INVISIBLE INK LAB

NAME

CLASS / DATE

01 QUESTION

How does the type of liquid used as invisible ink change how quickly the writing appears when heated?

02 PREDICT BEFORE YOU MEASURE

WHICH LIQUID WILL MAKE THE WRITING APPEAR FIRST?

○ lemon juice ○ milk ○ baking soda solution ○ plain water ○ not sure yet

Predict before heating; use the measured seconds, not the prediction, to decide.

03 VARIABLES

I CHANGE (INDEPENDENT)	I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: THE LIQUID USED AS INK. MEASURED: SECONDS UNTIL VISIBLE AND DARKNESS. KEEP PAPER, SWAB, AMOUNT, DRYING TIME AND HEAT SOURCE AND DISTANCE THE SAME.

04 MATERIALS

☐ Four matching sheets and one untreated sheet

☐ Four labeled cups: lemon juice, milk, baking soda solution, water

☐ Four swabs and a pencil

☐ Timer, goggles and heatproof tile

☐ Adult-held hair dryer on low

05 PROCEDURE

SAFETY Heat sources can burn skin or scorch paper into flame if held too close: an adult handles the heat source and keeps the paper moving, never held still against it. Use only a moving hair dryer on a low setting, kept away from the paper, and stop before the page browns or smokes. Never use candles, matches, irons, stovetops or open flames.

1 **WRITE** Dip a fresh swab in each liquid and write the same short word or symbol on its own sheet. Label the back in pencil. ☐

2 **DRY** Let every sheet air dry completely, away from sunlight, until you cannot see the writing. ☐

3 **HEAT** The adult holds a hair dryer on low, moving, at the same distance over each sheet. Never hold paper still against heat. ☐

4 **TIME** Start the timer when warm air reaches the sheet. Stop it when the mark is visible or at 120 s. ☐

5 **COMPARE** Rate each mark light, medium or dark and compare with the water and untreated sheets. Do not taste the liquids. ☐

DATA AND EXPLANATION

NAME

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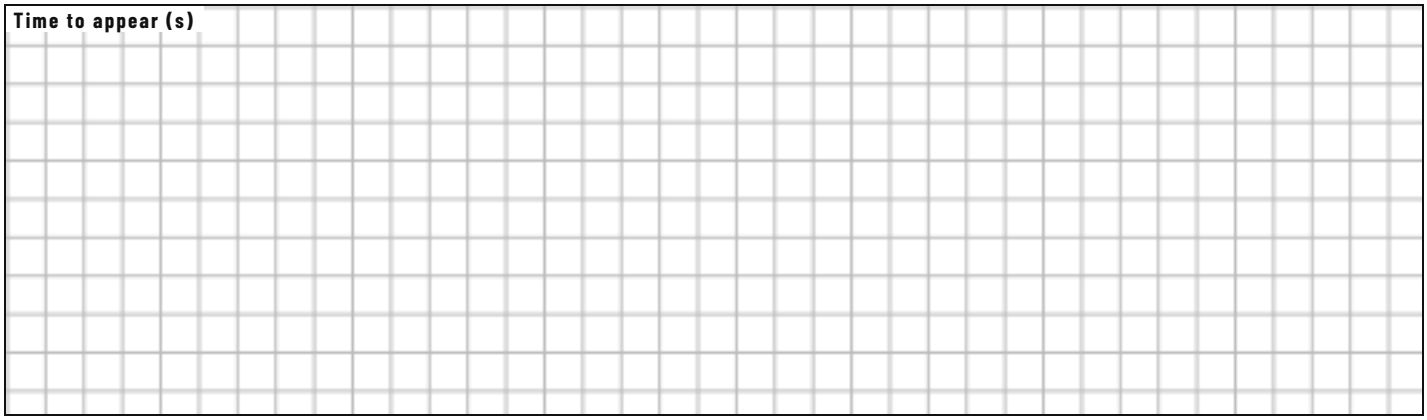
06 RECORD YOUR OBSERVATIONS

LIQUID USED	TIME TO APPEAR (S)	DARKNESS (LIGHT / MEDIUM / DARK)
Lemon juice		
Milk		
Baking soda solution		
Plain water (control)		

No calculation is needed. Write the seconds to the first clear mark; if nothing appears by 120 s write "not by 120 s" and "none" for darkness.

SHOW ONE CALCULATION

07 TIME FOR THE WRITING TO APPEAR



Draw one bar per liquid that appeared. If one never appeared, draw an open bar to the top edge. X: Liquid used

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: liquid · seconds · darkness · control · residue

09 THINK FURTHER

How could you make the comparison fairer if one sheet was heated from a slightly different distance?