Let P be the true population proportion ofpercent of all shirts sold are returned to the supermarket by customers who complain that the shirts do not fit properly.

Given that,

Sample size, n=500

number of success, x=60

significance level, α=0.05

We have ,

sample proprtion,p^= xn = 60500 =0.12

**Claim:** Is to test that, whether here has been a significant decrease in the population proportion of returns.

The null and alternative hypotheses,

Ho:P=0.15 Vs H1:P<0.15

here, Po=0.15 and Qo=1-Po =0.85

Test Statistic,

(hatp-Po)/\sqrt{(Po \*Qo)/n}

(0.12-0.15)/\sqrt{(0.15 \*0.85)/500}

#Explanation:

Here Z follows standard normal distribution under Ho

P-value=P(Z<-1.8787)

=P(Z>1.8787)

=

**Decision rule:**

We reject H0 at α% level of significance level if,

P-value<α

here , P-value < α i.e 0.0301<0.05

Therefore, we reject Ho at 5% level of significance.

**Conclusion:**

There is sufficient evidence to conclude that there has been a significant decrease in the population proportion of returns