

Fair Survey Choices

Use randomness and sample size to plan better surveys.

GRADE 7 • 7.PS.2.c

7.PS.2.c "Determine how sample size and randomness will ensure that the data collected is a sample that is representative of a larger population."

NAME _____

DATE _____

BUILD A FAIR SAMPLE

A representative sample is likely to reflect the larger population. Choose people at random so everyone has a chance to be picked, and use a larger sample when possible.

WORKED EXAMPLE

A library has 480 cardholders. The librarian wants a representative sample of 60 cardholders to ask about new books.

1. Make a list of all 480 cardholders.
2. Give each cardholder a number.
3. Use random numbers to choose 60 different cardholders.

Answer: The 60 randomly chosen cardholders are likely to be a representative sample.

PRACTICE 5 problems

- 1** A school has 200 students. Plan A asks the first 20 students at lunch. Plan B randomly selects 20 students from the school list. Which plan is better?

ANSWER _____

- 2** For the same population, which is more likely to be representative: a random sample of 15 people or a random sample of 45 people?

ANSWER _____

- 3** Names are picked at random from a list of every student in the school. What makes this sample fairer?

ANSWER _____

- 4** A student surveys only members of the basketball team about school lunches. Is this likely to represent the whole school?

ANSWER _____

- 5** From a population of 300 people, which random sample is more likely to represent the population: 30 people or 75 people?

ANSWER _____

APPLY IT Show your work

- 1** The school dance committee wants to choose music that students will enjoy. Plan A randomly selects 40 students from the school roster. Plan B asks 70 choir members. Which plan should the committee use?

WORK SPACE

ANSWER _____

- 2** A gaming club wants to know which device students use most for games. The school has 360 students. Should the club randomly survey 24 students or 72 students? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A student council wants opinions from 720 students. Rank these plans from strongest to weakest sample. Explain: Plan A randomly selects 36 students from the roster. Plan B randomly selects 84 students from the roster. Plan C asks the first 84 students who enter the cafeteria.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A school has 200 students. Plan A asks the first 20 students at lunch. Plan B randomly selects 20 students from the school list. Which plan is better?	Plan B, because the students are selected randomly.
2	For the same population, which is more likely to be representative: a random sample of 15 people or a random sample of 45 people?	A random sample of 45 people.
3	Names are picked at random from a list of every student in the school. What makes this sample fairer?	Every student has a chance to be chosen.
4	A student surveys only members of the basketball team about school lunches. Is this likely to represent the whole school?	No, because basketball team members may not reflect all students.
5	From a population of 300 people, which random sample is more likely to represent the population: 30 people or 75 people?	75 people, because it is the larger random sample.

PART 2 • APPLY IT

1. **Plan A.** Plan A uses random selection from the whole school. Plan B includes only choir members, so it may be biased.
2. **The club should randomly survey 72 students because a larger random sample is more likely to represent the school.**
Both choices are random, but 72 students provide more data than 24 students. The larger sample is more likely to reflect the population.

CHALLENGE

Plan B, Plan A, Plan C. Plan B is random and has the largest sample. Plan A is random but smaller. Plan C is not random because cafeteria arrivals may not represent all students.

Accept equivalent wording about random selection giving all members a chance to be chosen and larger random samples being more likely to represent the population. Students may say "less biased" for "fairer."