



Chapter 4D “FRAPPY” {Free Response AP Problem...Yay!}

The following problem is taken from an actual Advanced Placement Statistics Examination. Your task is to generate a complete, concise statistical response in 15 minutes. You will be graded based on the AP rubric and will earn a score of 0-4. After grading, keep this problem in your binder for your AP Exam preparation.

An apartment building has nine floors and each floor has four apartments. The building owner wants to install new carpeting in eight apartments to see how well it wears before she decides whether to replace the carpet in the entire building.

The figure below shows the floors of apartments in the building with their apartment numbers. Only the nine apartments indicated with an asterisk (*) have children in the apartment.

11*	12
1st Floor	
14	13

21	22*
2nd Floor	
24	23*

31	32
3rd Floor	
34	33

41	12
4th Floor	
44	13

51*	52
5th Floor	
54	53

61	62
6th Floor	
64	63

71	12
7th Floor	
74	13

81	82
8th Floor	
84*	83

91	92*
9th Floor	
94	93*

Scoring:

E P I

(a) For convenience, the apartment building owner wants to use a cluster sampling method, in which the floors are clusters, to select the eight apartments. Describe a process for randomly selecting eight different apartments using this method.

E P I

(b) An alternative sampling method would be to select a stratified random sample of eight apartments, where the strata are apartments with children and apartments with no children. A stratified random sample of size eight might include two randomly selected apartments with children and six randomly selected apartments with no children. In the context of this situation, give one statistical advantage of selecting a stratified sample as opposed to a cluster sample of eight apartments using the floors as clusters.

Total: __/4