LESSON MAKER PRO

# Sample to School

*Predict a total from random samples*

**GRADE 7 · 7A.DSP.A.26.d**

**7A.DSP.A.26.d** "Use data from a random sample to draw inferences about a population with an unknown characteristic of interest, generating multiple samples to gauge variation and make predictions or conclusions about the population."

NAME _____ DATE _____

## FROM SAMPLES TO ESTIMATES

To predict a population total, multiply each sample's fraction by the population size. Compare the predictions from several random samples, then use a typical value for your estimate and the spread to show how much it may vary.

## WORKED EXAMPLE

A school has 90 lockers. Three random samples of 9 lockers had the sticker counts shown. Estimate how many lockers have stickers, and give the range of predictions.

**RANDOM SAMPLES OF 9 LOCKERS**

| Sample | Lockers with stickers |
|---|---|
| A | 1 |
| B | 2 |
| C | 3 |

1. Predict from each sample: 1/9 × 90 = 10, 2/9 × 90 = 20, and 3/9 × 90 = 30.
2. Use the middle prediction, 20, as the estimate. The predictions range from 10 to 30.

**Answer: About 20 lockers; the predictions range from 10 to 30 lockers.**

## PRACTICE 4 problems

**1** A library has 160 books. Two random samples of 8 include 5 and 7 comics. What range of comic totals do the samples predict?

**ANSWER** _____

**2** Of 120 students, two random samples of 12 include 6 and 8 who walk to school. Use the average sample count to predict how many students walk.

**ANSWER** _____

**3** Of 150 jerseys, two random samples of 15 include 6 and 12 with stripes. What total does each sample predict?

**ANSWER** _____

_____

**4** Of 180 students, three random samples of 18 include 10, 11, and 12 who play a sport. Use the middle prediction to estimate a total. Give the range of predictions.

**ANSWER** _____

_____

## APPLY IT Show your work

**1** A school has 320 students. Two random samples of 16 students gave these results for a school movie night. Predict how many students would attend. Give the range of predictions.

**SCHOOL MOVIE NIGHT**

| Sample | Would attend |
|---|---|
| A | 10 |
| B | 12 |

**ANSWER** _____

**2** A school has 240 students. Two random samples of 24 students gave these results. Predict how many students prefer a later lunch, and give the range of predictions.

**LATER LUNCH**

| Sample | Prefer later lunch |
|---|---|
| A | 13 |
| B | 17 |

**ANSWER** _____

## CHALLENGE One step up

A district has 500 students. In three random samples of 25, the numbers who want a new game club are 10, 15, and 20. Predict how many district students want the club. Explain why your estimate is uncertain.

WORK SPACE AND ANSWER

**ANSWER KEY** # Sample to School

**GRADE 7 · 7A.DSP.A.26.d**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | A library has 160 books. Two random samples of 8 include 5 and 7 comics. What range of comic totals do the samples predict? | **100 to 140 comics** |
| 2 | Of 120 students, two random samples of 12 include 6 and 8 who walk to school. Use the average sample count to predict how many students walk. | **70 students** |
| 3 | Of 150 jerseys, two random samples of 15 include 6 and 12 with stripes. What total does each sample predict? | **60 jerseys and 120 jerseys** |
| 4 | Of 180 students, three random samples of 18 include 10, 11, and 12 who play a sport. Use the middle prediction to estimate a total. Give the range of predictions. | **About 110 students; the predictions range from 100 to 120 students.** |

## PART 2 · APPLY IT

1. **About 220 students; the predictions range from 200 to 240 students.** The samples predict 10/16 × 320 = 200 and 12/16 × 320 = 240. Their average is 220.
2. **About 150 students; the predictions range from 130 to 170 students.** The samples predict 13/24 × 240 = 130 and 17/24 × 240 = 170. Their average is 150.

## CHALLENGE

**About 300 students may want the club. The samples predict 200, 300, and 400 students, so the predictions vary widely.**

Accept equivalent estimates that use all the samples, such as the average of the sample predictions. For the challenge, the explanation should cite the wide spread from 200 to 400.