



Chapter 6b “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.

Airlines routinely overbook flights because they expect a certain number of no-shows. An airline runs a 5 P.M. commuter flight from Washington, D.C., to New York City on a plane that holds 38 passengers. Past experience has shown that if 41 tickets are sold for the flight, then the probability distribution for the number who actually show up for the flight is as shown in the table below.

Number who actually show up	36	37	38	39	40	41
Probability	0.46	0.30	0.16	0.05	0.02	0.01

Scoring:

Assume that 41 tickets are sold for each flight.

- (a) There are 38 passenger seats on the flight. What is the probability that all passengers who show up for this flight will get a seat?

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- (b) What is the expected number of no-shows for this flight?

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- (c) Given that not all passenger seats are filled on a flight, what is the probability that only 36 passengers showed up for the flight?

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Total: __/4