YEAR 8 | IB MYP DIAGNOSTIC

Sciences | Inquiry and Evidence

Student name: _____ Date: _____

Suggested time: 60 minutes | Unofficial MYP-aligned diagnostic | Show your thinking.

Answer using scientific reasoning and evidence. Tasks sample MYP Sciences criteria A (knowledge), B (inquiring/designing), C (processing/evaluating) and D (reflecting on impacts).

Scientific understanding

1. Explain why the mass of a sealed container remains constant during a chemical reaction, even when bubbles form.

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2. A plant is placed in a dark cupboard for several days. Predict two changes and explain them using photosynthesis and respiration.

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3. Distinguish between a physical change and a chemical change. Give one example of each and explain your classification.

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Design an investigation

4. A student claims that warmer water dissolves sugar faster. Write a testable research question, a hypothesis with scientific reasoning, the independent and dependent variables, and three control variables.

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5. Outline a safe, repeatable method for the sugar investigation. Explain why repeats improve the quality of evidence.

Process and evaluate data

6. A student measures dissolving times: at 20°C: 85, 82, 88 seconds; at 40°C: 49, 52, 50 seconds; at 60°C: 27, 29, 28 seconds. Calculate the mean time at each temperature and describe the trend.

7. Identify one limitation of these data and suggest one specific improvement. Does the data prove that all solids dissolve faster in warmer water?

8. A city considers replacing diesel buses with electric buses. Describe one possible environmental benefit and one limitation, and explain why evidence matters.

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PARENT / TUTOR GUIDE

Keep this section separate from the student during the assessment. The purpose is to identify current understanding and next teaching steps, not to assign an official IB grade.

Suggested answers

• 1. Atoms are rearranged but conserved; a sealed system prevents matter entering or leaving.

• 2. Photosynthesis decreases/stops without light; respiration continues; stored reserves are consumed; growth may slow.

• 3. Physical changes do not form new substances (melting ice); chemical changes do (rusting iron).

• 4. IV: temperature; DV: time to dissolve a fixed mass; controls: sugar mass/grain size, water volume, stirring and vessel.

• 5. Use consistent conditions, safe warm water, stopwatch and repeated trials; repeats reveal variation and support a reliable mean.

• 6. Means: 85 s, about 50.3 s, 28 s; dissolving time decreases as temperature rises.

• 7. Limited temperatures and trials; improve controlled stirring and measurement. No, this experiment is about sugar under these conditions.

• 8. Possible reduction in local exhaust pollution; electricity generation and battery production have impacts. Compare lifecycle evidence.

MYP-inspired observations

• A: scientific accuracy and use of concepts.

• B: testable design and controlled variables.

• C: accurate processing, patterns, limitations and justified conclusions.

• D: balanced evaluation of science in context.

Suggested diagnostic follow-up

Look for clarity of reasoning, correct use of subject vocabulary, the quality of evidence and whether the student can revise an answer after a probing question. Record strengths and one or two priorities for future lessons.

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