

Science Answer Key: Weeks 1–4

Answers that come from a child's own investigation will vary. Accept any answer that matches what the child actually observed, and use the Look for lists for open items.

Week 1: What is Matter?

Property chart: rock: gray or brown, rough (or smooth if a river rock), hard, does not bend. Sponge: any color, rough, soft, bends. Rubber band: any color, smooth, soft, bends. Spoon: silver, smooth, hard, does not bend.

Texture Test: Order will vary by materials used. Check that the first items are clearly rough (sandpaper, bark, rock) and the last are clearly smooth (foil, plastic, glass).

Two-property sort: Hard and smooth: spoon, crayon, wooden block. Hard and rough: rock. Soft and smooth: cotton ball (accept soft and rough if the child says it feels fuzzy). Soft and rough: sponge. Accept reasonable placements the child can defend.

1. Look for: two named objects; one property they share; one property that differs (for example, both hard, but the rock is rough and the spoon is smooth).

2. Look for: the material from the child's own ranking; a reason that uses a texture word (bumpy, scratchy, rough).

Scoring: Developing / Approaching / Proficient / Exemplary. Proficient: fills the chart and sort correctly, ranks the materials in a sensible order, and uses property words in both sentences.

Week 2: Describing Properties

Part A results: Absorbs: paper towel, cotton ball, cloth. Does not absorb: foil, plastic bag, coin. Predictions will vary.

Part B: Sort 1: Absorbs = paper towel, cotton ball, cloth; Does not absorb = foil, plastic bag, coin. Sort 2: Hard = coin (accept foil as hard if folded, or soft if flimsy); Soft = paper towel, cotton ball, cloth, plastic bag. The key idea is that the same objects land in different groups.

1. Answers vary. Look for: a named material and an honest comparison of prediction to result.

2. Look for: foil or plastic bag; a property (does not absorb, waterproof); a because clause tied to keeping rain out.

3. Any two of: soft, bends, absorbs, rough or bumpy, squishy, plus a color.

Scoring: Developing / Approaching / Proficient / Exemplary. Proficient: records predictions and results honestly, sorts the same six materials two correct ways, and picks a raincoat material with a property-based reason.

Week 3: Heating & Cooling Changes

Part A: Predictions vary. Typical result: sunny window 1, kitchen counter 2, inside a towel 3, refrigerator 4 (the towel slows melting because it keeps warm air out).

Part B: Butter: soft or liquid after heating, solid after cooling. Chocolate chips: soft after heating, solid after cooling. Ice cube: liquid after heating, still liquid after a short time in the refrigerator (it needs the freezer to become solid). Crayon: solid after heating (it did not melt in sun or lamp heat), solid after cooling.

Part C drawing: Look for: an ice cube, a puddle, an arrow labeled heat going to the puddle, an arrow labeled cold going back to the ice.

1. Sunny window (usually). Look for: the word heat, warm, or sun.

2. The sugar dissolves: it seems to disappear into the water and makes the water taste sweet.

3. Look for: heat melts solids into liquids; cooling turns liquids back into solids; an example from the week.

Scoring: Developing / Approaching / Proficient / Exemplary. Proficient: completes both charts from real observations, draws a correctly labeled heat and cold diagram, and explains that heat melts and cold freezes.

Week 4: Reversible & Irreversible Changes

1–7: 1. R (it can freeze again). 2. R (it is still paper and can be flattened). 3. I (the paper cannot be put back into one piece). 4. I (the banana cannot be made whole). 5. I (a new gas was made; you cannot get the baking soda back). 6. I (the egg became something new). 7. R (the dough can be reshaped).

Before and After: Look for: raw egg drawn runny with a yellow yolk and clear white; cooked egg drawn solid, fluffy, white and yellow.

8. Look for: the ice was still water after it melted; the egg changed into something new; you cannot make the cooked egg raw again.

9. Look for: a rule such as 'If something new is made and you cannot get the old thing back, it is irreversible.'

Scoring: Developing / Approaching / Proficient / Exemplary. Proficient: marks at least six of the seven changes correctly with reasons and explains why cooking the egg is irreversible.

Weeks 1–4: Vocabulary and Big Ideas

Match It: 1. matter 2. texture 3. flexible 4. absorb 5. melt 6. freeze 7. solid 8. irreversible

Fill in: 9. property 10. liquid

11. Yes, it is reversible. Look for: it is still water the whole time; it can go back and forth; cooling undoes the melting.

Scoring: Developing / Approaching / Proficient / Exemplary. Proficient: gets at least eight of the ten words right and explains that melting and freezing is reversible because the water can change back.

Weeks 1–4: My Reflection

Checklist: No right or wrong answers. Talk about any box left empty and revisit that week's investigation.

Drawing and sentences: Look for: a recognizable investigation from Weeks 1–4; at least one label; a sentence that names what was learned, not only what was fun.

Scoring: Developing / Approaching / Proficient / Exemplary. Proficient: checks honestly, draws and labels one investigation, and writes a sentence that states a science idea.