Year 4 Science

Scientific knowledge, investigation design and evidence

Student: _____ Date: _____

Suggested time: 35–45 minutes. Show your thinking. You may ask an adult to read instructions, but try the questions independently.

Living things and ecosystems

1. A pond has algae, insects, small fish and herons. Write one possible food chain using arrows and explain what the arrows mean.

2. What might happen to the fish population if many insects disappeared? Explain why.

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Materials and states

1. A metal spoon and a wooden spoon are left in a bowl of warm water. Which might feel warmer after two minutes, and why?

2. Ice is left on a plate in a warm room. Describe two observations and explain whether a new substance is formed.

Forces and electricity

1. A toy car rolls farther on a smooth floor than on a thick carpet. Suggest a reason and name the force involved.

2. A torch does not light up. Suggest two possible causes and explain how you could test each safely.

Planning an investigation

1. You want to test whether the amount of light affects seedling growth. Write a prediction and identify what you would change, measure and keep the same.

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2. Draw a simple results table for measuring plant height over seven days. Include units.

3. Your two plants grow to different heights. Does that prove light caused the difference? Explain one limitation and one improvement.

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How to use this assessment

Allow a quiet, relaxed sitting with breaks. Avoid giving the answer. Record whether responses were independent, prompted, or supported. This is a learning snapshot, not a fixed ability label.

Suggested answers

1. Algae → insects → small fish → heron; arrows show energy transfer from food to consumer. 2. Fish may decline if insects are an important food source.

3. Metal may transfer thermal energy more quickly than wood; avoid treating perceived warmth as a precise temperature measurement. 4. Ice melts into liquid water; no new substance forms.

5. Greater friction on carpet opposes motion. 6. Possible causes: flat battery, loose connection or faulty bulb; test with an adult using safe low-voltage equipment.

7. Change light exposure; measure height in cm; keep seed type, water, soil, container and duration consistent. 8. Table should show day (1–7) and plant height (cm), ideally for each plant. 9. No; other variables or natural differences may matter; repeat with more seedlings and control conditions.

What to observe

Does the child distinguish observation from explanation? Can they name variables and explain why a test is fair?

Look for units, sensible predictions, and willingness to acknowledge uncertainty.

Safe support

Do not ask children to investigate household mains electricity. Use diagrams or supervised low-voltage classroom resources.

Observation notes

Strengths: _____

Next steps: _____

Student explanations or questions worth revisiting: _____

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