

Evidence Under Pressure

Build conclusions that match the evidence.

PS.1.d.ii "constructing and critiquing conclusions and explanations construct arguments supported by empirical evidence and scientific reasoning"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each conclusion, circle each measured result, and number the sentences that explain how the evidence supports a conclusion.

Testing Ramp Surfaces

- ① Engineers at a toy company wanted to know whether the surface of a ramp changes how far a wooden block slides after leaving it. They kept the ramp height, block, release point, and floor the same. On each surface, they released the block five times and measured the distance from the ramp to where the block stopped. Testing several trials helped them see whether one unusual slide changed the result too much.
- ② On smooth plastic, the five distances were close together, and their average was 82 centimeters. On rough sandpaper, the average was 49 centimeters. Because the block traveled farther on smooth plastic in every trial, the team concluded that a smoother ramp surface can increase the block's sliding distance. Their reasoning was that rougher surfaces create more friction, which slows the block before it reaches the floor. This explanation connects the measured pattern to a physical cause.
- ③ The conclusion is supported by the measurements, but it has a limit. The team tested only one wooden block, one ramp height, and two surfaces. The evidence does not prove that every object or every ramp would produce the same difference. A stronger investigation could test blocks with different masses and repeat the trials at more ramp heights. Scientists should state what the data show, explain why the pattern makes sense, and avoid claiming more than the evidence supports.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What conclusion did the team make about ramp surfaces and sliding distance?

2 Which measured results support the team's conclusion? Include both average distances.

3 Explain the scientific reasoning that connects the ramp surface to the block's sliding distance.

4 Identify one limit of the investigation and describe one way to make the evidence stronger.

3 YOUR TURN _____ Your own words

A 200-gram wooden block was pulled at a steady speed across two surfaces for five trials. The average pulling force was 1.8 N on wax paper and 4.6 N on a rubber mat. Write exactly three sentences that state a conclusion, use both results as evidence, and explain the role of friction while naming one limit or next step.

PART 1 • READ AND MARK

Underline each conclusion, circle each measured result, and number the sentences that explain how the evidence supports a conclusion. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What conclusion did the team make about ramp surfaces and sliding distance?	A smoother ramp surface can increase a block's sliding distance.
2	Which measured results support the team's conclusion? Include both average distances.	The average distance was 82 centimeters on smooth plastic and 49 centimeters on rough sandpaper. The block also traveled farther on smooth plastic in every trial.
3	Explain the scientific reasoning that connects the ramp surface to the block's sliding distance.	Rougher surfaces create more friction. More friction slows the block before it reaches the floor, so it travels a shorter distance.
4	Identify one limit of the investigation and describe one way to make the evidence stronger.	A limit is that the team tested only one block, one ramp height, and two surfaces. The investigation could be strengthened by testing blocks with different masses or using more ramp heights.

PART 3 • YOUR TURN (SAMPLE ANSWER)

The rubber mat requires more pulling force than wax paper for this block. In five trials, the average force was 4.6 N on the rubber mat and 1.8 N on wax paper. The rougher rubber creates more friction, although more blocks and surfaces should be tested before making a broader claim.

Accept equivalent conclusions that accurately compare the two surfaces and cite both numerical results. For the open response, require a claim, evidence, friction-based reasoning, and a reasonable limit or next investigation step.