Answer on Question #84850 – Math – Statistics and Probability

Question

Twenty children are selected for a study on daily soda and milk consumption. The differences in consumption (Soda minus Milk) have a mean of 20 ml with a standard deviation of 33 ml.

1. Which of the following statements is/are true?
A) For each child, daily soda and milk consumption are dependent.
B) For each child, daily soda and milk consumption are independent.
C) In order to conduct a matched pairs t test, we must assume that differences in daily soda and milk consumption are normally distributed.
D) In order to conduct a matched pairs t test, we must assume that daily soda consumption and daily milk consumption are both normally distributed.

2. We would like to construct a 95% confidence interval for the true mean difference in daily consumption of soda and milk. What is the margin of error for the confidence interval?

Solution

1.

B) For each child, daily soda and milk consumption are independent.
C) In order to conduct a matched pairs t test, we must assume that differences in daily soda and milk consumption are normally distributed.

2.

$$ME = t_{0.025,n-1} \frac{s}{\sqrt{n}} = 2.093 \frac{33}{\sqrt{20}} = 15.444.$$