AP STATISTICS Chapter 15 Practice WS

NAME	 	 	
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- 1. A survey of local car dealers revealed that 64% of all cars sold last month had CD players, 28% had alarm systems, and 22% had both CD players and alarm systems.
  - a. What is the probability one these cars selected at random had neither a CD player nor an alarm system?
  - b. What is the probability that a car had a CD player unprotected by an alarm system?
  - c. What is the probability a car with an alarm system had a CD player?
  - d. Are having a CD player and an alarm system disjoint events? Explain.
- 2. According to the American Pet Products Manufacturers Association (APPMA) 2003-2004 National Pet Owners Survey, 39% of U.S. households own at least one dog and 34% of U.S. households own at least one cat. Assume that 60% of U.S. households own a cat or a dog.
  - a. What is the probability that a randomly selected U.S. household owns neither a cat nor a dog?
  - b. What is the probability that a randomly selected U.S. household owns both a cat and a dog?
  - c. What is the probability that a randomly selected U.S. household owns a cat if the household has a dog?
- 3. All airline passengers must pass through security screenings, but some are subjected to additional searches as well. Some travelers who carry laptops wonder if that makes them more likely to be searched. Data for 420 passengers aboard a cross-country flight are summarized in the table shown.

	Searched?				
	Yes	No	Total		
Laptop	30	42	72		
No Laptop	145	203	348		
Total	175	245	420		

- a. Find the probability that a randomly selected passenger is searched.
- b. Find the probability that a randomly selected passenger has a laptop and is searched.
- c. Find the probability that a randomly selected passenger with a laptop is searched.
- d. Does it appear that being subjected to an additional search is independent of carrying a laptop computer? Explain.

4. For purposes of making on-campus housing assignments, a college classifies its students as Priority A (seniors), Priority B (juniors), and Priority C (freshmen and sophomores). Of the students who choose to live on campus, 10% are seniors, 20% are juniors, and the rest are underclassmen. The most desirable dorm is the newly constructed Gold dorm, and 60% of the seniors elect to live there. 15% of the juniors also live there, along with only 5% of the freshmen and sophomores. What is the probability that a randomly selected resident of the Gold dorm is a senior?

- 5. A particular gene occurs in 2% of the population. A test for the gene gives a positive result for people who have the gene 99% of the time. However, it also gives a false positive for those who don't have the gene 3% of the time.
  - a. What is the probability that a person tests negative for the gene?

b. What is the probability that a person who tests positive for the gene actually has it?