family trial or measured learning improvement is claimed.

Related reading

The Fizzy Volcano shows a separate baking-soda-and-vinegar reaction. Separating ink is a different process.

Scientific sources

exploratorium-black-magic — https://dev-annex.exploratorium.edu/science-explorer/black_magic.html

acs-investigating-ink — https://www.acs.org/education/activities/investigating-ink.html

acs-mystery-markers — https://www.acs.org/education/activities/mystery-markers.html

Read with confidence. Explore Kiddos Books with a grown-up.

App Store: https://apps.apple.com/app/id6720721998

Available physical books: https://www.amazon.com/author/kiddos-books