6.8

If we were dealt many, many, many 5-card hands, the proportion of these hands that we would get three of kind would be about 1/50.

6.20

(a) P(Blue) = 1–(0.3 + 0.2 + 0.2 + 0.1 + 0.1) = 0.1

(b) P(Blue Peanut) = 1–(0.2 + 0.1 + 0.2 + 0.1 + 0.1) = 0.3

(c) P(Plain Red, Yellow, or Orange) = 0.2 + 0.2 + 0.1 = 0.5

P(Peanunt Red, Yellow, or Orange) = 0.1 + 0.2 + 0.1 = 0.4

6.26

(a) P(D) = 0.301 + 0.176 + 0.125 = 0.602
(b) $P(B \cup D) =$ 0.222 + 0.602 = 0.824
(c) $P(D^c) = 1 - 0.602 = 0.398$
(d) $P(C \cap D) =$ 0.301 + 0.125 = 0.426
(e) $P(B \cap C) =$ 0.058 + 0.04 6= 0.104

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6.30

$P(A) = \dfrac{44845}{175230} = 0.26$

$P(B) = \dfrac{56008}{175230} = 0.319$

$P(AB) = \dfrac{10596}{175230} = 0.06$. Since $P(A)P(B) \neq P(AB)$, we know that A and B are not independent.

6.44

$P(\text{Albino Child}) = \dfrac{1}{2}\cdot\dfrac{1}{2} = \dfrac{1}{4}$

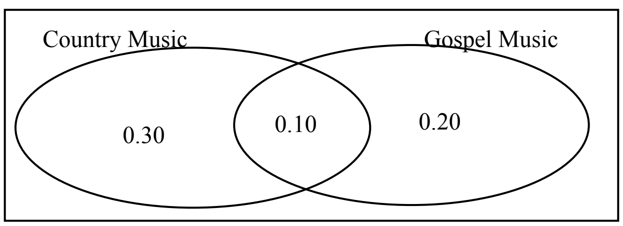
$P(2 \text{ Albino Children}) = \dfrac{1}{4}\cdot\dfrac{1}{4} = \dfrac{1}{16}$

$P(\textit{Neither are Albino}) = \frac{9}{16}$

6.46

$P(A \text{ or } B) = 0.134 + 0.254 - 0.080 = 0.308$

6.52



P(Like Country not Gospel) = 0.30
P(Neither Country nor Gospel) = 0.40

6.58

(a) $P(\text{Spade}) = \dfrac{13}{52}$, $P(\text{Spade}|\text{Spade}) = \dfrac{12}{51}$

(b) The probabilities continue as above for the 3rd, 4th, and 5th cards respectively: $\dfrac{11}{50}, \dfrac{10}{49}, \dfrac{9}{48}$

(c) $P(5 \text{ Spades}) = 0.000495$. This is a direct application of the multiplication principal of probabilities of events.

(d) P(Flush) = 4(P(5 Spades)) = 0.00198

6.59

P(R.F. in Spades) = $\dfrac{5\cdot 4\cdot 3\cdot 2\cdot 1}{52\cdot 51\cdot 50\cdot 49\cdot 48} = 0.0000003847$

P(R.F.) = 4(Above Probability) = 0.00000154

6.68

(a) $P(J) = 1/13 = 0.0769$
(b) $P(5 \mid J) = 1/12 = 0.083$
(c) $P(J, 5) = P(J)P(5 \mid J) = 0.0064$

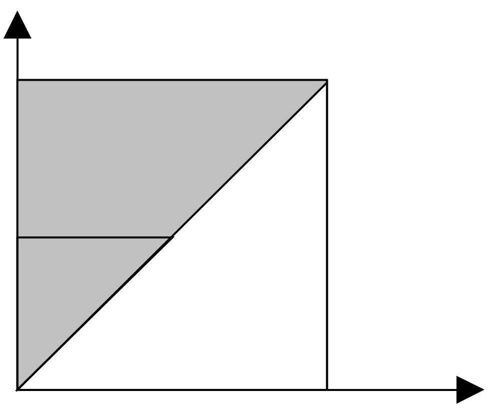
(d) P(Greater than 5 and Greater than 5) = $P(>5)P(>5 \mid >5) = (8/13)(7/12) = 0.359$

6.70

(a) $P(A) = 0.1$, $P(C) = 0.2$, $P(A \mid C) = 0.05$

(b) $P(AC) = P(C)P(A \mid C) = 0.2(0.05) = 0.01$

6.76



The question basically asks what percentage of the shaded right triangle is striped?

So $P(Y < ½ \mid Y > X) = (1/2)(1/2)(1/2) / (1/2) = ¼$

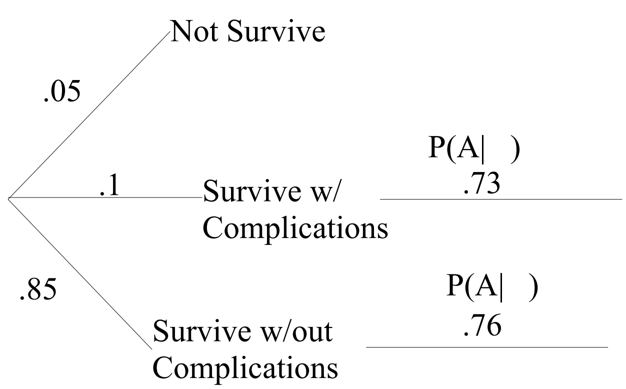
6.84

Let A = An adult belongs to a Health Club, and B = an adult goes to a Health Club twice per week.

We have $P(A) = 0.1$ and $P(B|A) = 0.4$. So $P(AB) = 0.04$.

Note also that $P(A|B) = 1 = \dfrac{P(AB)}{P(B)}$ Thus $P(B) = 0.04$

6.86



$P(A) = 0.1(0.73) + 0.85(0.76) = 0.719$

Since the P(A) if he chooses the surgery is > 0.7, he should elect surgery.