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Section 1C

5.4
This is an example of empirical probability because it is the relative frequency derived from a real-life experiment (in this case, tossing two coins 10 times).

5.6
Theoretical probability, because this is the relative frequency after we perform “tossing 3 coins” for infinitely many times. It is based on probability but not experiment.

5.10
a,d,e cannot be. Probability must be between 0 and 1, inclusive.

5.12
A. P(Getting a black card) = 26/52 =0.5
B. P(Getting a diamond) = 13/52 = 0.25
C. P(Getting a face card) = 12/52 = 0.23
D. P(Getting a nine) = 4/52 = 0.077
E. P(Getting a king or queen) = 8/52 = 0.154

5.16
A. 1/8
B. 3/8
C. 3/8
D. 1/8
E. They add up to 1, since the 4 events form the entire sample space

5.22
P(Male and say No) = 56/1275 = 4.39%

5.26
P(female or say No) = (722+101-45)/1275 = 61.02%

5.40
A. Group of Students taking English is larger. If all students taking English are taking Math, then the groups have the same size
B. Group of students taking English or Math is larger

5.46
A. P(16 or more) = 1-0.23-0.41=0.36
B. P(7 or more) = 1-0.23 = 0.77
C. P(at most 15) = 0.23+0.41 = 0.64

D. a and c are complements of each other because “making fewer than 15 mistakes” is the opposite of “making 16 or more mistakes.” They make up the entire sample space

5.52

They are associated because the ratio of left-handedness in each gender is different. There might be a correlation between gender and left-handedness.

5.64

They are equally possible. The gender of one baby already born does not affect the gender of babies to be born. This means the gender of each baby is independent.
Both of them have possibility equals (1/2)^6=1/64

5.66

A. 0.95*0.95 = 0.9025
B. 0.05*0.05 = 0.0025
C. 1-0.0025=0.9975