LESSON MAKER PRO

Sample Signal

Compare random samples to judge an estimate.

GRADE 7 · 7.DS.A.2.b

7.DS.A.2.b "Generate and compare multiple random samples of the same size and use the variability across samples to assess how reliable an estimate or prediction is."

NAME _____ DATE _____

COMPARE THE ESTIMATES

For each equal-size random sample, divide the count by the sample size to find a percent estimate. A smaller gap between the highest and lowest estimates means the result is more consistent across samples.

WORKED EXAMPLE

Each random sample has 10 students. Estimate the percent who prefer a new lunch option, then find the gap between the estimates.

LUNCH POLL

Sample	Students who prefer it
A	2
B	4
C	6

1. 2/10 = 20%, 4/10 = 40%, and 6/10 = 60%.
2. 60% - 20% = 40 percentage points.

Answer: The estimates are 20%, 40%, and 60%. The gap is 40 percentage points.

PRACTICE 4 problems

1 Three random samples of 20 students each have 11, 13, and 15 yes answers. Find the three percent estimates.

ANSWER _____

2 Three random samples of 20 students each have 12, 14, and 16 yes answers. Find the gap between the highest and lowest percent estimates.

ANSWER _____

3 Two polls each use three random samples of 20 students. Poll A has 9, 10, and 11 yes answers. Poll B has 5, 10, and 15. Which poll gives a more consistent estimate? State both gaps.

ANSWER _____

4 Three random samples of 20 students each have 13, 14, and 15 yes answers. Is 70% a reasonable estimate? Give one number that supports your answer.

ANSWER _____

APPLY IT Show your work

1 A school polls three random groups of 25 students about game night. Find each percent who would attend and the gap between the estimates.

GAME NIGHT POLL

Group	Would attend
A	14
B	17
C	19

ANSWER _____

2 Two teams poll random groups of 20 students about a gaming club. Which team's estimate is more consistent? Find each team's gap.

GAMING CLUB POLL

Group	Team A yes	Team B yes
1	10	6
2	11	11
3	12	16

ANSWER _____

CHALLENGE One step up

Three random samples of 20 students were asked about a later school start. Use the middle sample percent to predict how many of the school's 300 students want it. Give a range using the lowest and highest sample percents. Why is one exact prediction uncertain?

LATER START POLL

Sample	Yes answers
A	11
B	13
C	17

WORK SPACE AND ANSWER

ANSWER KEY # Sample Signal

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Three random samples of 20 students each have 11, 13, and 15 yes answers. Find the three percent estimates.	**55%, 65%, and 75%**
2	Three random samples of 20 students each have 12, 14, and 16 yes answers. Find the gap between the highest and lowest percent estimates.	**20 percentage points**
3	Two polls each use three random samples of 20 students. Poll A has 9, 10, and 11 yes answers. Poll B has 5, 10, and 15. Which poll gives a more consistent estimate? State both gaps.	**Poll A. Its gap is 10 percentage points; Poll B's gap is 50 percentage points.**
4	Three random samples of 20 students each have 13, 14, and 15 yes answers. Is 70% a reasonable estimate? Give one number that supports your answer.	**Yes. The estimates are 65%, 70%, and 75%, so 70% is the middle estimate.**

PART 2 · APPLY IT

1. **56%, 68%, and 76%; gap: 20 percentage points** Divide each count by 25 to get the three percents. Subtract 56% from 76%.
2. **Team A; its gap is 10 percentage points, while Team B's gap is 50 percentage points.** Team A's estimates run from 50% to 60%. Team B's run from 30% to 80%.

CHALLENGE

The middle estimate is 13/20 = 65%, so the prediction is 195 students. The range is 165 to 255 students, from 55% to 85%. One exact prediction is uncertain because the sample estimates vary.

Accept equivalent explanations that compare the spread of equal-size random samples. In the challenge, the range represents predictions from the lowest and highest sample estimates.