

Name: _____

MATH 108

Fall 2023

HW 11: Due 11/02

“The 50-50-90 rule: anytime you have a 50-50 change of getting something right, there’s a 90% probability you’ll get it wrong.”

–Andy Rooney

Problem 1. (10pt) News reporting suggests that 30% of local residents support a tax increase to fund local beautification improvements. You go out into the community to survey individuals to confirm this reporting. Walking up to random individuals on the street, you ask whether they support the tax increase.

- (a) Discuss whether the number of people supporting the tax increase is given by a binomial distribution.
- (b) Assuming you survey 12 people and that the number of people supporting the tax increase is given by a binomial distribution and that the news reporting is correct, compute...
 - (i) Exactly 7 people support the tax increase.
 - (ii) At least 3 people support the tax increase.
 - (iii) More than 7 people support the tax increase.
 - (iv) Less than 7 people support the tax increase.

Problem 2. (10pt) Suppose that surveys suggest that 85% of individuals have taken an Uber at some point. You take a simple random sample of eight individuals. Find the probability that. . .

- (a) At least one individual had taken an Uber.
- (b) Exactly five individuals had taken an Uber.
- (c) More than four individuals had taken an Uber.
- (d) At most three individuals had taken an Uber.