Extra Extra Practice

5.3 day 1

**1. Olympic medals** *(Two-way tables and conditional probabilities)*

In the 2016 Summer Olympics, the United States and China won the most medals. Suppose we randomly select a medal from the 191 that are represented in the two-way table. Define events G: gold medal, U: United States, and B: bronze medal.



(a) Find *P*(B | U) and interpret this value in context.

(b) Given that the chosen medal is not a gold medal, what’s the probability that it came from the United States? Write your answer as a probability statement using correct symbols for the events.

**2. Pandora or Spotify? Replay.** *Calculating conditional probability*

According to a recent report, Pandora and Spotify are the most used music-streaming apps. A group of AP® Statistics students surveyed all the seniors in the school and found that 68% use Pandora, 38% use Spotify, and 24% use both. Suppose we select a senior at random. Given that the person uses Pandora, what’s the probability that she or he uses Spotify?

**3. Subject preference and gender, again …….** *Checking for independence*

Is there a relationship between gender and subject preference (math or English)? The two-way table summarizes the relationship between gender and subject preference for a class of 25 AP® Statistic students.

Suppose we choose one of the students in the sample at random. Are the events “male” and “math” independent? Justify your answer.

**4. Hot coffee ………***The general multiplication rule*

Students who work at a local coffee shop recorded the drink orders of all the customers on a Saturday. They found that 64% of customers ordered a hot drink, and 80% of these customers added cream to their drink. Find the probability that a randomly selected Saturday customer orders a hot drink and adds cream to the drink.

**SOLUTION to 1:**

(a) P(B|U) = *P*(bronze medal | United States) given that the randomly chosen medal is from the United States, there is about a 31.4% chance that it is a bronze medal.

(b) P(United States|not gold) =

*P*(U|G*C*) 

**SOLUTION to 2:**



**SOLUTION to 3**



Because these probabilities are equal, the events “male” and “math” are independent. Knowing that the student is male doesn’t change the probability that the student prefers math.

**SOLUTION to 4:**

= *P*(hot drink) ∙ *P*(adds cream | hot drink)