LESSON MAKER PRO

Sample to City

Use a random sample to predict a whole population.

GRADE 7 · MA.7.DP.1.3

MA.7.DP.1.3 "Given categorical data from a random sample, use proportional relationships to make predictions about a population."

NAME _____ DATE _____

SCALE UP A SAMPLE

A random sample can help you predict how many people in a population belong to a category. Write the category part over the sample total, set it equal to x over the population total, and solve for x.

WORKED EXAMPLE

A random sample of 17 library visitors shows that 8 visitors borrowed a graphic novel. Predict how many of 85 library visitors would borrow a graphic novel.

1. Write the proportion: 8/17 = x/85.
2. Multiply 8 by 85: 680.
3. Divide 680 by 17: x = 40.

Answer: 40 visitors

PRACTICE 6 problems

1 A random sample of 20 students shows that 7 students prefer mystery books. Predict how many students in a school of 80 students prefer mystery books.

ANSWER _____

2 In a random sample of 25 students, 10 students walk to school. Predict how many students in a population of 150 students walk to school.

ANSWER _____

3 A random sample of 16 students shows that 12 students use reusable water bottles. Predict how many students in a group of 48 students use reusable water bottles.

ANSWER _____

4 A random sample of 30 students shows that 9 students play a school sport. Predict how many students in a school of 200 students play a school sport.

ANSWER _____

5 In a random sample of 40 students, 15 students chose art as an elective. Predict how many students in a population of 200 students chose art.

ANSWER _____

6 A random sample of 24 students shows that 5 students bring lunch from home. Predict how many students in a school of 96 students bring lunch from home.

ANSWER _____

APPLY IT Show your work

1 The student council randomly surveyed 35 students about a new lunchtime podcast. Fourteen students said they would listen to it. If the school has 210 students, predict how many students would listen to the podcast.

WORK SPACE

ANSWER _____

2 A game club randomly surveyed 45 students about the type of game they want at the next event. Eighteen students chose strategy games. If 300 students attend the school, predict how many would choose strategy games.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A random sample of 50 students shows that 22 students ride bikes to school, 13 students ride the bus, and 15 students walk. Predict how many students in a school of 400 ride bikes, ride the bus, and walk. Explain how you know your predictions account for all 400 students.

WORK SPACE AND ANSWER

ANSWER KEY

Sample to City

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A random sample of 20 students shows that 7 students prefer mystery books. Predict how many students in a school of 80 students prefer mystery books.	**28 students**
2	In a random sample of 25 students, 10 students walk to school. Predict how many students in a population of 150 students walk to school.	**60 students**
3	A random sample of 16 students shows that 12 students use reusable water bottles. Predict how many students in a group of 48 students use reusable water bottles.	**36 students**
4	A random sample of 30 students shows that 9 students play a school sport. Predict how many students in a school of 200 students play a school sport.	**60 students**
5	In a random sample of 40 students, 15 students chose art as an elective. Predict how many students in a population of 200 students chose art.	**75 students**
6	A random sample of 24 students shows that 5 students bring lunch from home. Predict how many students in a school of 96 students bring lunch from home.	**20 students**

PART 2 · APPLY IT

1. **84 students** Use 14/35 = x/210. Since 210 is 6 times 35, multiply 14 by 6.
2. **120 students** Use 18/45 = x/300. Simplify 18/45 to 2/5, then find 2/5 of 300.

CHALLENGE

176 students ride bikes, 104 students ride the bus, and 120 students walk. The predictions account for all 400 students because 176 + 104 + 120 = 400.

Accept equivalent proportion setups and correct predictions labeled with the category. For the challenge, accept any clear explanation that the three predicted category totals add to 400.