**1) Find the equation for the best linear fit for the following data: Actual Data represents population in thousands.**

|  |  |
| --- | --- |
| t=Reference Time | P=Population |
| 0 | 37.21 |
| 10 | 43.50 |
| 20 | 52.05 |
| 30 | 62.53 |
| 40 | 68.30 |

1. $p=.812t+36.476$ b) $p=-.912t+35.21$ c) $p=2.1t-3.3$ d) $p=.755t-32.134$

**Answer: a)**

**2) Find the correlation coefficient ® for problem 1.**

**Answer:** r=0.996

**3) Sate your conclusion about correlation at the 0.01 level of significance.**

**Answer:** $H\_{0}: ρ=0$ There is no linear correlation.

 $H\_{1}: $ $ρ\ne 0$ There is a linear correlation.

At 0.01 level of significance, table A-5 gives $r\_{c}=0.959$

 $\left|0.996\right|$ > $0.959$ $\rightarrow Reject H\_{0}$

$$\rightarrow There is significant linear correlation between reference time \left(t\right)and the population (P).$$

**4) What is the best predicted value of y for t=23.**

**Answer:** For t=23, P(23)= 0.812\*23+36.476 = 55.152 Thousand.