

S-IC School Advisory Panel

Alignments to Content Standards: S-IC.A.1

Task

From a class containing 12 girls and 10 boys, three students are to be selected to serve on a school advisory panel. Here are four different methods of making the selection.

- I. Select the first three names on the class roll.
- II. Select the first three students who volunteer.
- III. Place the names of the 22 students in a hat, mix them thoroughly, and select three names from the mix.
- IV. Select the first three students who show up for class tomorrow.

Which is the best sampling method, among these four, if you want the school panel to represent a fair and representative view of the opinions of your class. Explain the weaknesses of the three you did not select as the best.

IM Commentary

Most students will quickly settle on option III as the “best” method because it seems the “fairest” of the three. However, these students may not have a clear idea of what they mean by “best” or “fair.” Further discussion should lead to the idea that “fair” implies an equal chance of selection for any group of three students, which implies that any one student has the same chance of selection as any other student. Instructors could consider assigning the task to student pairs to initiate a think-pair-share exploration of the concomitant sampling issues or, if more in-depth student processing is desired

prior to a classroom discussion, then assign the task to small groups of three or four.

A possible follow-up discussion is that randomness allows the use of probability models, a key concept in the statistical inference concepts that come later.

[Edit this solution](#)

Solution

Choice III is the best solution in terms of fairness because each of the other methods does not give equal chance of selection to all possible groups of three students. Explanations as to why the others are unfair may include comments such as the following:

I. Names beginning with the same letter may belong to the same family or the same ethnic group.

II. Volunteers may have special interest in a particular issue on which they want to focus.

IV. Prompt students may be the more serious students and, perhaps, would be the more conscientious members of a panel, but they may not be typical of students in the class.

None of the three would allow me to be selected.



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