

### Answer on Question #46543 – Math - Statistics and Probability

A new computer network is being designed. The makers claim that it is not compatible with 96% of the equipment already in use.

i. Set up the appropriate null and alternative hypotheses needed to support this claim.

ii. A sample of 400 equipments is tested, and 390 of these equipments require changes. That is, they are not compatible with the new network. Can  $H_0$  be rejected at 98% confidence? Justify.

#### Solution

i.  $H_0: p = p_0 = 0.96; H_A: p \neq p_0.$

ii.

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1 - p_0)}{n}}}$$
$$n = 400, \hat{p} = \frac{390}{400} = 0.975.$$
$$z = \frac{0.975 - 0.96}{\sqrt{\frac{0.96(1 - 0.96)}{400}}} = 1.53.$$

The significance level  $\alpha = 1 - 0.98 = 0.02$ . This is two-sided test.

We don't reject  $H_0$  at 98% confidence because  $z = 1.53 < z_{\alpha/2} = z_{0.01} = 2.33$ .