

MATH 115
 FALL 2016
 EXAM 2

NAME:

1. 10 pts. Write out the sample space for the probability experiment of tossing a single coin three times.
2. 10 pts. A laptop has 3 choices for a processor, 3 choices for a graphics card, 4 choices for memory, 6 choices for a hard drive, and 2 choices for a battery. How many ways can the laptop be customized?
3. 10 pts. Two cards are selected at random from a standard deck of 52 playing cards. The first card is replaced before the second card is selected. Find the probability of selecting a diamond and then selecting a king.
4. 10 pts. each The table below shows the estimated number of earned degrees (in thousands) conferred in 2000 by level and gender. Say someone who earned a degree in 2000 is randomly selected. Find the probability of getting someone who...
 - (a) Earned a doctor's degree.
 - (b) Earned an associate's degree or a master's degree.
 - (c) Earned a bachelor's degree given the person is a woman.
 - (d) Is a woman given the person earned a bachelor's degree.

		GENDER		Total
		Men	Women	
L E V E L	Associate	208	323	531
	Bachelor	502	659	1161
	Master	187	227	414
	Doctor	27	19	46
Total		924	1228	2152

5. 10 pts. Of the boxes produced by a company, 5% have a puncture, 8% have a smashed corner, and 0.4% have both a puncture and a smashed corner. Find the probability that a randomly selected box has a puncture or has a smashed corner.
6. 10 pts. An astronomy club has 32 members. How many different ways can the club select a president, vice president, treasurer, and secretary?
7. 10 pts. In how many distinguishable ways can the letters in the German word *Bedeutungen* be written?
8. 10 pts. A shipment of 15 microwave ovens contains 3 defective units. A restaurant buys 4 of these units. What is the probability that the restaurant buys at least two of the defective units?

9. 15 pts. The number of dogs per household in a small town is as follows:

Dogs	0	1	2	3	4	5
Probability	0.686	0.195	0.077	0.022	0.013	0.007

Find the mean, variance, and standard deviation of the probability distribution.

10. 10 pts. each Randall McDoogalhauser spent the weekend partying to a degree of immoderation that recommended lampshades as headwear, and so upon rousing from a puddle of organic toxins on Monday morning he found himself wholly unprepared for a quiz in his intermediate stage lighting class. The quiz consists of seven multiple-choice questions, each question having four choices: one right, three wrong. In an alcoholic haze as thick as the clouds of Titan, Randall decides to randomly guess the answer to every question.
- (a) What is the probability Randall will get precisely five questions right?
 - (b) What is the probability Randall will pass the quiz, if passing requires getting a score of at least 70%?
11. 10 pts. each An oil prospector plans to drill holes in a region until a productive well is found or funds are exhausted. Geologists estimate the probability any single drilling will be successful to be 0.18.
- (a) What is the probability that the fourth hole drilled is the first to yield a productive well?
 - (b) If the prospector can afford to drill no more than seven wells, what is the probability that the search for a productive well will fail?
12. 10 pts. each During the 20th century the mean number of hurricanes to strike the U.S. mainland per year was about 0.6. Find the probability that the number of hurricanes striking the U.S. mainland in any given year is...
- (a) Exactly one.
 - (b) More than one.