HAPTER 14

a) S = {HH, HT, TH, TT}, equally likely.
b) S = {0, 1, 2, 3}, not equally likely.
c) S = {H, TH, TTH, TTT}, not equally likely.
d) S = {1, 2, 3, 4, 5, 6}, not equally likely.
a) S = {2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}, not equally likely.
b) S = {BBB, BBG, BGB, BGG, GBB, GBG, GGB, GGG}, equally likely.
c) S = {0, 1, 2, 3, 4}, not equally likely.
d) S = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, not equally likely.
In this context "truly random" should mean that every number is equally likely to occur.
In circumstances "like this," rain occurs 25% of the time.
There is no "Law of Averages." She would be wrong to think that they are "due" for a harsh winter.
He's referring to the "Law of Averages," which doesn't exist. If rain in the fall and winter are independent of each other, a nice fall will have no bearing on winter rains.
There is no "Law of Averages." If at bats are independent, his chance for a hit does not change based on recent successes or failures.
a) There is no "Law of Averages." If crashes are independent, it makes no difference. If crashes were due to problems with the aircraft, another crash may be more likely; however, increased maintenance vigilance may *lessen* the chance of another crash.
b) A good safety record may be due to competence rather than luck. In any even, if events are independent, the probability of a crash has not changed.
a) There is some chance you would have to pay out much more than the $300.
b) Many customers pay for insurance. The small risk for any one customer is spread among all.
a) Almost all people make bets without winning the jackpot.
b) This creates publicity—more people may be attracted to play. (And, of course, it's not a loss. We assume that they take in more than they pay out.)
a) Legitimate. b) Legitimate.
c) Not legitimate (sum more than 1). d) Legitimate.
e) Not legitimate (can't have negatives or values more than 1).
a) Not legitimate (sum less than 1).
b) Not legitimate (sum greater than 1). c) Legitimate.
d) Not legitimate (can't have negatives). e) Legitimate.
A family may own both a car and an SUV. The events are not disjoint, so the Addition Rule does not apply.
A home may have both a garage and a pool. The events are not disjoint, so the Addition Rule does not apply.
When cars are traveling close together, their speeds are not independent, so the Multiplication Rule does not apply.
There may be a genetic factor making the handedness of siblings not independent, so the Multiplication Rule does not apply.
a) He has multiplied the two probabilities.
b) He assumes that being accepted at the colleges are independent events.
c) No. Colleges use similar criteria for acceptance, so the decisions are not independent.
a) He has added the three probabilities.
b) He is assuming that the events are disjoint.
c) No. Many students get into more than one of the three, so the events are not disjoint and the probabilities cannot simply be added together.
a) 0.72 b) 0.89 c) 0.28
a) 0.13 b) 0.45 c) 0.87
a) 0.5184 b) 0.0784 c) 0.4816
a) 0.3025 b) 0.2025 c) 0.2431
a) Repair needs for the two cars must be independent.
b) Maybe not. An owner may treat the two cars similarly, taking
a) The Calculus backgrounds of the students must be independent.
b) Yes. The professor assigned students to the groups at random.
a) 342/1005 = 0.340.
b) 30/1005 + 50/1005 = 80/1005 = 0.080.
a) 950/2020 = 0.47.
b) 424/2020 + 566/2020 = 990/2020 = 0.49.
a) 0.195 b) 0.913
c) Responses are independent.
d) People were polled at random.
a) 0.044 b) 0.624 c) 0.332
d) Responses are independent.
e) People were polled at random.
a) 0.2888 b) 0.7112
c) (1 − 0.76) + 0.76(1 − 0.38) or 1 − (0.76)(0.38)
a) 0.2888 b) More likely in 1997. (0.4002)
a) 1) 0.30 2) 0.30 3) 0.90 4) 0.0
b) 1) 0.027 2) 0.128 3) 0.512 4) 0.271
a) 1) 0.04 2) 0.51 3) 0.55
b) 1) 0.041 2) 0.849 3) 0.974 4) 0.373
a) Disjoint (can't be both red and orange).
b) Independent (unless you're drawing from a small bag).
c) No. Once you know that one of a pair of disjoint events has occurred, the other is impossible.
a) Disjoint.
b) Independent (unless they are related).
c) No. Once you know that one of a pair of disjoint events has occurred, the other is impossible.
a) 0.0046 b) 0.125 c) 0.296 d) 0.421 e) 0.995
a) 0.027 b) 0.125 c) 0.001 d) 0.729 e) 0.784
a) 0.027 b) 0.063 c) 0.973 d) 0.014
a) 0.0225 b) 0.092 c) 0.00008 d) 0.556
a) 0.024 b) 0.250 c) 0.543
a) 0.148 b) 0.600 c) 0.344
0.078 **42.** 0.469
a) For any day with a valid three-digit date, the chance is 0.001, o 1 in 1000. For many dates in October through December, the probability is 0. (No three digits will make 10/15, for example.
b) There are 65 days when the chance to match is 0. (Oct. 10–31, Nov. 10–30, and Dec. 10–31.) The chance for no matches on th remaining 300 days is 0.741
c) 0.259 d) 0.049
a) Yes. There are 42 cards left in the deck: 26 black and only 16 red.
b) No. There is no "long run." You'll see the whole deck after 52 cards, and you know there will be 26 of each color then.

CHAPTER 15

a) 0.68 b) 0.32 c) 0.04
a) 0.14 b) 0.23 c) 0.77
a) 0.31 b) 0.48 c) 0.31
a) 0.06 b) 0.50 c) 0.94
a) 0.2025 b) 0.6965 c) 0.2404 d) 0.0402
a) 0.193 b) 0.507 c) 0.067 d) 0.632
a) 0.50 b) 1.00 c) 0.077 d) 0.333
a) 0.333 b) 0.429 c) 0.667
a) 0.11 b) 0.27 c) 0.407 d) 0.344
a) i) 0.62 ii) 0.867 iii) 0.194 b) 0.66
a) 0.011 b) 0.222 c) 0.054 d) 0.337 e) 0.436
a) 0.103 b) 0.404 c) 0.209 d) 0.460 e) 0.559
0.21 **14.** 0.08
a) 0.145 b) 0.118 c) 0.414 d) 0.217
a) 0.783 b) 0.013 c) 0.127 d) 0.586
a) 0.318 b) 0.955 c) 0.071 d) 0.009
a) 0.632 b) 0.140 c) 0.003 d) 0.624