

Evidence Under Review

Build a scientific explanation that fits the evidence and its limits.

PS.1.d.i "constructing and critiquing conclusions and explanations construct scientific explanations based on valid and reliable evidence obtained from sources (including the students' own investigations)"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the evidence Maya collected, circle the conclusion she made, and number two details that make the evidence or a source more reliable. These marks will help you judge whether each explanation fits its evidence.

Testing a Toy Car

- ① In a physical science class, Maya investigated how ramp surfaces affect a toy car's motion. She released the same car from the same marked height on ramps covered with smooth plastic, felt, or sandpaper. A partner timed the car over a 1-meter section. For each surface, they completed five trials and recorded every time, not only the fastest run. Keeping the car, release height, ramp angle, and measured distance constant helped make surface type the main changing variable in the test.
- ② The recorded times showed that the car usually took longer on sandpaper than on smooth plastic. Because the pattern appeared across repeated trials, Maya concluded that, in this investigation, a rougher ramp surface increased the time the car needed to travel the measured section. Her conclusion matched the evidence and named its limit. It did not claim that every rough surface slows every moving object, because only one car, distance, angle, and set of surfaces were tested.
- ③ Later, Maya found a website post that said sandpaper "proves friction always stops cars quickly." The post gave no trial times, described no method, and named no author. She did not use it as strong evidence. Instead, she compared her data with a museum science article that explained friction and cited tested examples. A reliable source lets readers check who made the claim, what evidence was used, and whether the method fits the conclusion. Evidence can support an explanation without proving a claim beyond its tested conditions.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What conclusion did Maya make from her investigation? Include the limit she placed on that conclusion.

2 Name two parts of Maya's method that made her evidence more reliable. Explain how one of them helped.

3 Why was the website post weak evidence, while the museum science article was a stronger source?

4 Why would the claim "rough surfaces always slow moving objects" go beyond Maya's evidence?

3 YOUR TURN _____ Your own words

A student rolls the same steel ball down the same ramp. The average travel time is 1.4 seconds on bare wood and 2.1 seconds on a rubber mat, with five trials for each surface. Write exactly four sentences: a conclusion, two pieces of evidence, scientific reasoning, and one limit or next step.

PART 1 • READ AND MARK

Underline the evidence Maya collected, circle the conclusion she made, and number two details that make the evidence or a source more reliable. These marks will help you judge whether each explanation fits its evidence. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What conclusion did Maya make from her investigation? Include the limit she placed on that conclusion.	Maya concluded that, in her investigation, a rougher ramp surface increased the car's travel time over the measured section. Her conclusion was limited to the tested car, distance, angle, and surfaces.
2	Name two parts of Maya's method that made her evidence more reliable. Explain how one of them helped.	Answers include five trials for each surface, recording every time, using the same car, using the same release height, keeping the ramp angle constant, and keeping distance constant. Repeated trials showed whether the pattern occurred more than once.
3	Why was the website post weak evidence, while the museum science article was a stronger source?	The website post had no trial times, no method, and no named author. The museum article explained friction and cited tested examples, so readers could examine the evidence and source.
4	Why would the claim "rough surfaces always slow moving objects" go beyond Maya's evidence?	Maya tested only one car, one distance, one ramp angle, and a limited set of surfaces. Her data cannot support a claim about every rough surface or every moving object.

PART 3 • YOUR TURN (SAMPLE ANSWER)

In this test, the rubber mat increased the steel ball's average travel time compared with bare wood. The ball averaged 2.1 seconds on rubber and 1.4 seconds on wood across five trials for each surface. The rubber likely provided greater friction, so the ball moved more slowly over the measured distance. This evidence supports the conclusion only for this ball, ramp, and surfaces, so more tests with other conditions are needed.

Accept conclusions that match the supplied averages, use both numerical results and the repeated trials, and limit the claim to the tested conditions. Accept a reasonable next step, such as testing another ball, ramp angle, or surface.