

AP Statistics · Collecting Data: Sampling and Experiments · Quiz

Common Core AP Statistics Unit 1 (2026-27) · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This ap statistics collecting data quiz asks 10 multiple-choice questions on collecting data: sampling and experiments, and each answer comes with a short explanation.

This quiz has 10 multiple-choice questions on sampling methods, bias, observational studies, experiment design and scope of inference. Choose the single best answer for each, and read each explanation to learn why the other choices are wrong.

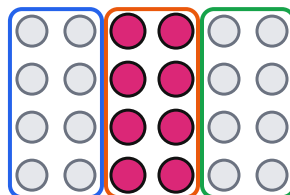
AP StatisticsCommon Core: AP Statistics Unit 1 (2026-27)

Questions

Question 1

A researcher splits 24 classrooms into three groups of eight neighbors, randomly picks one group, and surveys every student in those eight classrooms. Which sampling method is this?

Cluster (column pairs)



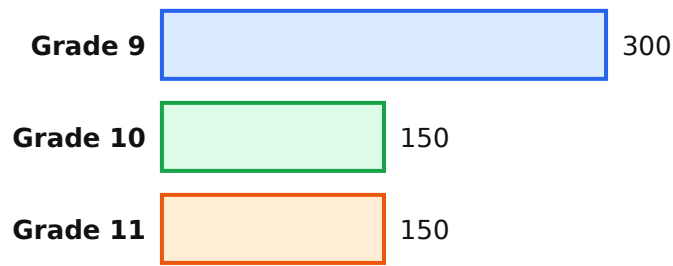
1 of 3 clusters surveyed

Dots are individuals; marked dots are in the sample.

- A. Stratified sample
- B. Systematic sample
- C. Simple random sample
- D. Cluster sample

Question 2

A school has 600 students: 300 in Grade 9, 150 in Grade 10 and 150 in Grade 11. A stratified sample of 60 is proportional to grade size. How many Grade 10 students are in the sample?



Students per grade.

- A. 20 students
- B. 15 students
- C. 30 students
- D. 10 students

Question 3

A radio station asks listeners to call in and say whether the city should build a new stadium. What is the main problem with the results?

- A. Undercoverage bias
- B. Nonresponse bias
- C. Voluntary response bias
- D. A sample size that is too small

Question 4

Researchers compare the GPA of 80 students who chose to join the band with 80 students who did not join. What type of study is this and what can be concluded?

- A. Experiment; band membership causes the GPA difference
- B. Observational; only an association can be shown
- C. Experiment; the groups are the same size
- D. Observational; band membership is proven to cause it

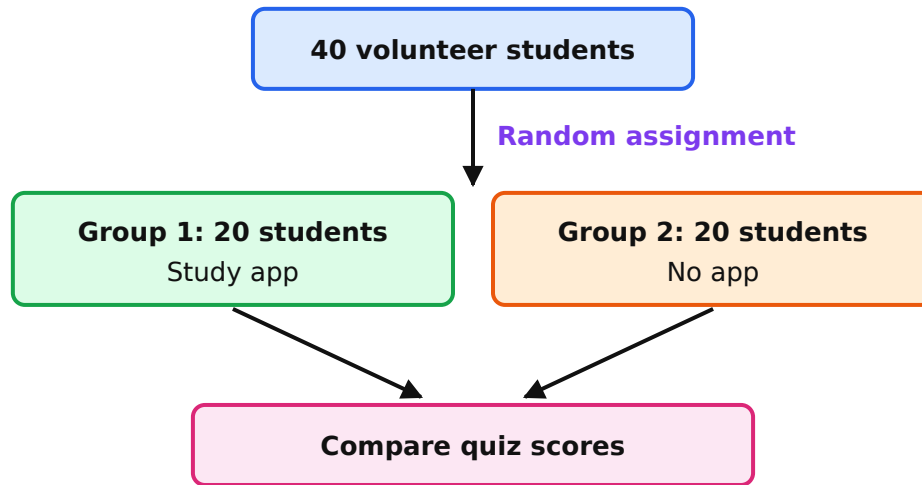
Question 5

What is the main purpose of random assignment in an experiment?

- A. To balance other variables across the treatment groups on average
- B. To make the sample represent the population
- C. To guarantee the groups are identical
- D. To remove the need for a control group

Question 6

In the diagram, what role does Group 2 play?



A completely randomized design.

- A. A block that removes variation due to grade
- B. A placebo that hides the treatment
- C. A control group that gives a baseline for comparison
- D. A second factor in the experiment

Question 7

A researcher compares two diets using 20 men and 20 women, assigning diets at random within each gender. What is the purpose of splitting the participants by gender first?

- A. To remove variation due to gender from the comparison
- B. To replace random assignment
- C. To make the experiment double-blind
- D. To increase the number of treatments

Question 8

In a double-blind experiment on a new vitamin, who does not know which participants receive the vitamin?

- A. Only the participants
- B. Only the people measuring the response
- C. Both the participants and the people measuring the response
- D. Only the statistician who analyzes the data after unblinding

Question 9

The shaded cell of the table describes which kind of study?

	Random assignment	No random assignment
Random sample	Cause and effect for the whole population	Generalize to the population only
Not random	Cause and effect, volunteers only	Neither conclusion is justified

Shaded cell: random sample, no random assignment.

- A. An experiment on student volunteers
- B. A convenience survey of mall shoppers
- C. An experiment on a random sample of adults
- D. A survey of a random sample of voters

Question 10

Cities with higher ice cream sales also have more drownings. Which variable is most likely a confounding variable?

- A. Brand of ice cream sold
- B. Color of swimsuits
- C. Day of the week the data were recorded
- D. Hot weather

Answer key

1. **D** – The groups are chosen at random and everyone inside a chosen group is surveyed, which defines a cluster sample. A stratified sample takes an SRS from every group.
2. **B** – The sampling fraction is $60/600 = 1/10$, so Grade 10 gives $150/10 = 15$ students. Taking 20 from each grade ignores the sizes of the groups.
3. **C** – Listeners choose themselves, and people with strong opinions are most likely to call. That is voluntary response bias, which a larger sample does not remove.
4. **B** – No treatment was assigned, since students chose their own group, so this is observational and confounding variables are possible. Equal group sizes do not make it an experiment.
5. **A** – Chance spreads other variables about evenly across groups, so differences can be credited to the treatments. Representing a population is the job of random selection.
6. **C** – Group 2 receives no app, so it shows what quiz scores look like without the treatment. There are no blocks, no placebo and only one factor in this design.
7. **A** – Blocking groups similar units so the treatment comparison is made within each block. It supplements random assignment rather than replacing it.
8. **C** – Double-blind means two groups are blinded: those receiving treatments and those evaluating the response. Hiding the assignment from only one side is single-blind.
9. **D** – The shaded cell has random selection but no treatments assigned, such as a random survey. Volunteers give no generalization, and randomly assigned treatments move the study to another cell.
10. **D** – Hot weather leads to both more ice cream sales and more swimming, so it explains the association without either variable causing the other.

How does this quiz work?

Read each question, choose one answer among A, B, C and D, then check it: a short explanation appears after every answer. Your score out of 10 is shown at the end, and you can restart the quiz as often as you like.

What should you review before the quiz?

Reread the key facts of the lesson and the worked example. If a question is hard, go back to the matching part of the lesson, then try the quiz again. Write your work on scrap paper: most mistakes come from skipping a step, not from the idea itself.

Remember:

- Simple random, stratified, cluster and systematic samples use chance; convenience and voluntary response samples are biased.
- Sources of bias include undercoverage, nonresponse and response bias such as a

- leading question; a bigger sample does not fix bias.
- Observational studies show association; experiments with random assignment can show cause and effect.
- Good experiments use comparison, random assignment, replication and blocking, and may be blind.
- Random selection allows generalizing to a population; random assignment allows causal claims.

How to use this ap statistics collecting data quiz

Retake this ap statistics collecting data quiz until every answer is right, then move on to the worksheet and the test.

