CATALASE ENZYME LAB

NAME

CLASS / DATE

01 QUESTION

How does reaction temperature relate to bubble-start time and foam height in a potato-catalase test?

02 PREDICT BEFORE YOU MEASURE

WHICH STARTING REACTION TEMPERATURE MAY SHOW THE EARLIEST BUBBLES?

○ cold ○ room temperature ○ comfortably warm ○ not sure yet

Predict before testing. Do not assume a universal temperature optimum.

03 VARIABLES

I CHANGE (INDEPENDENT)

I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: STARTING REACTION TEMPERATURE (EQUILIBRATED DISK AND PEROXIDE). MEASURED: SECONDS TO FIRST BUBBLES AND FOAM HEIGHT AT 60 S. KEEP MATERIALS AND TIMING MATCHED.

04 MATERIALS

☐ Nine fresh matched potato disks

☐ 3% household hydrogen peroxide, nine 15 mL portions

☐ Nine identical clear open containers on a tray

☐ Cold, room and comfortably warm water baths (no hotter than 40 °C)

☐ Thermometer, ruler, timer, cylinder and goggles

05 PROCEDURE

SAFETY Hydrogen peroxide can irritate skin and eyes at higher concentrations — wear goggles and avoid contact with skin. Wear splash goggles and use adult supervision with 3% household hydrogen peroxide only. Never use concentrated peroxide; keep it off skin and out of eyes and mouths.

1 **PREPARE SAFELY** Put on goggles. Label three cups for each of cold, room and warm conditions; use only 3% peroxide and keep cups open on a tray. ☐

2 **MATCH NINE TRIALS** Use nine fresh equal disks and nine 15 mL peroxide portions in identical clear cups. Equilibrate each pair in the same bath for about five minutes. ☐

3 **START AND TIME** Combine one disk and its peroxide portion. Record actual starting temperature and seconds until first clear bubbles; repeat for all nine trials. ☐

4 **MEASURE AT 60 SECONDS** Exactly 60 seconds after contact, measure foam height in mm without touching the foam. ☐

5 **COMPARE EVIDENCE** Keep the three values per temperature; calculate the mean and range for bubble time and foam height. Foam is an indirect measure. ☐

DATA AND EXPLANATION

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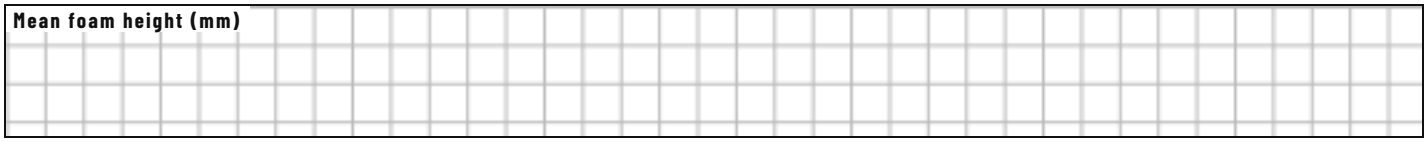
06 RECORD YOUR OBSERVATIONS

TEMPERATURE / TRIAL	START °C	FIRST BUBBLES (S)	FOAM AT 60 S (MM)
Cold · 1			
Cold · 2			
Cold · 3			
Room · 1			
Room · 2			
Room · 3			
Warm · 1			
Warm · 2			
Warm · 3			

For each temperature, mean = sum of three readings ÷ 3; range = highest − lowest. Calculate separately for bubble-start seconds and foam-height mm.

SHOW ONE CALCULATION

07 MEAN FOAM HEIGHT BY REACTION TEMPERATURE



Plot one mean foam-height point for each condition. Add the three individual values or show the range so spread is visible.

X: Measured starting temperature (°C)

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: reaction temperature · three trials · seconds · foam at 60 s · mean · range

09 THINK FURTHER

What additional moderate temperature would narrow the observed pattern while keeping every other condition matched?