

Roll, Measure, Notice

Analyze patterns, unusual results, and measurement errors.

5.2.B “analyze data by identifying any significant features, patterns, or sources of error;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the sentence that describes the measurement error, circle the data value it may have affected, and draw a box around each row of trial values that shows a consistent pattern.

A Car Ramp Test

- ① In a ramp test, a class explored how surface texture affects how far a toy car rolls. They used the same car, ramp height, and release point each time. For each surface, they measured the car's travel distance in three trials. Their recorded distances are shown in the table.

TOY CAR TRAVEL DISTANCE

Surface	Trial 1 (cm)	Trial 2 (cm)	Trial 3 (cm)
Tile	181	210	180
Cardboard	121	120	122
Sandpaper	94	92	93
Carpet	56	57	55

- ② The numbers should be compared across each row and across surfaces. A value that is far from the other trials can be a significant feature, not just a number to ignore. During tile trial 2, the tape measure's torn end started at the 30-centimeter mark. The recorder wrote the ending number without subtracting 30 centimeters.
- ③ Scientists look for patterns before deciding what the data mean. Repeating trials helps them notice results that do not fit. They can check equipment, units, starting points, and recording methods. A corrected result should be based on evidence, while an uncertain result may need a new trial.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What pattern do the data show about the car's travel distance on the four surfaces?

2 Which recorded value is a significant feature? Use the other tile trials as evidence.

3 What was the actual distance for tile trial 2 after correcting for the tape measure's 30-centimeter starting mark?

4 What should the class check or do before trusting a result that does not fit the other trials? Name two actions from the passage.

3 YOUR TURN _____ Your own words

Analyze this new test: a car rolled 145 cm, 147 cm, and 220 cm on a wood surface. Write exactly three sentences that identify the pattern, name the significant feature, and give one possible source of error and a way to check it.

PART 1 • READ AND MARK

Underline the sentence that describes the measurement error, circle the data value it may have affected, and draw a box around each row of trial values that shows a consistent pattern. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What pattern do the data show about the car's travel distance on the four surfaces?	The car traveled farthest on tile and shortest on carpet. The travel distances decreased from tile to cardboard to sandpaper to carpet.
2	Which recorded value is a significant feature? Use the other tile trials as evidence.	Tile trial 2, 210 cm, is significant because the other tile trials were 181 cm and 180 cm.
3	What was the actual distance for tile trial 2 after correcting for the tape measure's 30-centimeter starting mark?	180 cm. The recorder should subtract 30 cm from 210 cm.
4	What should the class check or do before trusting a result that does not fit the other trials? Name two actions from the passage.	Answers may include checking the equipment, units, starting points, or recording method, and repeating the uncertain trial.

PART 3 • YOUR TURN (SAMPLE ANSWER)

The first two wood-surface trials are close, so the car usually traveled about 146 centimeters. The 220-centimeter result is a significant feature because it is much higher than the other two results. A recorder may have used the wrong starting mark, so the class should check the tape measure and repeat that trial.

Accept equivalent descriptions of the overall pattern and the unusual tile value. For the open response, accept any reasonable error source and check that connects to the 220 cm result.