

Sample Smart

Build samples that match the population.

GRADE 6 • 6.PS.1.c

6.PS.1.c "Determine the factors that will ensure that the data collected is a sample that is representative of a larger population."

NAME _____

DATE _____

THE BIG IDEA

A representative sample mirrors important groups in the population. Choose people randomly, and use the same proportion from groups that are different sizes.

WORKED EXAMPLE

A recreation center has 500 members. Sixty percent are on the swim team. Plan a representative sample of 20 members.

1. Find swim-team members: 60% of $20 = 12$.
2. Find other members: $20 - 12 = 8$.
3. Randomly choose 12 swim-team members and 8 other members.

Answer: Randomly select 12 swim-team members and 8 other members.

PRACTICE 5 problems

- 1** Student council has 90 sixth graders and 60 seventh graders. For a sample of 15, how many should come from each grade?

ANSWER _____

- 2** Tariq asks 18 students in art club about recess. Is his sample representative of the school?

ANSWER _____

- 3** A school has 140 bus riders and 210 car riders. For a sample of 25, how many students should come from each group?

ANSWER _____

- 4** Which plan is more representative for a school-spirit survey? A: Ask volunteers at a pep rally. B: Randomly select students from every homeroom in proportion to homeroom size.

ANSWER _____

- 5** A cafeteria has 270 students buying lunch and 30 bringing lunch. For a sample of 30, how many should come from each group?

ANSWER _____

APPLY IT Show your work

- 1** A library serves 210 sixth graders, 150 seventh graders, and 90 eighth graders. It will survey 30 students about graphic novels. How many students from each grade should be randomly selected?

WORK SPACE

ANSWER _____

- 2** For an after-school club survey, a school has 160 sixth graders and 240 seventh graders. Jon randomly selects 18 sixth graders and 17 seventh graders. Is his sample representative? Give corrected counts for a sample of 35.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A school has 270 bus riders, 180 car riders, and 90 walkers. A team randomly chooses 15 bus riders, 10 car riders, and 5 walkers for a start-time survey. Is the sample representative? Explain.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Student council has 90 sixth graders and 60 seventh graders. For a sample of 15, how many should come from each grade?	9 sixth graders and 6 seventh graders, chosen randomly.
2	Tariq asks 18 students in art club about recess. Is his sample representative of the school?	No. Art club students may not represent all students.
3	A school has 140 bus riders and 210 car riders. For a sample of 25, how many students should come from each group?	10 bus riders and 15 car riders, chosen randomly.
4	Which plan is more representative for a school-spirit survey? A: Ask volunteers at a pep rally. B: Randomly select students from every homeroom in proportion to homeroom size.	B
5	A cafeteria has 270 students buying lunch and 30 bringing lunch. For a sample of 30, how many should come from each group?	27 students buying lunch and 3 students bringing lunch, chosen randomly.

PART 2 • APPLY IT

- 14 sixth graders, 10 seventh graders, and 6 eighth graders.** There are 450 students total. The grade groups are 210/450, 150/450, and 90/450 of the population, so use the same proportions of 30.
- No. Select 14 sixth graders and 21 seventh graders.** Sixth graders are 160/400, or 2/5, of the school, so 2/5 of 35 is 14. The remaining 21 students should be seventh graders.

CHALLENGE

Yes. The population ratio is 3:2:1, and the sample ratio 15:10:5 simplifies to 3:2:1. The students were chosen randomly.

Accept equivalent proportion reasoning when the labeled group counts are correct. For explanation answers, require random selection and matching population proportions.