LESSON MAKER PRO

Polling the Possibilities

Use sampling variability to estimate plausible percentages.

HIGH SCHOOL · A2S.DSP.I

A2S.DSP.I "The sampling distribution of a sample statistic formed from repeated samples for a given sample size drawn from a population can be used to identify typical behavior for that statistic..."

NAME _____ DATE _____

FROM RANGE TO ESTIMATE

A typical range shows where sample statistics often fall when you take repeated samples of the same size. Half the range's width is an estimated margin of error. Subtract and add it to your sample percentage to find plausible values for the population percentage.

WORKED EXAMPLE

A poll of 72 students finds that 65% support a new lunch option. Use the typical ranges to estimate plausible percentages for all students.

REPEATED-SAMPLE RESULTS

Sample size	Typical low	Typical high
18	36%	60%
72	44%	52%

1. Match the poll size to the row for 72 students.
2. Margin of error = (52% - 44%)/2 = 4 percentage points.
3. 65% - 4% = 61%; 65% + 4% = 69%.

Answer: 61% to 69%

PRACTICE 4 problems

1 For samples of 25, typical percentages run from 15% to 25%. Estimate the margin of error.

ANSWER _____

2 A sample of 64 gives 47%. Its typical range is 21% to 33%. Find the margin of error and a plausible population range.

ANSWER _____

3 A sample of 81 gives 58%. Its typical range is 27% to 45%. Find a plausible population range.

ANSWER _____

4 A sample of 144 gives 78%. Its typical range is 62% to 74%. Is 85% plausible? Give the plausible range.

ANSWER _____

APPLY IT Show your work

1 In a poll of 120 students, 41% choose hip-hop for the school dance playlist. Use the matching typical range to estimate plausible percentages for all students.

REPEATED PLAYLIST POLLS

Sample size	Typical low	Typical high
30	20%	44%
120	26%	38%

ANSWER _____

2 A student-run café polls 90 students. Of those polled, 56% want reusable cups. For samples of 90, the typical range is 39% to 51%. Estimate plausible percentages for all students.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two polls each find 46% support for a phone-free lunch. For samples of 32, the typical range is 16% to 40%. For samples of 128, it is 23% to 33%. Find both plausible population ranges. Which poll gives a tighter range, and why?

WORK SPACE AND ANSWER

ANSWER KEY

Polling the Possibilities

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For samples of 25, typical percentages run from 15% to 25%. Estimate the margin of error.	**5 percentage points**
2	A sample of 64 gives 47%. Its typical range is 21% to 33%. Find the margin of error and a plausible population range.	**6 percentage points; 41% to 53%**
3	A sample of 81 gives 58%. Its typical range is 27% to 45%. Find a plausible population range.	**49% to 67%**
4	A sample of 144 gives 78%. Its typical range is 62% to 74%. Is 85% plausible? Give the plausible range.	**No; 72% to 84%**

PART 2 · APPLY IT

1. **35% to 47%** For samples of 120, the margin of error is (38% - 26%)/2 = 6 percentage points. Apply it to 41%.
2. **50% to 62%** The margin of error is (51% - 39%)/2 = 6 percentage points. Subtract and add 6 percentage points to 56%.

CHALLENGE

Sample of 32: 34% to 58% (margin of error 12 percentage points). Sample of 128: 41% to 51% (margin of error 5 percentage points). The larger sample gives a tighter range because its sample percentages vary less.

Accept intervals written with endpoints or as inequalities. Margins of error are measured in percentage points.