

Question 1: It is required to estimate μ . Find the required sample size to be 95% sure that your estimator is within $\varepsilon = 0.6$ if $\sigma = 3$.

Question 2: Answer with True or False (justify)

If $H_0: \theta = \theta_0$ is rejected at $\alpha = 0.10$ then

- (a) H_0 is rejected for all $\alpha > 0.1$ (b) H_0 is rejected for all $\alpha < 0.1$
 (c) H_0 is accepted for all $\alpha < 0.1$ (d) H_0 is accepted for all $\alpha > 0.1$
 (e) 90% C. I. for θ should not contain θ_0 if $H_1: \theta \neq \theta_0$

Question 3: Let X_1, \dots, X_{15} be a r.s. from $B(1, p)$. Let $Y = \sum_{i=1}^{15} X_i \sim B(15, p)$. Assume

that $H_0: p = 0.7$ is rejected vs. $H_1: p < 0.7$ if $Y \leq 11$. Find

- (a) The level of significance α (b) β when $p = 0.5$.

Question 4: Let X_1, \dots, X_{15} be a r.s. from $N(\mu, \sigma^2)$ such that $\bar{X} = 60$ and $\sigma = 3$. Find the p-value in each of the following cases:

- (a) $H_0: \mu = 62$ vs. $H_1: \mu < 62$ (b) $H_0: \mu = 62$ vs. $H_1: \mu \neq 62$

Question 5: Two samples from two independent populations gave the following:

	Group I	Group II
n	36	30
\bar{X}	60	65
S	5	4

- (a) Find 95% C. I. for $\mu_I, \sigma_{II}^2, \mu_I - \mu_{II}$
 (b) Test $H_0: \mu_I = 62$ vs. $H_1: \mu_I < 62$, at $\alpha = 0.05$
 (c) Test $H_0: \mu_I = \mu_{II}$ vs. $H_1: \mu_I \neq \mu_{II}$, at $\alpha = 0.05$
 (d) Test $H_0: \sigma_{II}^2 = 25$ vs. $H_1: \sigma_{II}^2 > 25$, at $\alpha = 0.05$