Problem 1.   Dr. Sy Napse had the idea that intense intellectual effort would affect the level of blood cholesterol but did not know how much. The researcher had data from a huge group where μ = 150 and σ = 16. A group of 36 heavy thinkers had a mean level of 156 with s = 12. Was Napse correct in this assumption?

1.	What is your research hypothesis?	**Intellectual effort will affect blood pressure.**
2.	What is H_o?	**Intellectual effort will not affect blood pressure**
3.	What is H_A?	**Intellectual effort will affect blood pressure**
4.	Is this a one or two-tailed test?	**Two**
5.	What is your statistical hypothesis?	**M** $_{\text{intellecutal effort}}$ $\neq$ **μ**
6.	What is the significance level and its critical value of Z?	**α = .05, critical value = ± 1.96**
7.	What is the Standard error of the mean?	**2.667**
8.	What is your calculated statistic?	**Z = 2.25**
9.	What is your statistical decision?	**Reject the null hypothesis**
10.	What is your conclusion?	**Intense intellectual effort increases blood cholesterol.**

Problem 2. Sammi Quaver thinks that listening to Barry Manilow music while studying will affect students' performance on the Graduate Record Examinations but does not know whether the listening will distract students making their studying less effective, or if it will improve studying by acting as 'white noise' blocking out other distracting sounds. The GRE has the following statistical properties: $\mu = 500$ and $\sigma = 100$. Using a sample of 121 students who listened to Barry Manilow while preparing for the GRE, the professor found that the group obtained a mean score of 460 with a standard deviation of 68.2. What conclusion can you draw from these data?

1.	What is your research hypothesis?	**Listening to Barry Manilow will affect performance on the GRE.**
2.	What is H_o?	**Listening to Barry Manilow will not affect GRE performance.**
3.	What is H_1?	**Listening to Barry Manilow will affect GRE performance.**
4.	Is this a one or two-tailed test?	**Two**
5.	What is your statistical hypothesis?	$\mathbf{M}$ **Barry Manilow music** $\neq \mu$
6.	What is the significance level and its critical value of Z?	**$\alpha = .05$, critical value $= \pm 1.96$**
7.	What is the Standard error of the mean?	**9.091**
8.	What is your calculated statistic?	**Z= -4.40 (note the negative value!)**
9.	What is your statistical decision?	**Reject the Null hypothesis**
10.	What is your conclusion?	**Listening to Barry Manilow music will reduce performance in the GRE.**

Problem 3.   Dr. Oh Takashowa thought that hot baths prior to bed time would reduce the amount of sleep people required. The researcher knew that the average number of hours required for most people is 8 hours; the standard deviation is .72 hours. Using a sample of 36 people who took hot baths before going to bed, the researcher found that the mean amount of time they needed to sleep each night was 7.7 hours. Is there any statistical evidence that the bathing worked?

1.	What is Null Hypotheses H_0?	**Hot baths will not reduce the amount of sleep people need.**
2.	What is Alternative hypothesis, H_A?	**Hot baths will reduce the amount of sleep people need.**
3	Is this a one or two-tailed test?	**One**
4.	What is the statistical hypothesis?	**M** $_{\text{hot baths}}$ **< μ**
5.	What is the significance level and critical value or the test?	**α = .05, critical value = - 1.64** (Note the negative value)
6.	What is the standard error?	**.12**
7.	What is Z?	**-2.50**
8.	What is your statistical decision?	**Reject the null hypothesis**
9.	What is your conclusion?	**Taking hot baths reduces the amount of sleep one needs.**