

Roof Heat Detectives

Connect a written explanation to evidence in a data table.

CCSS.ELA-Literacy.RST.6-8.7 “Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB In paragraph 3, underline the two phrases that compare temperature changes, then circle the table values that prove each phrase and label each matching set A or B.

Testing Roof Materials

- ① On a clear spring afternoon, a science club tested how three roof materials warmed in sunlight. Students placed equal-sized squares of black paper, white paper, and shiny aluminum foil on insulated boards. Each square began at 20°C. A thermometer measured the surface temperature before the test and again after 20 minutes in direct sun. The students kept the boards side by side so that each material received similar light. Their purpose was to compare temperature change, not just final temperature.
- ② Use the table to compare the measurements. The “Rise” column shows how much warmer each surface became, found by subtracting the starting temperature from the temperature after 20 minutes. The table lets a reader see the same investigation as a set of aligned numbers instead of as a description. Its columns are ordered from the material that warmed most to the material that warmed least. Material | Start | After 20 min | Rise Black paper | 20°C | 37°C | 17°C White paper | 20°C | 29°C | 9°C Aluminum foil | 20°C | 25°C | 5°C
- ③ The results suggest that darker surfaces absorbed more solar energy than the foil in this test. Black paper rose 12°C more than aluminum foil, while white paper's rise fell between those two. A building designer might use the evidence when choosing roof materials in a hot place. However, this small test does not prove that every real roof will behave the same way. Real roofs differ in texture, size, insulation, wind, shade, and local weather.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Which table column confirms that the test began fairly, and what number in that column supports your answer?

2 Which material reached 37°C after 20 minutes, and what was its temperature rise?

3 The text says black paper rose 12°C more than aluminum foil. Use the table to show the calculation that proves this claim.

4 How does the table support the statement that white paper's rise fell between the other two rises?

3 YOUR TURN _____ Your own words

Create a small table for a new fair test with three materials, one shared starting temperature, and a final temperature for each material. Then write two sentences that compare the temperature changes and state one limit of your test.

PART 1 • READ AND MARK

In paragraph 3, underline the two phrases that compare temperature changes, then circle the table values that prove each phrase and label each matching set A or B. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which table column confirms that the test began fairly, and what number in that column supports your answer?	The Start column. It shows 20°C for all three materials.
2	Which material reached 37°C after 20 minutes, and what was its temperature rise?	Black paper reached 37°C, and its temperature rose 17°C.
3	The text says black paper rose 12°C more than aluminum foil. Use the table to show the calculation that proves this claim.	17°C minus 5°C equals 12°C.
4	How does the table support the statement that white paper's rise fell between the other two rises?	White paper rose 9°C, which is less than black paper's 17°C rise and greater than aluminum foil's 5°C rise.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Material | Start | Final | Rise Red paper | 18°C | 30°C | 12°C Blue paper | 18°C | 26°C | 8°C Silver paper | 18°C | 21°C | 3°C Red paper warmed the most, rising 4°C more than blue paper and 9°C more than silver paper. This test is limited because results could change with different light or wind.

Accept correct comparisons that use both the written information and the table values. For the open task, accept reasonable invented data if all materials share a starting temperature, the rises are calculated correctly, and the two sentences accurately interpret the table and name a valid limit.