HOMEMADE LAVA LAMP LAB

NAME

CLASS / DATE

01 QUESTION

How does effervescent-tablet amount affect how long visible bubbling lasts in an oil-and-water lamp model?

02 PREDICT BEFORE YOU MEASURE

WHICH TABLET AMOUNT MAY KEEP VISIBLE BUBBLING GOING LONGEST?

○ 1/4 tablet ○ 1/2 tablet ○ whole tablet ○ not sure yet

More tablet contains more reactant, but size also affects dissolution rate. Use your measurements to decide.

03 VARIABLES

I CHANGE (INDEPENDENT)

I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: EFFERVESCENT TABLET AMOUNT.
MEASURED: DURATION IN SECONDS UNTIL NO NEW BUBBLES APPEAR FOR 10 SECONDS.
RUN THREE FRESH BOTTLES PER AMOUNT AND MATCH ALL OTHER CONDITIONS.

04 MATERIALS

- ☐ Nine matching open clear plastic bottles and a tray
- ☐ 450 mL water and 900 mL vegetable oil per group
- ☐ Food coloring and three portions each of 1/4, 1/2 and one tablet
- ☐ Timer, labels, measuring tools and eye protection
- ☐ Teacher-designated oil-containing liquid waste container

05 PROCEDURE

SAFETY Do not drink the oil, water, dye or tablet mixture. Wear eye protection and keep the bottle upright and pointed away from faces while adding tablet pieces. Use clear plastic bottles on a tray. Keep every bottle uncapped during the reaction; never cap one, even loosely, because gas pressure can build up.

1. **LABEL NINE BOTTLES** Prepare three fresh bottles for each tablet amount. Add 50 mL colored water and 100 mL oil per bottle, then wait for the layers to settle. ☐
2. **SET UP THE REPEATS** Use the same bottle size, liquid amounts, tablet brand and room-temperature liquids. Keep every bottle uncapped and upright on a tray. ☐
3. **ADD AND TIME** Test one bottle at a time. Start when its tablet touches water; keep timing through short pauses. ☐
4. **APPLY ONE ENDPOINT** Stop only after 10 seconds pass with no new bubbles. Record all nine durations in seconds. ☐
5. **COMPARE AND DISPOSE** Calculate each amount's mean and range. Do not drink; give oil-containing liquid to the teacher for disposal. ☐

DATA AND EXPLANATION

NAME

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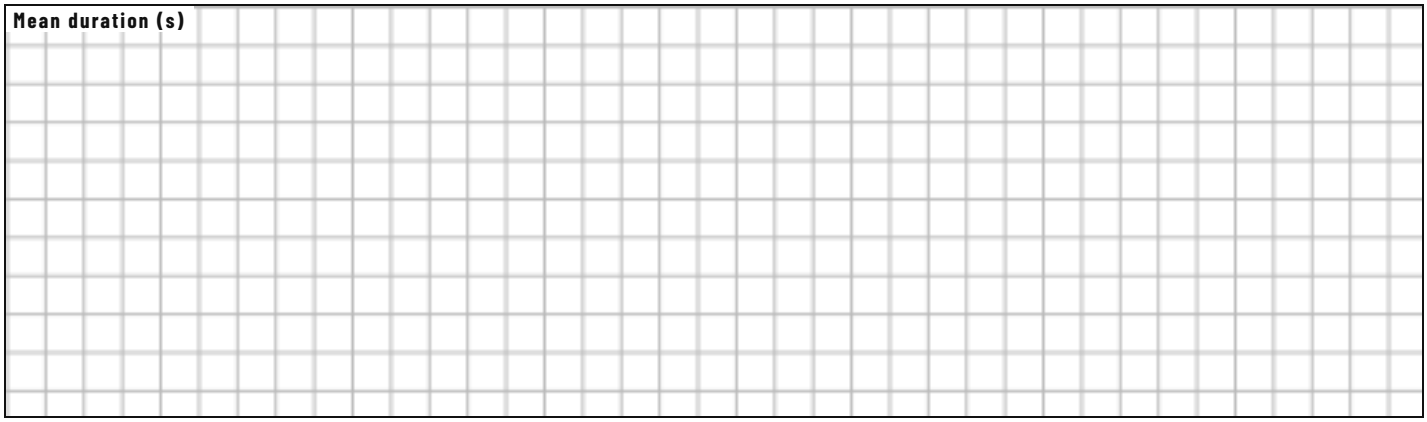
06 RECORD YOUR OBSERVATIONS

TABLET AMOUNT	TRIAL 1 (S)	TRIAL 2 (S)	TRIAL 3 (S)	MEAN (S)	RANGE (S)
1/4 tablet					
1/2 tablet					
Whole tablet					

Start when the tablet first contacts water. Stop after no new bubbles appear for 10 seconds. For each amount, calculate mean = sum of three durations ÷ 3 and range = longest − shortest duration.

SHOW ONE CALCULATION

07 MEAN BUBBLING DURATION BY TABLET AMOUNT



Plot each mean; show its range. Keep all nine trial times in the table. X: Tablet amount

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: tablet amount · bubbling duration · carbon dioxide · oil-water layers · bubbles

09 THINK FURTHER

How could you separate the effect of tablet amount from the rate at which a small piece dissolves?