

Motion Pattern Detectives

Use observations and measurements to predict what happens next.

3-PS2-2 "Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the four height measurements, then number them 1 through 4 in the order Maya recorded them. These observations show a pattern you can use to predict a future height.

The Marble Track

- ① Ms. Chen placed a marble at one side of a smooth, U-shaped track. She let it go without a push. The marble rolled down, sped through the low middle, and climbed the other side. It rolled back again. The class saw the marble travel from one side to the other and back. This same path happened several times, but each climb was a little lower.
- ② Next, the class used a ruler to measure how high the marble climbed on the left side. After each trip across the track, Maya wrote a number in a chart. The heights were 18 centimeters, 15 centimeters, 12 centimeters, and 9 centimeters. Each new height was 3 centimeters less than the one before it. The measurements gave the class evidence of a pattern in the marble's motion.
- ③ Using the pattern, Maya predicted the next left-side height would be 6 centimeters. She did not say the marble would climb forever. Rubbing between the marble and track slows the marble. Later, the marble may stop near the middle. A pattern from several observations can help scientists predict what an object will do next. They check the prediction by watching or measuring again.

2 ANSWER WITH EVIDENCE Use the passage

1 What path did the marble repeat as it moved on the track?

2 What four heights did Maya measure on the left side?

3 How did the marble's height change from one measurement to the next?

4 How did the measurements help Maya predict the next height?

3 YOUR TURN Your own words

Choose an object with repeating motion, such as a ball rolling back and forth in a bowl. Write three sentences that include four observations or measurements, explain the pattern, and predict what will happen next.

PART 1 • READ AND MARK

Underline the four height measurements, then number them 1 through 4 in the order Maya recorded them. These observations show a pattern you can use to predict a future height. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What path did the marble repeat as it moved on the track?	It rolled down from one side, through the middle, up the other side, and back again.
2	What four heights did Maya measure on the left side?	18 cm, 15 cm, 12 cm, and 9 cm.
3	How did the marble's height change from one measurement to the next?	Each new height was 3 centimeters lower.
4	How did the measurements help Maya predict the next height?	The heights decreased by 3 centimeters each time, so she predicted 6 centimeters.

PART 3 • YOUR TURN (SAMPLE ANSWER)

I watched a ball roll back and forth in a bowl. Its heights on one side were 20 cm, 16 cm, 12 cm, and 8 cm, so each height was 4 cm lower. I predict its next height on that side will be 4 cm.

Accept any repeating-motion object with four observations or measurements, a clearly stated pattern, and a prediction that follows that pattern. Measurements and predictions may differ from the sample if they are internally consistent.