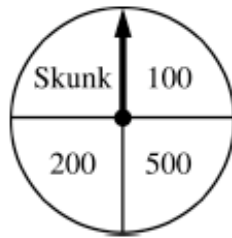




“FRAPPY” {Free Response AP Problem...Yay!}

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.



Contestants on a game show spin a wheel like the one shown in the figure above. Each of the four outcomes on this wheel is equally likely and outcomes are independent from one spin to the next.

- The contestant spins the wheel.
- If the result is a skunk, no money is won and the contestant's turn is finished.
- If the result is a number, the corresponding amount in dollars is won. The contestant can then stop with those winnings or can choose to spin again, and his or her turn continues.
- If the contestant spins again and the result is a skunk, all of the money earned on that turn is lost and the turn ends.
- The contestant may continue adding to his or her winnings until he or she chooses to stop or until a spin results in a skunk.

Scoring:

- (a) What is the probability that the result will be a number on all of the first three spins of the wheel?

1 1/2 0

(b) Suppose a contestant has earned \$800 on his or her first three spins and chooses to spin the wheel again. What is the expected value of his or her total winnings for the four spins?

1 1/2 0

(c) A contestant who lost at this game alleges that the wheel is not fair. In order to check on the fairness of the wheel, the data in the table below were collected for 100 spins of this wheel.

Result	Skunk	\$100	\$200	\$500
Frequency	33	21	20	26

Based on these data, can you conclude that the four outcomes on this wheel are not equally likely? Give appropriate statistical evidence to support your answer.

1/2 0

1/2 0

1/2 0

1/2 0

Total: __/4