

Ramp Test Detectives

Use a fair test and data to choose a ramp height.

3.1 “The student will demonstrate an understanding of scientific and engineering practices by asking questions and defining problems ask questions that can be investigated and predict reasonable outcomes ask questions about what would happen if...”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the investigable question, circle the prediction, and number the three ramp heights in order. This shows how Maya changed one variable and collected evidence.

A Ramp for the Box

- ① Maya's class had a design problem. They needed a ramp that would help a toy car travel into a box without jumping over it. The class asked an investigable question: What will happen to the car's travel distance if the ramp height changes? They predicted that a higher ramp would make the car travel farther.
- ② With teacher guidance, Maya used a ruler to set the ramp at 5, 10, and 15 centimeters. She kept the same car, starting spot, and floor for each test. She released the car three times at each height. Then she measured how far it rolled in centimeters and found the average distance.

AVERAGE DISTANCE THE TOY CAR ROLLED

5 cm ramp		45
10 cm ramp		80
15 cm ramp		115

centimeters

- ③ The bar graph shows Maya's average results. The 15-centimeter ramp sent the car farthest, so the data supported the prediction. Maya chose a 10-centimeter ramp for the box. It sent the car 80 centimeters, which reached the box but did not jump over it. She explained her choice using the measurements.

2 ANSWER WITH EVIDENCE Use the passage

1 What variable did Maya change in her test?

2 Name two things Maya kept the same for every test.

3 What tool did Maya use, and what unit did she use to measure distance?

4 How do the data support Maya's choice of a 10-centimeter ramp?

3 YOUR TURN Your own words

Choose a simple test that is different from Maya's car ramp. Write 3 sentences: ask a question about changing one thing, predict what will happen, and tell what you will keep the same and measure.

PART 1 • READ AND MARK

Underline the investigable question, circle the prediction, and number the three ramp heights in order. This shows how Maya changed one variable and collected evidence. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What variable did Maya change in her test?	She changed the height of the ramp.
2	Name two things Maya kept the same for every test.	Any two: the toy car, the starting spot, and the floor.
3	What tool did Maya use, and what unit did she use to measure distance?	She used a ruler and measured in centimeters.
4	How do the data support Maya's choice of a 10-centimeter ramp?	The 10-centimeter ramp sent the car 80 centimeters. That distance reached the box without sending the car over it.

PART 3 • YOUR TURN (SAMPLE ANSWER)

How will the width of a paper airplane's wings affect how far it flies? I predict that wider wings will make it fly farther. I will keep the paper and throwing spot the same and use a tape measure to measure flight distance in centimeters.

Accept reasonable investigable questions that change one variable, predictions that match the question, and plans that identify what will stay the same and what will be measured. Students may choose different tools and metric or U.S. Customary units when appropriate.