Name: _____ Date: _____ **Unit 2 Class Work**

Sample Proportions & Margins of Error Class Work

Objective: You will be able to calculate and interpret sample proportions and margins of error.

★ Sample Proportions

Remember, a **sample** gathers information from only a part of a population.

Using any sample, you can determine the **sample proportion**, which is the number of times an event, x, occurs in a sample size n.

Guided Example:

1. a. In a sample of 250 baseball players, 183 players have never hit a homerun. Determine the sample proportion of baseball players who have hit homeruns.

b. In a sample of 100 baseball players, 63 have never hit homeruns. Determine the sample proportion of baseball players who have hit homeruns.

c. In a sample of 435 baseball players, 288 have never hit homeruns. Determine the sample proportion of baseball players who have hit homeruns.

d. Which of these samples would you consider to be the most *reliable*? Explain.

★ Margins of Error

Since sample proportions are not representative of an entire population, they should be reported with an estimate (a.k.a. margin) of error. This margin of error is based on the standard deviation.

*How do you think the size of the sample will affect the margin of error?

*Margin of Error Formula:

✎ ***Guided Example:***

2. a. A poll reports that 49% of students surveyed in a high school would like the opportunity to eat lunch outside, with a margin of error of 2.5%. Estimate the number of students in the school who participated in the poll.

b. There are 2000 total students in the high school. Estimate the range of students who would like the opportunity to eat lunch outside.

✎ ***Now You Try Some:***

3. a. A poll reports that 47% of voters favor the Republican candidate, with a margin of error of 3.8%. Estimate the number of voters polled.

b. If there are expected to be a total of 15,000 voters, estimate the interval likely to contain the population proportion of voters who favor the Republican candidate.

4. a. A survey of 1250 high school students found that 18% of students do not have Facebook Messenger downloaded on their iPhones. Determine the margin of error.

b. If there are 1853 students in the school, estimate the interval likely to contain the population proportion of students who do not have Facebook Messenger.

5. 500 email addresses of NYC residents were randomly chosen. A survey was sent to the owner of each email address, asking him/her to describe a time when he/she performed an act of kindness for a homeless person. 500 responses were recorded, and of these 500, unfortunately 147 people claimed to have never performed an act of kindness for a homeless person. Determine the margin of error for the sample. If there are 8,406,000 people living in NYC, estimate the population proportion that has never performed an act of kindness for the homeless.

Homework: p. 667-668 #16, 17, 19, 20, 22, 24, 25, 27, 31, 33, & 34

In a survey of 400 random people, 140 people claim to not watch television every day. Describe how to determine the likely interval of the population that does not watch television daily.

Find margin of error: *1/√400 (+/-5%)*
Calculate sample proportion: *140/400 = 35%*
Add and subtract margin of error to sample proportion:
30% to 40%