SF5 Ch. 6

Chapter Summary: Random Variables

(1) Review Ch. 6 in textbook.

In the last chapter we learned the basic definition and rules of probability. We continued our study of probability in this chapter by exploring situations that involve assigning a numerical value to each possible outcome of a chance process. The random variables that result form the foundation for inference procedures in later chapters. You learned how to calculate probabilities of events involving random variables as well as how to describe their probability distributions. You learned formulas to determine the mean and standard deviation of individual random variables as well as the combination of several independent random variables. Finally, you explored two special random variables – binomial and geometric – and learned how to calculate probabilities of events in binomial and geometric settings.

This chapter involved a lot of formulas, so you may want to familiarize yourself with the formula sheet provided on the AP exam. Like earlier chapters, you should focus less on memorizing formulas or calculator keystrokes and more on how to apply the formulas and interpret results. Make sure you understand how and when to apply each formula. More importantly, make sure you show your work when calculating probabilities so anyone reading your response understands exactly how you arrived at your answer!

(2) **After You Read: What Have I Learned?**

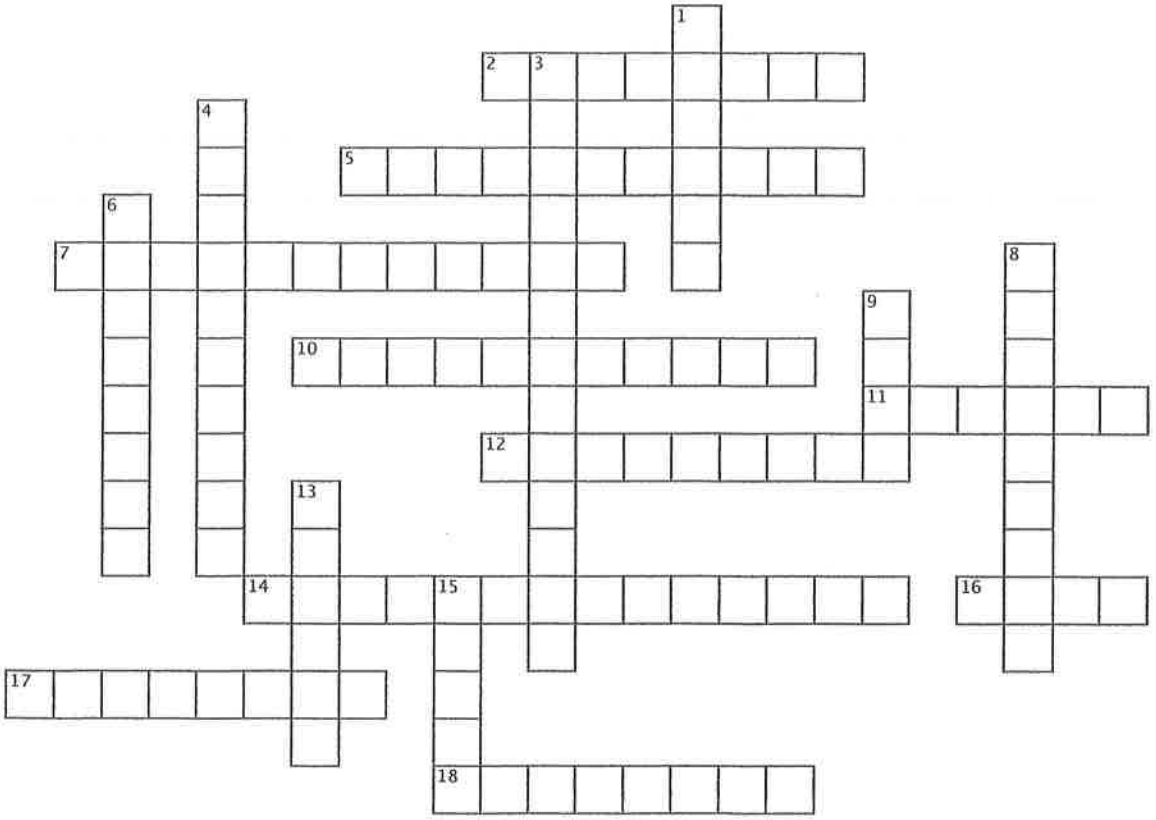
Complete the vocabulary puzzle, multiple-choice questions, and FRAPPY. Check your answers and performance on each of the learning targets. Be sure to get extra help on any targets that you identify as needing more work!

Learning Target	Got It!	Almost There	Needs Some Work
I can use the probability distribution of a discrete random variable to calculate the probability of an event.			
I can make a histogram to display the probability distribution of a discrete random variable and describe its shape.			
I can calculate and interpret the mean (expected value) of a discrete random variable.			
I can calculate and interpret the standard deviation of a discrete random variable.			
I can use the probability distribution of a continuous random variable (uniform or Normal) to calculate the probability of an event.			
I can describe the effect of adding or subtracting a constant or multiplying or dividing by a constant on the probability distribution of a random variable.			
I can calculate the mean and standard deviation of the sum or difference of random variables.			
I can find probabilities involving the sum or difference of independent random variables.			
I can determine whether the conditions for a binomial setting are met.			
I can calculate and interpret probabilities involving binomial distributions.			
I can calculate and interpret the mean and standard deviation of a binomial random variable.			
I can find probabilities involving geometric random variables.			
I can use the Normal approximation to the binomial distribution to calculate probabilities, when appropriate.			

(3) As useful, do "Check for Understanding" problems

[next LCQ ON SF5! ch. 4 and 5]

Chapter 6: Random Variables



Across

2. The average of the squared deviations of the values of a variable from its mean.
5. Random variables are _____ if knowing whether an event in X has occurred tells us nothing about the occurrence of an event involving Y.
7. The probability _____ of a random variable gives its possible values and their probabilities.
10. The number of ways of arranging k successes among n observations is the binomial ____.
11. The sum or difference of independent Normal random variables follows a _____ distribution.
12. When you combine independent random variable, you always add these.
14. A linear _____ occurs when we add/subtract and multiply/divide by a constant.
16. An easy way to remember the requirements for a geometric setting.
17. This setting arises when we perform several independent trials of a chance process and record the number of times an outcome occurs.
18. The mean of a discrete random variable is also called the _____ value.

Down

1. A ____ variable takes numerical values that describe the outcomes of some chance process.
3. When n is large, we can use a Normal _____ to determine probabilities for binomial settings.
4. A random variable that takes on all values in an interval of numbers.
6. A random variable that takes a fixed set of possible values with gaps between.
8. A ____ setting arises when we perform independed trials of the same chance process and record the number of trials until a particular outcome occurs.
9. An easy way to remember the requirements for a binmial setting.
13. Adding a constant to each value of a random variable has no effect on the shape or ____ of the distribution.
15. Multiplying each value of a random variable by a constant has no effect on the ____ of the distribution.