This paper has 2 question, DQ 1 and DQ 2. DQ 1 has two part and I need solution for part B. And answer the DQ 2, please.

DQ 1: This question is about two part. Part A and Part B. I solve part A and please solve part B.

**Part A: Roll a single die 50 times and record the results. Now use that data set to compute the mean, median, mode, variance, and standard deviation of the set.**

**Part B: Then Calculate the 95% confidence interval for the mean.**

**Part A:** Roll a single die 50 times and record the results. Now use that data set to compute the mean, median, mode, variance, and standard deviation of the set.

The results of rolling: 1, 3, 2, 2, 5, 4, 4, 2, 5, 5, 2, 1, 4, 6, 6, 2, 2, 3, 1, 1, 2, 2, 4, 6, 6, 2, 3, 1, 1, 1, 2, 3, 1, 5, 4, 4, 3, 6, 6, 1, 1, 1, 3, 4, 1, 1, 6, 3, 6, 4.

There are 13 1’s, 10 2’s, 7 3’s, 8 4’s, 4 5’s, 8 6’s.

The **mean** is the arithmetic mean, the sum divided by the number of rolls (50). The sum is
$$13∙1+10∙2+7∙3+8∙4+4∙5+8∙6=13+20+21+32+20+48==34+40+80=154,$$

so the **mean** is $\frac{154}{50}=\frac{308}{100}=3.08.$

The **median** is the center number in sorted list (average between two most centered numbers for an even quantity of numbers). Here the sorted list is

11111111111112222222222333333344444444555566666666.

Remove 12 items from the left and from the right: 12222222222333333344444444.
Then remove 8 more items: 2223333333.

Now we see that both center numbers are 3’s, so the **median** is **3**.

The **mode** is the number which occurs most often, here it is **1**.

The **variance** is the arithmetic mean of squared differences between all outcomes and their mean, i.e.

$$\frac{1}{50}\left(13∙\left(1-3.08\right)^{2}+10∙\left(2-3.08\right)^{2}+7∙\left(3-3.08\right)^{2}+ +8∙\left(4-3.08\right)^{2}+4∙\left(5-3.08\right)^{2}+8∙\left(6-3.08\right)^{2} \right)==\frac{1}{50}\left(13∙4.3264+10∙1.1664+7∙0.0064+8∙0.8464+4∙3.6864+8∙8.5264\right)==\frac{1}{50}∙157.68=3.1536.$$

The **standard deviation** is the square root of the variance, here it is
$$\sqrt{3.1536}≈1.7758.$$

Part B: Use the sample from Topic 2 DQ 1 and test that the population mean for rolling a single die is 3.5.

DQ 2: Explain the difference between statistical significance and practical significance.

(1 example and 1 reference)