7.2.2 Day 2 Assignment – AP Statistics Name: _____

1. Internet Usage: Many young adult Internet uses (ages 18 to 29) watch online videos. Suppose that a sample survey contacts and SRS of young adult Internet users and calculates the proportion $\hat{p}$ in this sample who watch online videos.

a) Calculate and interpret a **92%** Confidence Interval if the sample size is 250. 182 of 250 young adult Internet users said they also watch online videos. (Do the 4 steps.)

7.2.2 Day 2 Assignment – AP Statistics Name: _____

b) **Calculate** and **interpret** a 92% Confidence Interval if the population size is 1000. 728 of 1000 young adult Internet users said they also watch online videos. (Show work and interpret the Confidence Interval – you do not need to do the 4 steps.)

c) Calculate a **99%** Confidence Intervals for $\hat{p} = 0.728$ if the population size is 250. (Show work for the Confidence Interval – you do not need to do the 4 steps.)

d) Calculate a **99%** Confidence Interval for $\hat{p} = 0.728$ if the population size is 1000. (Show work for the Confidence Interval – you do not need to do the 4 steps.)

7.2.2 Day 2 Assignment – AP Statistics Name: Key

1. Internet Usage: Many young adult Internet uses (ages 18 to 29) watch online videos. Suppose that a sample survey contacts and SRS of young adult Internet users and calculates the proportion $\hat{p}$ in this sample who watch online videos.

a) Calculate and interpret a **92%** Confidence Interval if the sample size is 250. 182 of 250 young adult Internet users said they also watch online videos. (Do the 4 steps.)

IDENTIFY: p = true population proportion of young adult internet users who watch online videos.
- 92% confidence
- $\hat{p} = 182/250 = 0.728$ $n = 250$
- 1-proportion z-interval

CHECK: Random: description states "SRS"
Independent: $0.10N \geq n$
$0.10N \geq 250$
There are more than 2,500 young adult internet users.
Normal/Large counts: $n\hat{p} \geq 10 \rightarrow 250(0.728) \geq 10$
$182 \geq 10$ ✓
$n(1-\hat{p}) \geq 10 \rightarrow 250(1-0.728) \geq 10$
$68 \geq 10$ ✓

CALCULATE:
$invNorm(0.04, 0, 1) = -1.751$
$0.728 \pm 1.751\sqrt{\frac{0.728(1-0.728)}{250}}$
$0.728 \pm 0.049 \rightarrow (0.679, 0.777)$

CONCLUDE:
I am 92% confident that the true population proportion of young adult Internet users who watch online videos is between 0.679 to 0.777.

7.2.2 Day 2 Assignment – AP Statistics Name: _____

b) **Calculate** and **interpret** a 92% Confidence Interval if the population size is 1000. 728 of 1000 young adult Internet users said they also watch online videos. (Show work and interpret the Confidence Interval – you do not need to do the 4 steps.)

$\hat{p} = 728/1000 = 0.728$

$0.728 \pm 1.751\sqrt{\frac{0.728(1-0.728)}{1000}} \rightarrow 0.728 \pm 0.0246$

$(0.703, 0.753)$

I am 92% confident that the true population proportion of young adult internet users who watch online videos is between 0.703 and 0.753.

c) Calculate a **99%** Confidence Intervals for $\hat{p} = 0.728$ if the population size is 250. (Show work for the Confidence Interval – you do not need to do the 4 steps.)

$\text{invNorm}(0.005, 0, 1) = -2.576$

$0.728 \pm 2.576\sqrt{\frac{0.728(1-0.728)}{250}} \rightarrow 0.728 \pm 0.0725$

$(0.656, 0.800)$

d) Calculate a **99%** Confidence Interval for $\hat{p} = 0.728$ if the population size is 1000. (Show work for the Confidence Interval – you do not need to do the 4 steps.)

$0.728 \pm 2.576\sqrt{\frac{0.728(1-0.728)}{1000}} \rightarrow 0.728 \pm 0.0362$

$(0.692, 0.764)$