LESSON MAKER PRO

Sample Snapshot

Use sample data to make careful population predictions.

GRADE 7 · 7.PAR.4.10

7.PAR.4.10 "Predict characteristics of a population by examining the characteristics of a representative sample. Recognize the potential limitations and scope of the sample to the population."

NAME _____ DATE _____

FROM SAMPLE TO POPULATION

A representative sample has characteristics that are likely to match the larger population. Find the fraction or rate in the sample, then use that same rate to predict a number in the population. A sample may not represent the population if it includes only one special group.

WORKED EXAMPLE

A random sample of 18 students finds that 12 bring a reusable water bottle. Predict how many of 90 students may bring one.

1. Write the sample rate: 12/18 = 2/3.
2. Multiply: 2/3 of 90 = 60.

Answer: About 60 students may bring a reusable water bottle.

PRACTICE 6 problems

1 A random sample of 25 students shows that 11 own a skateboard. About how many students out of 100 may own a skateboard?

ANSWER _____

2 In a random sample of 28 students, 21 say they eat breakfast before school. Predict how many out of 140 students eat breakfast before school.

ANSWER _____

3 A random sample of 32 students finds that 8 chose a mystery book. Predict how many students out of 160 may choose a mystery book.

ANSWER _____

4 Fourteen of 17 chess club members say pizza is their favorite lunch choice. Can this result be used to predict the favorite lunch choice of all students in the school? Explain.

ANSWER _____

5 A random sample of 24 students finds that 9 play an instrument. Predict how many students out of 72 may play an instrument.

ANSWER _____

6 A survey asks 45 students who ride the bus, and 30 say they would use a later bus route. Can this survey predict what all students in the school want? Explain.

ANSWER _____

APPLY IT Show your work

1 The student council randomly surveys 36 of the 180 students attending the school dance about music. Twenty-seven students want upbeat music. If 180 students attend the dance, predict how many may want upbeat music.

2 A game store surveys 22 members of its gaming club. Eleven members say they plan to buy a new game this month. The store uses the result to predict that 77 of 154 students at the school will buy a new game. Is this prediction reliable for all students? Explain.

CHALLENGE One step up

A school wants to predict how many of 240 students want more esports events. Survey A randomly selects 48 students, and 30 want more events. Survey B asks 26 esports club members, and 23 want more events. What does Survey A predict? Which survey is better for predicting the whole school, and why?

ANSWER KEY

Sample Snapshot

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A random sample of 25 students shows that 11 own a skateboard. About how many students out of 100 may own a skateboard?	**44 students**
2	In a random sample of 28 students, 21 say they eat breakfast before school. Predict how many out of 140 students eat breakfast before school.	**105 students**
3	A random sample of 32 students finds that 8 chose a mystery book. Predict how many students out of 160 may choose a mystery book.	**40 students**
4	Fourteen of 17 chess club members say pizza is their favorite lunch choice. Can this result be used to predict the favorite lunch choice of all students in the school? Explain.	**No. Chess club members may not represent all students in the school.**
5	A random sample of 24 students finds that 9 play an instrument. Predict how many students out of 72 may play an instrument.	**27 students**
6	A survey asks 45 students who ride the bus, and 30 say they would use a later bus route. Can this survey predict what all students in the school want? Explain.	**No. Students who ride the bus may not represent all students in the school.**

PART 2 · APPLY IT

1. **135 students may want upbeat music.** Use the sample rate 27/36, which is 3/4. Find 3/4 of 180 to get 135.
2. **The prediction is not reliable for all students.** The calculation gives 77 students, but the prediction is not reliable because gaming club members may not represent all students. The sample rate is 11/22, or 1/2, and 1/2 of 154 is 77. The sample is limited to gaming club members, so it may be biased.

CHALLENGE

Survey A predicts 150 students. Survey A is better because its random sample is more likely to represent the whole school, while esports club members are more likely to want esports events.

Accept equivalent fraction or proportion work that gives the correct prediction. For limitation responses, accept clear statements that a special group may not represent the full population.