**CHAPTER 7 SOLUTIONS**

The answers are rounded to the nearest hundredth.

**7.1.**

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a) 159/500 = .32

b) 190/500 = .38

c) (159+190)/500 = .32 + .38 = .70

d) 1 - .32 = .68

**7.2.**

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a) 48/500 = .10

b) 273/500 = .55

c) 28/500 = .06

d) 48/500 + 273/500 – 28/500 = 293/500 = .59

e) 1 - .10 = .90 or (159+190+103)/500 = 452/500 = .90

f) 28/48 = .58

g) 28/273 = .10

h) 245/452 = .54

**7.3.**

a) 159/500 = .32

b) 190/500 = .38

c) .32 X .38 = .12

d) Yes. It can be used. Because the sampling is with replacement, the events are independent.

**7.4.**

a) 159/500 = .32

b) (159/500) X (190/499) = .32 X .38 = .12

c) No. The Multiplicative Rule of Probability cannot be used because the events are not independent.

**7.5.**

a) 320

b) 380

c) 320 + 380 = 700

d) 1000 - 320 = 680

**7.6.**

a) .5

b) .5

c) 1

d) .7

e) .9

**7.7.**  The two events are not equally likely.

**7.8.**  The statement is false. The fact that the urn contains equal numbers of black and white marbles is enough to conclude that the probability that one marble selected at random from this urn is white is .5.

**7.9.**

a) They are not mutually exclusive because the outcome HH satisfies both E1 and E2.

b) Step 1: The sample space is {HH, HT, TH, TT}, thus P(E2) = .5. Step 2: The modified sample space is {HH, HT}, thus P(E2 given that E1 has occurred) = .5. Step 3: The modified sample space is {TH, TT}, thus P(E2 given that E1 has not occurred) = .5.

**7.10.**

a) They are mutually exclusive because the sample space is {H, TH, TT}. None of these outcomes satisfies both E1 and E2.

b) P(E2) = .33. P(E2 given that E1 has occurred) = 0 because the modified sample space is {H}. P(E2 given that E1 has not occurred) = .5 because the modified sample space is {TH, TT}. Because these values are not the same, E1 and E2 are dependent.

**7.11.**

a) They are not mutually exclusive because the outcome TT satisfies both E1 and E2.

b) P(E2) = .25. P(E2 given that E1 has occurred) = .50 because the modified sample space is {TH, TT}. P(E2 given that E1 has not occurred) = 0 because the modified sample space is {H}. Because these values are not the same, E1 and E2 are dependent.