

AP Statistics · Collecting Data: Sampling and Experiments · Test Answer Key

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

This ap statistics collecting test answer key gives the full solution and the scoring guide for each of the 9 test questions on collecting data: sampling and experiments.

Full solutions with a scoring guide are given for each question. On the AP exam, points are earned for correct reasoning stated in context, so award a point only when the explanation names the method or variable and refers to the situation in the problem.

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

AP Statistics Collecting Test Answer Key: questions 1-5

Question 1: Principal's survey (2 points)

- It is a **systematic sample** of $\frac{1200}{12} = 100$ students.
- In an SRS every group of 100 students is equally likely. Here, two neighbors on the list can never both be chosen, so **some groups of 100 have no chance**.

Scoring: (a) 1 point for systematic and 100. (b) 1 point for explaining that not all groups of the same size are equally likely.

Question 2: Random digit selection (2 points)

Keep numbers from 01 to 30 that have not appeared, and skip all others.

Line	1	2	3	4	5	6	7	8	9	10
101	74	25	26	94	82	25	05	24	57	51

Shaded cells are selected.

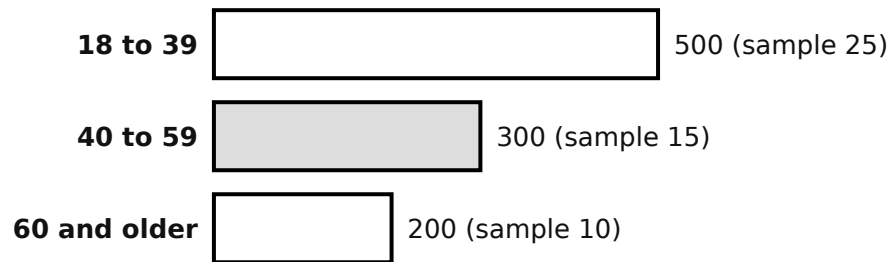
The sample is members **25, 26, 05, 24**.

Scoring: 1 point for using the two-digit numbers in order and skipping values outside 01 to 30 and repeats; 1 point for the correct four members.

Question 3: Stratified allocation (2 points)

- $\frac{50}{1000} = 0.05$; $500(0.05) = 25$, $300(0.05) = 15$, $200(0.05) = 10$.

- b. Within each group, take a **simple random sample** of the required size, for example by labeling the members and using random digits.



Sample sizes 25, 15 and 10.

Scoring: (a) 1 point for all three correct values (0 if any wrong). (b) 1 point for an SRS within each group.

Question 4: Two sources of bias (2 points)

- a. Question wording is a **response bias** (leading words). The low return is **nonresponse bias**.
- b. $\frac{420}{3000} = 0.14$, a **14% response rate**. The 86% who did not respond may hold different opinions from those who did, so the results may not represent the households.

Scoring: (a) 1 point for both sources. (b) 1 point for 14% and an explanation in context.

Question 5: Study or experiment (2 points)

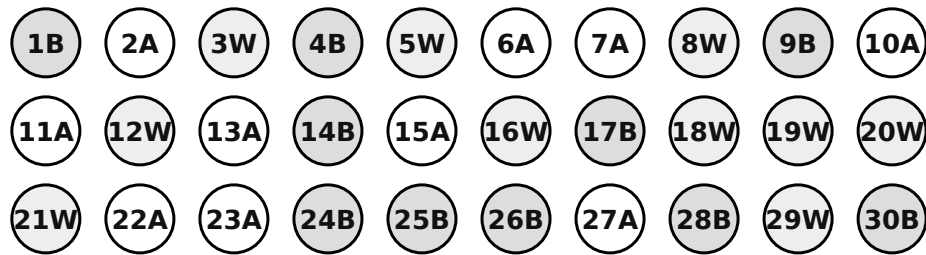
- a. **Observational**: the researchers did not assign any treatment; adults chose their own habits.
- b. A confounding variable, such as **high-stress jobs**, could lead to both more coffee and higher blood pressure, so the effect of coffee cannot be separated. Only an association is shown.

Scoring: (a) 1 point for observational with a reason. (b) 1 point for naming a plausible confounder and linking it to both variables.

AP Statistics Collecting Test Answer Key: questions 6-9

Question 6: Tomato experiment (3 points)

- a. Three treatments, 10 plants each. Use random digits (or draw numbers from a hat) to choose 10 distinct plants for A, then 10 of the remaining plants for B; the last 10 get water. Give all plants the same light and care, and compare yields.
- b. The water-only group is a **control**: it shows the yield without any fertilizer, so the effects of A and B can be judged against it.

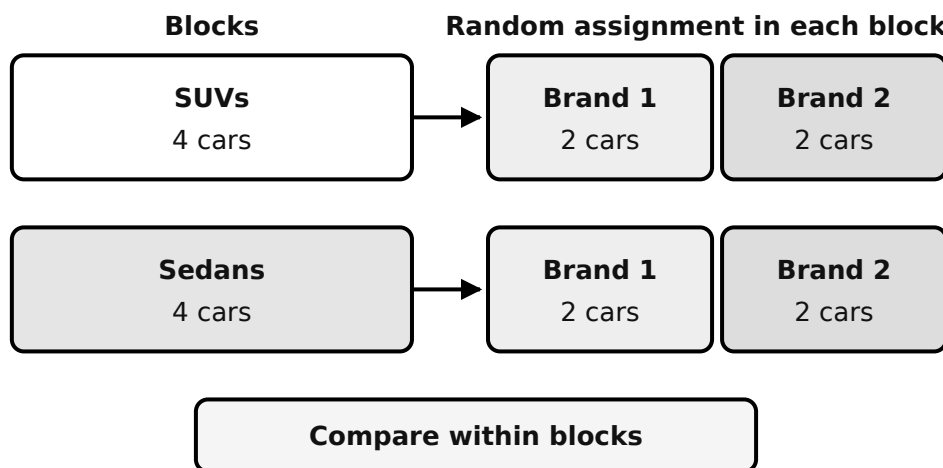


One acceptable random assignment (A, B, W for water).

Scoring: (a) 1 point for random assignment of 10 plants per treatment with a method; 1 point for equal treatment otherwise and comparing the responses. (b) 1 point for control/baseline.

Question 7: Tire experiment (2 points)

- Car type is a source of variation unrelated to tire brand. Blocking **removes that variation from the comparison**.
- Within the SUV block, randomly assign 2 SUVs to brand 1 and 2 to brand 2; do the same in the sedan block. Compare within each block.



Randomization inside each block.

Scoring: (a) 1 point for reducing variation due to car type. (b) 1 point for random assignment within each block, 2 cars per brand.

Question 8: Scope of inference (2 points)

Study 1: random assignment supports **cause and effect**, and random selection supports **generalizing to all high school students** in the population sampled.

Study 2: random assignment supports cause and effect **only for volunteers like these**, and the results cannot be generalized to all students.

Scoring: 1 point per study for both conclusions stated correctly.

Question 9: Music while studying (3 points)

- a. The students chose their own group, so the groups may differ in other ways (for example, motivation or study habits), which **confounds** the effect of music.
- b. Randomly assign 12 of the 24 students to study with music and the other 12 in silence, with the same room, material and quiz, then compare mean scores.
- c. Random assignment supports a **causal conclusion for these 24 students**; because they are not a random sample of all students, **it cannot be generalized** to all students.

Scoring: (a) 1 point for self-selection and confounding. (b) 1 point for random assignment with equal groups and consistent conditions. (c) 1 point for both parts of the conclusion.

Scoring summary

Total
20 points: add the points of every question of this ap statistics collecting test answer key.

How to use this ap statistics collecting test answer key

Use this ap statistics collecting test answer key to score the test fairly and to see which skills need more practice.

