LESSON MAKER PRO

Data Detective Plans

Choose the right data and collection method.

GRADE 8 · 8.PS.2.b

8.PS.2.b "Determine the data needed to answer a formulated question and collect the data (or acquire existing data) using various methods (e.g., observations, measurement, surveys, experiments)."

NAME _____ DATE _____

PLAN BEFORE YOU COLLECT

Start with the question. Decide what value or category to record for each person or trial, then choose a fair method such as a survey, measurement, observation, experiment, or existing record.

WORKED EXAMPLE

Question: Does a new warm-up change sprint time? Plan a fair data collection for 12 runners.

1. Recruit consenting runners and define comparable timed sprint trials.
2. Randomly assign half to warm-up first and half to comparison first, with sufficient rest; keep course and timing method fixed.
3. Record each runner's condition and time in seconds, then compare within-runner differences.

Answer: Use paired measurements with randomized, counterbalanced order and rest; before/after alone can confound treatment with fatigue or practice.

PRACTICE 4 problems

1 1. Question: What percent of students use the bus to get to school? What should you record for each selected student? A. Favorite class B. Main way of getting to school C. Shoe size

ANSWER _____

2 2. Question: How many hours of sleep do students usually get on school nights? Choose the best method. A. Give students an anonymous survey. B. Measure the height of desks. C. Observe the lunch line.

ANSWER _____

3 3. Question: Did the recycling drive reduce the school's trash weight? The custodian already records trash weight each week. What data should you acquire?

ANSWER _____

4 4. Question: Does chewing gum affect quiz scores? State the data to collect and a fair method.

ANSWER _____

_____

APPLY IT Show your work

1 Pose a question about three categories of objects on your desk (for example, pencils, pens and erasers). Actually observe up to 15 objects. Record category counts in a three-row table, state a conclusion, and explain why your desk data cannot establish what all eighth graders have.

CATEGORY	OBSERVED COUNT

2 2. Students ask, "Is the hallway louder before lunch or after lunch?" Give a fair collection plan. Include what to measure and how to keep the comparison fair.

WORK SPACE

ANSWER

CHALLENGE One step up

Question: Does listening to music while studying affect vocabulary-test scores? Lee surveys only members of the school band and asks whether they like music. Explain why this cannot answer the question. Then give a better experiment plan.

WORK SPACE AND ANSWER

ANSWER KEY

Data Detective Plans

GRADE 8 · 8.PS.2.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	1. Question: What percent of students use the bus to get to school? What should you record for each selected student? A. Favorite class B. Main way of getting to school C. Shoe size	**B. Main way of getting to school**
2	2. Question: How many hours of sleep do students usually get on school nights? Choose the best method. A. Give students an anonymous survey. B. Measure the height of desks. C. Observe the lunch line.	**A. Give students an anonymous survey.**
3	3. Question: Did the recycling drive reduce the school's trash weight? The custodian already records trash weight each week. What data should you acquire?	**Weekly trash weights from before and during the recycling drive.**
4	4. Question: Does chewing gum affect quiz scores? State the data to collect and a fair method.	**With permission and appropriate classroom conditions, randomly assign comparable students to gum/no-gum groups, give the same quiz under matched conditions and record scores. Alternatively use comparable quizzes with randomized counterbalanced condition order and consider practice/carryover.**

PART 2 · APPLY IT

1. **Variable. Three nonoverlapping categories and accurately recorded observed counts total no more than 15. A conclusion uses those counts. One desk is not a representative grade-wide sample.** Require actual observations and a question answered by them. Keep the hallway collection-plan task and method-choice questions.
2. **Measure sound level in the same hallway location for equal time periods before and after lunch on several days, and record the sound levels.** Sound level is the needed measurement. Keeping location, time length, and multiple days consistent makes the comparison fair.

CHALLENGE

The survey measures whether band members like music, not vocabulary-test scores, and the group may not represent all students. Randomly assign students to study with music or in silence for the same time, then give the same vocabulary test and record scores.

Accept equivalent plans that collect the stated variable and use a fair method. For sampling plans, accept other clearly random or representative samples; for experiments, accept comparable conditions and the same outcome measure. Provide safe ordinary desk objects. Observe the student collecting data; do not substitute a hypothetical count. Avoid causal claims from simple before/after comparisons without control of order and other conditions.