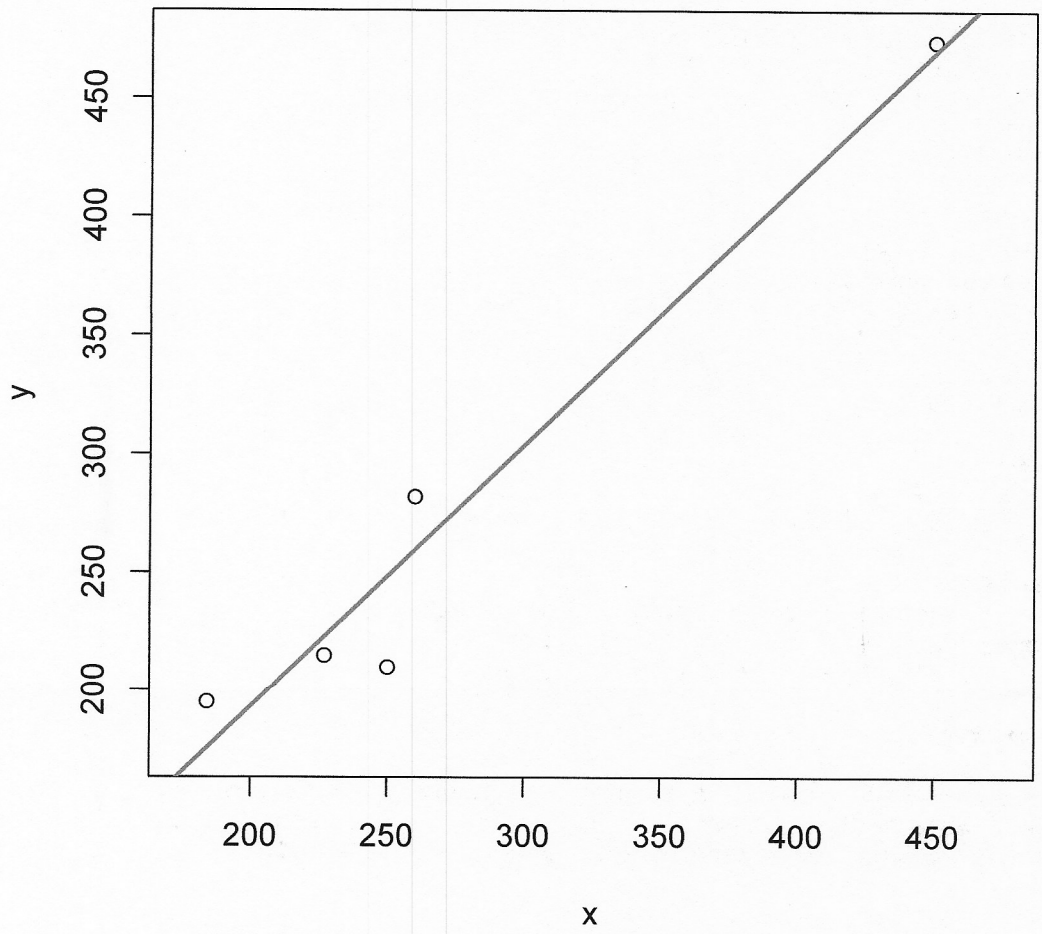
```
 #Regression
> # x = approximate net volume of tree
> # y = actual net volume of tree
> # SRS wor n = 5 from N = 20
> # units = 2,4,10,14,19
>
> N <- 20
> n <- 5
> taux <- 5986
> mux <- taux/N
> mux
[1] 299.3
>
> x <- c(450,227,184,260,250)
> y <- c(474,215,195,282,210)
> plot(x,y,xlim=c(175,475), ylim=c(175,475))
> cor(x,y)
[1] 0.9770036
>
> #help(lm)
> reg <- lm(y ~ x)
> abline(reg,lwd=2,col="blue")
> summary(reg)

Call:
lm(formula = y ~ x)

Residuals:
      1       2       3       4       5
  4.403  -8.007  19.542  22.502 -38.440

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -28.0064    40.2850  -0.695  0.53694
x             1.1058     0.1393   7.936  0.00417 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 28.57 on 3 degrees of freedom
Multiple R-squared: 0.9545,     Adjusted R-squared: 0.9394
F-statistic: 62.99 on 1 and 3 DF,  p-value: 0.004172

>
> muhatL <- reg$coefficients[1] + reg$coefficients[2]*mux
> muhatL
(Intercept)
   302.9552
> varmuhatL <- (N-n)/(N*n) * var(y) * (n-1)/(n-2) * (1-cor(x,y)^2)
> varmuhatL
[1] 122.468
```


y
200
250
300
350
400
450
x
200
250
300
350
400
450