1. The product manager of Circuits Unlimited has asked for your assistance in analyzing a production process. This process involves drilling holes whose diameters are normally distributed with a population mean 2 inches and population standard deviation 0.06 inch. A random sample of 9 measurements had a sample mean of 1.95 inches. Use a significance level of α=0.05 to determine if the observed sample mean is unusual and suggests that the drilling machine should be adjusted. (Source: Statistics for Business and Economics, 2007, 6th edition, Prentice Hall, by Paul Newbold, William L. Carlson, Betty Thorne. pp.347)

2. The average resistance of steel manila ropes is at most 750 kg in a big size company that produces these ropes. A researcher claims that a new production process has a positive impact on the resistance of the ropes. In order to test if the researcher's claim is valid a random sample of 64 ropes is chosen and their resistance levels are observed. Would you agree that the new production process had a positive impact on the resistance of the ropes at a significance level of 5%?

Resistance (Kg)	Number of manila
745	10
750	12
755	19
760	14
765	9

3. A company has chosen 60 sales representatives randomly in order to test if the company's new policy of sales premium had a positive impact on the average number of monthly sales of 2.27 billion $ of the sales representatives. The following table gives the number of monthly sales of the sample. Would you agree that the new policy of sales premium had a positive impact with a significance level of α=0.05?

Monthly Sales (billion $)	Number of Sales Reprs.
2.80	10
2.64	15
2.60	12
2.70	13
2.50	10

4. A company sells a product in packs of 500gr. In order to examine if the packaging process is under control, a random sample of 25 packs are chosen and the sample mean is found to be 504 gr, and the sample standard deviation is found to be 12 gr. Is the packaging process under control with a significance level of α=0.05?

5. A process produces packs of 100gr. A random sample of 16 packs is chosen from the packaging process and it is found that the sample mean is 95 gr and that the sample standard deviation is 10 gr. Assuming a normal distribution, would you be able to say that the packaging machine is under-filling the packs with a significance level of α=0.05?

6. A company selling licences for new e-commerce computer software advertises that firms using this software obtain, on average during the first year, a yield of 10% on their initial investments. A random sample of 10 of these franchises produced the following yields for the first year of operation:
    6.1 9.2 11.5 8.6 12.1 3.9 8.4 10.1 9.4 8.9
    Assuming that population yields are normally distributed, test the company's claim with a significance level of α=0.05. (pp.352)

7. A beer distributer claims that a new display, featuring a life-size picture of a well-known rock singer, will increase product sales in supermarkets by an average of 50 cases in a week. For a random sample of 20 high-volume liquor outlets, the average sales increase was 41.3 cases, and the sample standard deviation was 12.2 cases. Test at the 5% level the null hypothesis that the population mean sales increase is at least 50 cases, stating any assumptions you make. (pp.352)