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| NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_ | **Probability** |
| Probability Day 4 | **DATE: Wednesday, May 03, 2017** |

1. [**Role-playing games**](javascript:top.OpenSupp('exercise','5',39)) Computer games in which the players take the roles of characters are very popular. They go back to earlier tabletop games such as Dungeons & Dragons. These games use many different types of dice. A four-sided die has faces with 1, 2, 3, and 4 spots.

* (a) List the sample space for rolling the die twice (spots showing on first and second rolls).
* What is probability of rolling a sum of 5?

1. Tossing coins Imagine tossing a fair coin 3 times.
   1. What is the sample space for this chance process?
   2. What is probability of getting more heads than tails?
2. [**Blood types**](javascript:top.OpenSupp('exercise','5',45)) All human blood can be typed as one of O, A, B, or AB, but the distribution of the types varies a bit with race. Here is the distribution of the blood type of a randomly chosen black American:

[Description: http://ebooks.bfwpub.com/tps4e/tables/5_T_UN_14.gif](javascript:top.OpenSupp('table',5,'UN14'))

* (a) What is the probability of type AB blood? Why?
* (b) What is the probability that the person chosen does not have type AB blood?
* (c) Maria has type B blood. She can safely receive blood transfusions from people with blood types O and B. What is the probability that a randomly chosen black American can donate blood to Maria?

1. [**Languages in Canada**](javascript:top.OpenSupp('exercise','5',46)) Canada has two official languages, English and French. Choose a Canadian at random and ask, “What is your mother tongue?” Here is the distribution of responses, combining many separate languages from the broad Asia/Pacific region:[**6**](javascript:top.ShowFootnote('5_6'))

[Description: http://ebooks.bfwpub.com/tps4e/tables/5_T_UN_15.gif](javascript:top.OpenSupp('table',5,'UN15'))

* (a) What probability should replace “?” in the distribution? Why?
* (b) What is the probability that a Canadian’s mother tongue is not English?
* (c) What is the probability that a Canadian’s mother tongue is a language other than English or French?

1. [**Preparing for the GMat**](javascript:top.OpenSupp('exercise','5',48)) A company that offers courses to prepare students for the Graduate Management Admission Test (GMAT) has the following information about its customers: 20% are currently undergraduate students in business; 15% are undergraduate students in other fields of study; 60% are college graduates who are currently employed; and 5% are college graduates who are not employed. Choose a customer at random.

* (a) What’s the probability that the customer is currently an undergraduate?
* (b) What’s the probability that the customer is not an undergraduate business student?

1. [](javascript:top.OpenSupp('table',5,'UN16'))[**Who eats breakfast?**](javascript:top.OpenSupp('exercise','5',49)) Students in an urban school were curious about how many children regularly eat breakfast. They conducted a survey, asking, “Do you eat breakfast on a regular basis?” All 595 students in the school responded to the survey. The resulting data are shown in the two-way table below.[**7**](javascript:top.ShowFootnote('5_7'))

* If we select a student from the school at random, what is the probability that we choose
  + a female?
  + someone who eats breakfast regularly?
  + a female who eats breakfast regularly?
  + a female or someone who eats breakfast regularly?

1. [](javascript:top.OpenSupp('table',5,'UN17'))[**Sampling senators**](javascript:top.OpenSupp('exercise','5',50)) The two-way table below describes the members of the U.S Senate in a recent year.

* If we select a U.S. senator at random, what’s the probability that we choose
  + a Democrat?
  + a female?
  + a female Democrat?
  + a female or a Democrat?

1. In a statistics class there are 18 juniors and 10 seniors; 6 of the seniors are females and 12 of the juniors are males. If a student is selected at random, find the probability of selecting the following: a) P(a junior or a female)

b) P(a senior or a female)

c) P(a junior or a senior)