

Data Detective

Choose the right data, then use it to answer a question.

GRADE 4 • 4.PS.1.b

4.PS.1.b "Determine the data needed to answer a formulated question and collect or acquire existing data (limited to 10 or fewer data points) using various methods (e.g., observations, measurements, experiments)."

NAME _____

DATE _____

PLAN YOUR DATA

Start with the question. Decide what information will answer it, then choose a way to get that information, such as observing, measuring, experimenting, asking people, or using a record that already exists. Each recorded result is one data point.

WORKED EXAMPLE

Question: Which paper airplane flies farthest?

1. The needed data are the flight distances for the airplanes.
2. Measure and record: A = 11 inches, B = 13 inches, C = 15 inches.
3. Compare the distances. 15 inches is the greatest distance.

Answer: Airplane C flew farthest, 15 inches.

PRACTICE 6 problems

- 1** Question: Do more students choose apples or bananas for snack? What data should you collect from each student?

ANSWER _____

- 2** Question: Do seedlings grow taller with water every day or every other day? What data should you measure?

ANSWER _____

- 3** A librarian has this existing data for books checked out: Monday 6, Tuesday 9, Wednesday 8, Thursday 10. Which day had the most books checked out? How many data points were used?

ANSWER _____

- 4** Question: Which playground area has the most students at recess? Which method should you use: observation, measurement, survey, or experiment?

ANSWER _____

- 5** Ava wants to know how far 7 toy cars roll down a ramp. What data should she record?

ANSWER _____

- 6** This reading record shows pages read: Inez 14, Kai 12, Lila 9, Omar 10. What existing data answer the question, "Who read the most pages?"

ANSWER _____

APPLY IT Show your work

- 1** The student council asks, "Which game should we offer at Fun Friday?" Six students respond: tag, soccer, tag, jump rope, soccer, tag. What data did the council need? Which game should it offer based on these responses?

WORK SPACE

ANSWER _____

- 2** A robotics club wants to know whether a rubber-band car travels farther on tile or carpet. It runs 4 trials on each surface from the same starting line. Tile distances are 120 cm, 118 cm, 121 cm, and 119 cm. Carpet distances are 94 cm, 96 cm, 95 cm, and 93 cm. What data did the club need? Which surface had the greater total distance?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Jae asks, "Which of two marble tracks lets a marble travel farther?" Choose the better plan and explain why. Plan A: Roll a marble once on each track. Plan B: Roll the same marble 4 times on each track from the same starting place and measure each distance.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Question: Do more students choose apples or bananas for snack? What data should you collect from each student?	Each student's snack choice, apple or banana.
2	Question: Do seedlings grow taller with water every day or every other day? What data should you measure?	Measure the height growth of each seedling in both groups over the same amount of time.
3	A librarian has this existing data for books checked out: Monday 6, Tuesday 9, Wednesday 8, Thursday 10. Which day had the most books checked out? How many data points were used?	Thursday had the most books checked out. 4 data points were used.
4	Question: Which playground area has the most students at recess? Which method should you use: observation, measurement, survey, or experiment?	Observation.
5	Ava wants to know how far 7 toy cars roll down a ramp. What data should she record?	The distance each toy car rolls, measured in a unit such as centimeters.
6	This reading record shows pages read: Inez 14, Kai 12, Lila 9, Omar 10. What existing data answer the question, "Who read the most pages?"	The number of pages read by each student. Inez read the most pages, 14.

PART 2 • APPLY IT

1. **The council needed each student's game choice. It should offer tag.** The six data points are the students' game choices. Tag has 3 votes, more than soccer's 2 votes and jump rope's 1 vote.
2. **The club needed the distance traveled on each trial for both surfaces. Tile had the greater total distance, 478 cm.** Add the tile distances: $120 + 118 + 121 + 119 = 478$ cm. Add the carpet distances: $94 + 96 + 95 + 93 = 378$ cm, so tile is greater.

CHALLENGE

Plan B is better because it collects 8 distance data points, uses the same marble and starting place, and repeats each track test for a fairer comparison.

Accept equivalent wording for needed data, such as "students' choices" or "distance traveled." For the robotics problem, accept tile with a correct total of 478 cm and carpet with a correct total of 378 cm.