**Task session two (Estimation)**

**Elamir Ayman Yousef**

3)

x̄ = 32.7 years

Z = 3.09

σ = 3.1 years

n = 16

< m<

32.7 3.09 \* (3.1/4)< m < 32.7 3.09(3.1/4)

30.31 <m< 35.09

So the 99.8% confidence interval for the mean lifetime of all such trees is (30.31, 35.09) years.

4)

x̄ = 211.8 calories

Z = 1.96

s = 0.9 calories

n = 4

< m<

211.8 – 1.96 \*(0.9/2)< m < 211.8 + 1.96 \*(0.9/2)

210.918 <m < 212.682

So the 95% confidence interval for the mean number of calories in one cup of diced chicken breast meat is (210.92, 212.68) calories.

5)

a. The point estimate of the proportion p of all people who could read words disguised in this way is 448/450 = 0.9956

b. In this case, the sample size is 450 and the estimated proportion is 0.9956. Therefore, np = 450 \* 0.9956 = 448.02 and n(1-p) = 450 \* (1-0.9956) = 1.98.

Since both np and n(1-p) are less than 5, the sample size is not sufficiently large to construct a confidence interval for the proportion of all people who could read words disguised in this way.

6)

a. The point estimate of the proportion p of all adults who define themselves as vegetarians is 42/900 = 0.0467

b. In this case, the sample size is 900 and the estimated proportion is 0.0467. Therefore, np = 900 \* 0.0467 = 42.03 and n(1-p) = 900 \* (1-0.0467) = 857.97.

Since both np and n(1-p) are greater than 5, the sample size is sufficiently large to construct a confidence interval for the proportion of all adults who define themselves as vegetarians.

c.

p ± z \* √((p(1-p))/n)

Where p is the point estimate, z is the z-score corresponding to an 80% confidence level (which is approximately 1.28), and n is the sample size.

Using the point estimate p = 0.0467, z = 1.28, and n = 900, we can calculate the margin of error and then construct the confidence interval.