

Bellwork: A recent school poll showed that 47% of respondents favored Yash to be student body president, while 51% favored Noah, with a margin of error of 4% for each poll. Can a winner be determined from the poll? *Nope.*

$$\begin{array}{l} \text{C.I. Noah} \quad 51 \pm 4 = 47-55\% \\ \text{C.I. Yash} \quad 47 \pm 4 = 43-51\% \end{array}$$

### Homework 9.7 Solutions:

1. a)  $p=9/40=.225$     m.e.= .132    c.i. = .093-.375    yes
- b)  $p=5/40=.125$     m.e.= .105    c.i. = .020-.230    no
- c)  $p=13/40=.35$     m.e.= .151    c.i. = .199-.501    yes

2. a)  $x=68.6$      $S_x=10.6$
- b) margin of error = 3.5
- c) confidence interval = 65.1 - 72.1 hrs
- d) We are 95% confident that the average battery life for all batteries is between 65.1 and 72.1 hrs.

3. a)  $338/650 = .52$
- b) margin of error = .04
- c) confidence interval = .48 - .56
- d) We are 95% confident that the real proportion of people voting for this candidate is between .48 and .56 of the population

4. Willy Confidence Interval: 43-51%
- Flora Confidence Interval: 47-55%
- No, we cannot predict a winner from this poll.

$$3b) 2 \cdot \sqrt{\frac{.52(1-.52)}{650}} = .04$$

d) we are 95% sure population proportion will be between   .04  

Today's Objectives:

Review for Unit 9 Test!

Don't forget to make your 3x5 notecard!

1. Evaluate the series represented by

$$\sum_{n=3}^{13} (n(n+5)^2) = 3(8)^2 + 4(9)^2 + 5(10)^2$$

$$+ \dots + 13(18)^2$$

2<sup>nd</sup> stat  $\rightarrow$  MATH  $\rightarrow$  sum

2<sup>nd</sup> stat  $\rightarrow$  OPS  $\rightarrow$  seq

$(x(x+5))^2$ ,  $x$ , lower, upper  
3 13

18612

2. Find the sum of the following:

$$5 + 8 + 11 + \dots, n = 9$$

$$14 + 17 + 20$$

$$23 + 26 + 29$$

$$\sum_{k=1}^9 3k + 2$$

$$= \boxed{153}$$

## Stat → edit L1

3. Given the data to the right, determine the following:

- a. Mean 7.67  
 b. Median 8  
 c. Mode 8  
 d. Standard Deviation: 3.34  
 e. Range: 13  
 f. Quartile 1: 5  
 g. Quartile 3: 10  
 h. Interquartile range: 5

Total Hour worked per week

10	5
7	9
9	12
<u>8</u>	12
<u>8</u>	10
4	<u>8</u>
5	7
3	6
1	14

- Convenient Sample - easy access sample
- Cluster Sample - population is grouped randomly - you pick random groups 4 sample
  - Systematic Sample - population organized - go through w/pattern
  - Volunteer Sample - people volunteer
  - Stratified Sample - population is sorted into groups by characteristic, pick individuals out of each group to make sample

Experiment- Control group and experimental group

Survey- Ask all members of sample the same question(s)

Observational Study - Observe a group without interfering

Parameter - The thing we want to know about a group.

Population - The group that we want to know about

Random Sample - Everybody has an equal chance to be picked

Sample Population - The group where we get our data

8. Dixie High class officers want to know how many sophomores plan to attend the upcoming dance. They visit 5 all sophomore classes and ask each student in the room.

- a. Population: Sophomores
- b. Sample Population 5 classes
- c. Parameter of interest. going to dance?

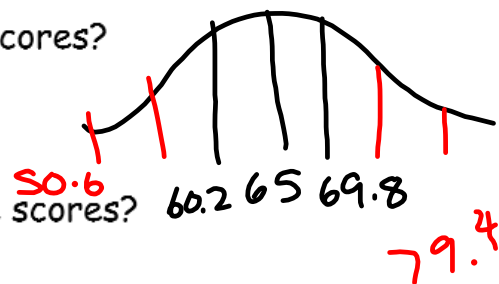
9. On a given test the mean was 65% with a standard deviation of 4.8%.

a. What interval contains 68% of the scores?

$\pm 1 \sigma$  60.2 - 69.8%

b. What interval contains 99.7% of the scores?

50.6 - 79.4%



c. What percentage of the scores are greater than 75%?

normalcdf(lower, upper, mean, std. dev.) = .0186  
 normalcdf(75, 100, 65, 4.8) = 1.86%

d. What percentages of the scores are between 60% and 70%?

normalcdf(60, 70, 65, 4.8) = .7024

2nd VARS (DISTR)

70.24%

10. A recent poll conducted telephone interviews with a random sample of adults aged 18 and older. Data were obtained for 1011 people. Of these, 37% said that football is their favorite sport to watch on television.

a. What is the margin of error for a 95% confidence level?

$$\text{margin of error} = 2 \sqrt{\frac{p(1-p)}{n}} = 2 \sqrt{\frac{.37(1-.37)}{1011}} = .030$$

b. What is the approximate interval for a 95% confidence level?

$$.37 \pm .03 = .34 - .40$$

so, 34% to 40%

11. The table to the right shows the scores for a recent test.

a. Find the mean and standard deviation for the sample.

$$\bar{x} = 74.96$$

$$s = 17.35$$

b. Approximate the margin of error for the 95% confidence level.

$$2 \cdot \frac{s}{\sqrt{n}} = 2 \cdot \frac{17.35}{\sqrt{27}} = 6.68$$

c. Find the 95% confidence interval.

$$\bar{x} \pm \text{m.e.} = 74.96 \pm 6.68 = 68.28 - 81.64$$

d. Interpret the meaning of the confidence interval.

We are 95% confident the average test score is between 68.28 and 81.64

95	70	75
75	70	78
99	75	49
100	65	72
60	67	65
58	50	93
88	70	96
45	43	93
93	83	97

