LESSON MAKER PRO

Who Did You Ask?

Use samples to make fair estimates.

GRADE 7 · 7A.DSP.A.26.b

7A.DSP.A.26.b "Compare sampling techniques to determine whether a sample is random and thus representative of a population, explaining that random sampling tends to produce representative samples and support valid inferences."

NAME _____ DATE _____

THE BIG IDEA

In a random sample, every person in the population has an equal chance of being chosen. Random samples tend to represent the population, so you can use the sample fraction to estimate a total. Asking only one group may give a misleading estimate.

WORKED EXAMPLE

Use the table. About how many students prefer games? Is the estimate supported?

SPIRIT DAY SURVEY

Group	Count
All students	90
Random sample	9
Sample votes for games	6

1. The 9 students were randomly chosen from all 90.
2. 6/9 = 2/3 of the sample prefer games.
3. 2/3 of 90 = 60.

Answer: About 60 students. Yes, the random sample supports the estimate.

PRACTICE 4 problems

1 A school has 120 students. Of 12 names drawn at random, 7 choose pizza. Estimate how many students choose pizza.

ANSWER _____

2 A school has 150 students. A student asks 15 friends, and 10 want a later start. Is an estimate of 100 students supported? Why?

ANSWER _____

3 A club has 48 members. In a random sample of 12, 3 bike to school. Estimate how many club members bike to school.

ANSWER _____

4 A school has 200 students. Of 20 names drawn at random, 14 like the dance. Of 20 dance club members, 18 like it. Which sample should you use to estimate how many students like the dance? Give the estimate.

ANSWER _____

_____

APPLY IT Show your work

1 Use the table. Estimate how many students want a skate area.

SKATE AREA SURVEY

School students	Random sample	Want a skate area
240	24	18

ANSWER _____

2 A game club has 84 members. The first 14 to arrive are asked about a new game, and 7 want it. An organizer estimates that 42 members want it. Is the estimate supported? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school has 300 students. Use the table. Which sample gives a stronger estimate of how many want afternoon games? Give the estimate and explain why the other sample may mislead.

AFTERNOON GAMES SURVEY

Sample	How chosen	Want games	Surveyed
A	Random names from school	12	30
B	Students at sports tryouts	16	20

WORK SPACE AND ANSWER

ANSWER KEY

Who Did You Ask?

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A school has 120 students. Of 12 names drawn at random, 7 choose pizza. Estimate how many students choose pizza.	**About 70 students.**
2	A school has 150 students. A student asks 15 friends, and 10 want a later start. Is an estimate of 100 students supported? Why?	**No. Friends are not a random sample of all students.**
3	A club has 48 members. In a random sample of 12, 3 bike to school. Estimate how many club members bike to school.	**About 12 members.**
4	A school has 200 students. Of 20 names drawn at random, 14 like the dance. Of 20 dance club members, 18 like it. Which sample should you use to estimate how many students like the dance? Give the estimate.	**Use the random sample. About 140 students like the dance.**

PART 2 · APPLY IT

1. **About 180 students.** 18/24 = 3/4, and 3/4 of 240 is 180.
2. **No. The first members to arrive were not randomly chosen, so the estimate may not represent the whole club.** The calculation, 7/14 of 84 = 42, is correct. The sampling method does not support a clubwide estimate.

CHALLENGE

Sample A gives the stronger estimate: about 120 students, since 12/30 of 300 is 120. Sample B includes only students at sports tryouts, who may be more likely to want games.

Accept estimates stated without "about." A correct calculation from a nonrandom sample does not make its schoolwide or clubwide inference reliable.