Honors Statistics
Review 3.4 and 3.5

For probability questions, write a probability statement and round answers to 3 significant digits.

The table shows the number (in thousands) of earned degrees conferred in the U.S. in 2004 by level and gender. Use the chart for #1 – 8.

	Male	**Female**	***Total***
Associate	260	405	665
Bachelor's	595	804	1399
Master's	230	329	559
Doctorate	25	23	48
Total	1110	1561	2671

A person who earned a degree in 2004 is randomly selected. Find the probability of selecting someone who

1. earned a bachelor' degree
2. earned a bachelor's degree, given that the person is female
3. earned a bachelor's degree, given that the person is not a female
4. earned an associate degree or is female
5. earned a doctorate, given that the person is a male
6. earned a master's degree or is female
7. earned an associate degree and is male
8. is a female given that the person earned a master's degree

9. Approximately 8% of students at a local high school participate in after-school sports all four years of high school. A group of 25 seniors is randomly chosen. What is the probability that at least 1 of the 25 seniors participated in after-school sports?

10. Suppose the probability that an adult in America will watch the Super Bowl is 40%. Ten people are randomly chosen. What is the probability that at least 1 adult will watch the Super Bowl?

11. The chance of an IRS audit for a tax return with over $25,000 in income is about 2% per year. If 15 people are selected at random, what is the probability that at least 1 of them will be audited?

12. It has been estimated that only 30% of California residents have adequate earthquake supplies. Eight California residents are randomly selected.

    a. What is the probability that all of the 8 people randomly selected have adequate earthquake supplies?
    b. What is the probability that none of the 8 people randomly selected have adequate earthquake supplies?
    c. What is the probability that at least 1 of the 8 people randomly selected have adequate earthquake supplies?

13. Suppose the defect rate for light bulbs is 9%. Five light bulbs will be randomly selected from a batch of 2,000 light bulbs.

    a. Can we assume independence? Explain

    b. Assuming independence, what is the probability that at least one of the light bulbs is defective?

14. An 8-sided die is tossed three times.

    a. What is the probability that all three tosses result in the same number?
    b. What is the probability that all three tosses result in a "7"?

Are these events independent? Explain

15. Selecting a queen and then a jack from a deck of cards without replacing the queen

16. Selecting a queen and then a jack from a deck of cards but returning the queen to the deck before picking another card

There are 100 juniors and 125 seniors at Fairview High School. Out of the 100 juniors, 15 said they were taking calculus. Out of the 125 seniors, 48 said they were taking calculus. Fill in the chart below. Use the chart for #17 – 22.

	Junior	Senior	***Total***
Taking calculus			
Not taking calculus			
Total			

If one student is randomly selected, find

17. P(junior)
18. the probability of selecting a junior or someone taking calculus
19. P(senior | taking calculus)
20. the probability of selecting a student taking calculus, given they are a senior

Utilizing the chart above, what is the probability of selecting 2 students taking calculus

21. without replacement
22. with replacement

Answers

1	.524
2	.515
3	.536
4	.682
5	.0225
6	.671
7	.0973
8	.589
9	.876
10	.994
11	.261
12a	.0000656
12b	.0576
12c	.942
13a	yes; 5% of 2000 is 100. We are selecting 5 light bulbs, which is less than 100.
13b	.376
14a	.0156
14b	.00195
15	dependent
16	independent
17	.444
18	.658
19	.762
20	.384
21	.0775
22	.0784