

Roll, Repeat, Compare

Use repeated trials and means to organize investigation data.

6.1.F “construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the words that tell about repeated trials, circle each mean in the table, and number the graph features named in paragraph 3.

Testing a Toy Car Ramp

- ① To test how a ramp's surface affected the distance a toy car rolled after leaving the ramp, a science team used three surfaces. They kept the ramp height, car, and starting point the same. For each surface, they ran the car three times and measured distance in centimeters. Repeated trials helped them notice unusual results instead of trusting one roll.
- ② The team organized every measurement in a table, with one row for each ramp surface and columns for Trials 1, 2, and 3. Then they found each mean. A mean is the sum of the trial distances divided by the number of trials. Means give one typical value for comparing the surfaces.

TOY CAR RAMP RESULTS

Ramp surface	Trial 1 (cm)	Trial 2 (cm)	Trial 3 (cm)	Mean distance (cm)
Cardboard	120	117	120	119
Felt	93	95	94	94
Sandpaper	65	66	64	65

- ③ Next, the team could make a bar graph to compare the surfaces. Each bar would show one mean, not one single trial. The graph title would name the investigation. Its horizontal axis would list ramp surfaces, and its vertical axis would show mean distance in centimeters. This graph makes it easy to compare the typical distance for each surface.

2 ANSWER WITH EVIDENCE Use the passage

- 1 What three column headings should a table use to hold the repeated measurements for one ramp surface?

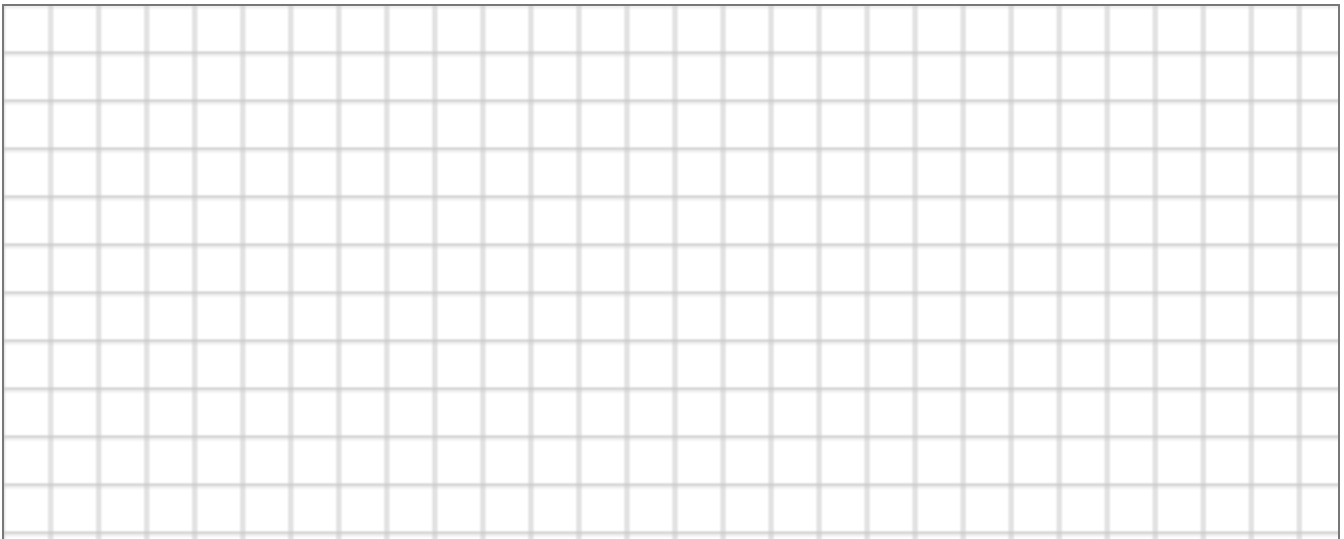
- 2 Why did the team run the car three times on each surface instead of trusting one roll?

- 3 Which ramp surface has the highest mean distance? How many centimeters farther is it than the surface with the lowest mean?

- 4 What graph should the team make to compare the mean distances? State what belongs on the horizontal axis and the vertical axis.

3 YOUR TURN Your own words

A student poured water through three soil samples for one minute. Clay drained 12, 15, and 15 mL; loam drained 28, 30, and 32 mL; sand drained 43, 45, and 47 mL. Calculate each mean, then use the grid to make a labeled bar graph that compares the three mean amounts.



PART 1 • READ AND MARK

Underline the words that tell about repeated trials, circle each mean in the table, and number the graph features named in paragraph 3. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What three column headings should a table use to hold the repeated measurements for one ramp surface?	Trial 1, Trial 2, and Trial 3.
2	Why did the team run the car three times on each surface instead of trusting one roll?	Repeated trials help reveal unusual high or low results and provide a more typical result than one roll.
3	Which ramp surface has the highest mean distance? How many centimeters farther is it than the surface with the lowest mean?	Cardboard has the highest mean, 119 cm. It is 54 cm farther than sandpaper, with a mean of 65 cm.
4	What graph should the team make to compare the mean distances? State what belongs on the horizontal axis and the vertical axis.	A bar graph. The horizontal axis should list ramp surfaces, and the vertical axis should show mean distance in centimeters.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Bar graph title: Mean Water Drained Through Soils in One Minute. Horizontal axis: soil type, Clay, Loam, Sand. Vertical axis: mean water drained (mL), using a scale from 0 to 50. Bars: Clay, 14 mL; Loam, 30 mL; Sand, 45 mL.

Accept a correctly labeled bar graph with bars at 14 mL for clay, 30 mL for loam, and 45 mL for sand. Accept equivalent clear titles and vertical scales that include all three means.