

Sample Size Scoop

Use a random sample to estimate a whole group.

GRADE 7 • TEKS 7.12.B

7.12.B "use data from a random sample to make inferences about a population; and"

NAME _____

DATE _____

FROM SAMPLE TO POPULATION

A random sample can represent a larger population because each person has a fair chance to be chosen. Find the fraction of the sample with a trait, then use the same fraction to estimate how many people in the population have that trait.

WORKED EXAMPLE

A random sample of 24 students shows that 9 students prefer mystery books. Estimate how many of 120 students prefer mystery books.

1. Write the sample fraction: $9/24 = 3/8$.
2. Find $3/8$ of 120.
3. $3/8 \times 120 = 45$.

Answer: About 45 students prefer mystery books.

PRACTICE 6 problems

- 1** A random sample of 20 students finds that 7 ride a bike to school. Estimate how many of 100 students ride a bike to school.

ANSWER _____

- 2** In a random sample of 30 students, 18 say they read for fun each week. Estimate how many of 90 students read for fun each week.

ANSWER _____

- 3** A random sample of 16 students shows that 5 bring lunch from home. Estimate how many of 64 students bring lunch from home.

ANSWER _____

- 4** In a random sample of 25 students, 10 choose art as an elective. Estimate how many of 150 students choose art as an elective.

ANSWER _____

- 5** A random sample of 40 students finds that 14 play an instrument. Estimate how many of 200 students play an instrument.

ANSWER _____

- 6** In a random sample of 12 students, 3 have a pet reptile. Estimate how many of 84 students have a pet reptile.

ANSWER _____

APPLY IT Show your work

- 1** The library randomly surveys 36 students and finds that 15 students want more graphic novels. There are 288 students at the school. About how many students at the school want more graphic novels?

WORK SPACE

ANSWER _____

- 2** A student council randomly surveys 28 seventh graders. Of those surveyed, 21 say they would join an after-school esports club. There are 140 seventh graders. Estimate how many seventh graders would join the club.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two nonoverlapping random samples are taken from a school. In the first sample, 7 of 18 students say they want a longer lunch period. In the second sample, 16 of 42 students say the same. The school has 300 students. Estimate how many students want a longer lunch period, and explain why using both samples is useful.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A random sample of 20 students finds that 7 ride a bike to school. Estimate how many of 100 students ride a bike to school.	35 students
2	In a random sample of 30 students, 18 say they read for fun each week. Estimate how many of 90 students read for fun each week.	54 students
3	A random sample of 16 students shows that 5 bring lunch from home. Estimate how many of 64 students bring lunch from home.	20 students
4	In a random sample of 25 students, 10 choose art as an elective. Estimate how many of 150 students choose art as an elective.	60 students
5	A random sample of 40 students finds that 14 play an instrument. Estimate how many of 200 students play an instrument.	70 students
6	In a random sample of 12 students, 3 have a pet reptile. Estimate how many of 84 students have a pet reptile.	21 students

PART 2 • APPLY IT

- 120 students** Use the sample proportion $15/36 = 5/12$. Find $5/12$ of 288, which is 120.
- 105 students** Use the sample proportion $21/28 = 3/4$. Find $3/4$ of 140, which is 105.

CHALLENGE

115 students. Combine the samples: 23 of 60 students want a longer lunch period. Since 23/60 of 300 is 115, the estimate is 115 students. Using both samples gives a larger random sample, which usually gives a more reliable estimate.

Accept equivalent fraction or proportion work. Because these are inferences, accept answers stated as estimates, such as "about 35 students."