

Practice 12-5

1. In a survey, participants were asked their opinion of a new government program. The response scale ranged from 1 to 4, with 4 being a favorable response to the program. Which sample was largest? Explain.

Sample	Score	Standard Deviation
A	3.0	1.1
B	2.8	1.3
C	2.9	0.8

C is the largest
smallest std. dev.
thus less variation
than sample A
and B

Identify any bias in each sampling method. When appropriate, suggest a sampling method that is more likely to produce a random sample.

2. A committee wants to find how much time students spend reading each week. They ask the students as they enter the library.

disproportionate # of readers

3. The students planning the junior class party want to know what kinds of pizza to buy. They ask the pizza restaurant what kinds sell the most.

poll should be of class members

4. The county road department wants to know which roads cause the most concern among the residents of the county. They ask the local restaurant to hand out survey forms.

not a random sample of residents

5. A politician wants to know what issues are most important to the voters in his district. He spends all day Tuesday talking to people as they enter the grocery store.

excludes working individ

6. A politician wants to know the voters' views on an important issue. She has her campaign workers call people randomly from the phone book.

random

Find the sample size that produces each margin of error.

7. $\pm 15\%$

$$S.S = \frac{1}{(.15)^2} = 44$$

8. $\pm 2\%$

$$S.S = \frac{1}{(.02)^2} = 2500$$

9. $\pm 0.9\%$

$$\frac{1}{(.009)^2} = 12,346$$

10. $\pm 0.6\%$

$$\frac{1}{(.006)^2} = 27,778$$

For each sample find the sample proportion, the margin of error, and an interval likely to contain the true population proportion. Round to the nearest percent.

11. In a survey of 38 parents of preschool children, 20 would like to have their local school district provide play group sessions at least one evening a month.

$$\frac{20}{38} = .526$$

53%

$$\frac{1}{\sqrt{38}} = .16$$

16%

37% to 69%

12. In a random sample of 526 visitors to the craft center, 378 want the craft center to be open later in the evenings.

$$\frac{378}{526} = .718$$

72%

$$\frac{1}{\sqrt{526}} = .043$$

4%

68% to 76%

13. In a survey of 165 visitors to the library, 102 want the library to have more novels available.

$$\frac{102}{165} = .618$$

62%

$$\frac{1}{\sqrt{165}} = .077$$

8%

54% to 70%

14. In one lake, 98 of the last 323 fish caught have a certain chemical present in their body.

$$\frac{98}{323} = .303$$

30%

$$\frac{1}{\sqrt{323}} = .055$$

6%

24% to 36%

15. In a traffic survey, 537 of the 1287 drivers passing through the checkpoint were traveling more than 100 miles from home.

$$\frac{537}{1287} = .417$$

42%

$$\frac{1}{\sqrt{1287}} = .027$$

3%

39% to 45%