Example 1:

In a soda-bottling plant in Brazil, there have been claims of bacterial contaminants in the soda that are making consumers *incredibly* sick. The plant manager decides to take a random sample of 50 bottles on a Friday in June and a Friday in July. He has a scientist, B. Banner, measure the concentration of bacteria in each bottle. Displayed below are the summary statistics (units are in μg/L).

Summary statistic	Friday (June)	Friday (July)	Differences
Average	0.232	0.197	0.035
Standard Deviation	0.078	0.065	0.080

Based on statistical evidence, what is the appropriate test to see if bacterial concentration decreasing over time? What are the hypotheses? The distribution of the test statistic?

Example 2:

A musically-inclined doctor has invented a new kind of treatment for patients with symptoms for fever. He decides to measure the health of patients through white blood cell counts, before they get a full prescription of cowbell. The random sample of 64 patients was sent to a second hospital for treatment and the second measurement. For his study, he obtains the following summary statistics, regarding white blood cell count, from the Walken Clinic (the first hospital) and the Gene Frenkle Memorial Hospital (units are in 1000s of cells/mm^3).

Summary statistic	Walken	G.F.M.	Differences
Average	17.00	11.80	5.20
Standard Deviation	6.19	4.14	5.57

Based on statistical evidence, what is the appropriate test to see if more cowbell reduces white blood cell count? What are the hypotheses? The distribution of the test statistic?

Example 3:

Recent events in the past few months have got people wondering about the average lifespan in Westeros. Investigating the matter, a maester randomly sampled 40 people in the north of Westeros and then repeated the sampling procedure for the south of Westeros. With the extensive use of his abacus, the maester obtained the following summary statistics, regarding age (units are in years).

Summary statistic	North	South	Differences
Average	19.96	20.11	-0.15
Standard Deviation	0.620	0.830	1.036

Based on statistical evidence, what is the appropriate test to see if people in the north are younger? What are the hypotheses? The distribution of the test statistic?