ANSWER KEY

DO NOT HAND OUT

A PREDICTIONS THAT EARN FULL MARKS

Fastest bubbling	Accept a reasoned, cautious prediction; actual measurements decide the comparison.

B VARIABLES

Independent	Starting reaction temperature, with potato disk and peroxide equilibrated together.
Dependent	Seconds to first clear bubbles and foam height (mm) at 60 seconds, recorded across three independent trials.
Controlled	Disk dimensions/freshness, 3% peroxide and 15 mL per trial, equilibration time, open-container shape, endpoint and lighting.

C SAMPLE DATA

Illustrative values only, not target or measured class results. They demonstrate how to retain three readings and calculate a mean/range; actual results may differ.

TEMPERATURE / TRIAL	START °C	FIRST BUBBLES (S)	FOAM AT 60 S (MM)
Cold · 1	8.0	**16**	**11**
Cold · 2	8.2	**20**	**13**
Cold · 3	7.9	**18**	**12**
Room · 1	22.1	**5**	**27**
Room · 2	22.3	**4**	**28**
Room · 3	21.9	**3**	**29**
Warm · 1	37.1	**2**	**33**
Warm · 2	37.3	**3**	**34**
Warm · 3	36.9	**2**	**35**

For each condition, verify mean and range are calculated separately for seconds and millimeters. Foam height is an indirect indicator affected by bubble stability, not a direct oxygen-volume measurement.

D MODEL CLAIM, EVIDENCE, REASONING

Claim: In these illustrative readings, bubble-start time decreases and 60-second foam height increases from cold to warm conditions.
Evidence: Cold trials are 16, 20 and 18 s / 11, 13 and 12 mm; room trials 5, 4 and 3 s / 27, 28 and 29 mm; warm trials 2, 3 and 2 s / 33, 34 and 35 mm.
Reasoning: Catalase speeds hydrogen peroxide breakdown and releases oxygen. Temperature can affect reaction activity, but this limited illustrative set does not establish a universal ordering or exact optimum, and foam stability also affects height.

E THINK FURTHER

A safe follow-up could add one moderate bath temperature while keeping all other conditions matched.

F QUICK GRADING GUIDE

Accept the class's recorded pattern, including a different result; require three values per condition, correct units, and cautious interpretation.