Name: _____ Date:_____ Period: _____ **Review**

Mid-Unit 1A Review – Exploring One Variable Data (Categorical)

Reviews do NOT cover all material from the lessons but will hopefully remind you of key points. To be prepared, you must study all packets for lessons 1.1 – 1.4.

1. A high school health class wants to understand how much time students sleep each night. The class decides to conduct a statistical study in which a group of 75 randomly selected students is surveyed and asked to report the number of minutes they sleep on a typical school night.

   a. Identify the population.

All students at the high school.

   b. Identify the sample.

The randomly selected 75 students surveyed

   c. Identify the variable. Label as Categorical or Quantitative. If Quantitative determine if Discrete or Continous.

Number of minutes slept on a typical school night = Quantitative and Continuous

   d. Write a strong statistical investigative question.

"What is the distribution of the number of minutes students at this high school sleep on a typical school night?"

2. A city restaurant association wants to understand which food delivery app residents prefer so they can plan future partnership opportunities. The association randomly selects 150 residents and records each person's preferred delivery app (DoorDash, Uber Eats, Grubhub, Postmates, or Instacart). The association believes that DoorDash is the most popular app, and they want to determine whether the data support this claim.

Delivery App	Counts
Uber Eats	32
Grubhub	24
Postmates	16
DoorDash	60
Instacart	18

   a. Identify the population.

All residents of the city.

   b. Identify the sample.

The 150 randomly selected residents surveyed.

   c. Identify the parameter.

The true proportion of all city residents who prefer DoorDash

   d. Identify the statistic.

The proportion of the 150 sampled residents who prefer DoorDash $\left(\frac{60}{150} = 40\%\right)$

   e. Identify the variable. Label as Categorical or Quantitative. If Quantitative determine if Discrete or Continous.

Preferred food delivery app = Categorical

   f. Identify the observational unit.

Each individual resident surveyed

© The Algebros from FlippedMath.com

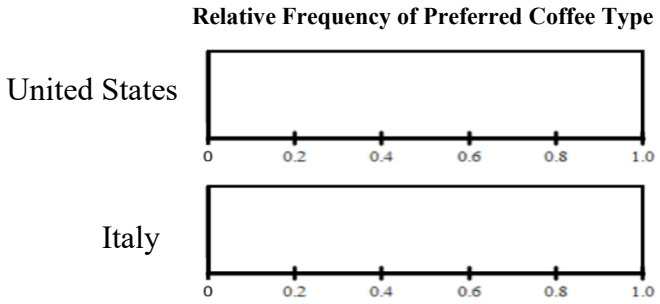
3. Starbucks wants to know if preferred drink type differs between customers in the United States and customers in Italy. The company randomly surveys 160 customers in the United States and 220 customers in Italy, and asks each person their primary drink order.

Country	Latte	Espresso	Drip Coffee
United States	96	32	32
Italy	66	110	44

a. Researchers surveyed 160 customers in the United States and 220 customers in Italy. Explain why relative frequency (a proportion), rather than raw count, must be used to fairly compare drink preference between the two countries.

The United States sample (160 customers) and Italy sample (220 customers) are different sizes. Comparing raw counts directly would be misleading because a larger sample will naturally tend to produce larger counts, even if the underlying preference isn't actually stronger. Relative frequency converts each country's data into a percentage, placing both groups on a fair, comparable 0–100% scale regardless of how many customers were surveyed in each country.

b. Construct a segmented bar graph to display the distribution of preferred coffee type.



c. Describe the distribution of preferred coffee type for both countries using relative frequencies.

Among United States customers, Latte was the most preferred drink at 60%, followed by Espresso and Drip Coffee, which were tied at 20% each. Among Italy customers, Espresso was the most preferred drink at 50%, followed by Latte at 30%, and Drip Coffee at 20%.

d. A Starbucks employee claims that Latte's are more popular with Americans than Espresso is among Italians. Does your segmented bar graph support this claim? Justify your answer using relative frequencies.

The claim states that Lattes are more popular with Americans (60%) than Espresso is among Italians (50%). Since 60% is greater than 50%, the segmented bar graph does support this claim. Latte's relative frequency among United States customers (60%) is higher than Espresso's relative frequency among Italy customers (50%), confirming the employee's statement.

© The Algebros from FlippedMath.com