Assignment 1: Introduction to Probability

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Dobrow Chapter 1

1.6

(a) {X + Y = 4} solution: {13, 22, 31}

(b) {X + Y = 9} solution: {45, 36, 63, 54}

(c) {Y = 3} solution (assuming that X value does not matter): {13, 23, 33, 43, 53, 63}

(d) {X = Y} solution: {11, 22, 33, 44, 55, 66}

(e) {X > 2Y} solution: {31, 52}

1.8

If a couple plans on having children until they have 1 girl or 6 boys, the sample space or Ω would be the following (G = Girl, B = Boy):

{G}

{BG}

{BBG}

{BBBG}

{BBBBG}

{BBBBBG}

{BBBBBB}

A reasonable random variable for having a girl is 0.5, P(G) = 0.5. The same probability can be associated with a boy, P(B) = 0.5. This random variable was selected because the outcomes of gender is 1 of 2 possbilities.

1.10

In order for the random experiment with three possible outcomes a, b, and c, with P(a) = p, P(b) = pˆ2, and P(c) = p then the three probailities when added together must = 1.

A possible probability for the p = 27/64.

1.16

A license plate can be two, three, four, or five letters long and taken from the alphabets A to Z. All letters are possible, including repeats.

(A) The probability of the plate A-R-R is:

$(1/26) * (1/26) * (1/26)$