test

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Q3

```
gra_growth = c(0.2,0.1,0.4,0.3,0.3,0.1,0.2,0.2,0.1,0.2,0.1,0.3,0.3,0.2)
liq_growth = c(0.5,0.5,0.4,0.3,0.6,0.4,0.5,0.6,0.1,0.5,0.7,0.5,0.3,0.6)
summary(lm(gra_growth - liq_growth ~ 1))
```

```
##
## Call:
## lm(formula = gra_growth - liq_growth ~ 1)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -0.350 -0.125 -0.050  0.200  0.250
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.25       0.05      -5 0.000243 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1871 on 13 degrees of freedom
```

Where $\mu_d = \mu_g - \mu_l$
$H_0 : \mu_d < 0$ vs $H_a : \mu_d \geq 0$
$d = \frac{-0.25-0}{0.1871} = 1.336184$ where $D \sim t_{13}$

```
1 - pt(-0.25 / 0.1871, 13)
```

```
## [1] 0.8977959
```

$P(D > d) = 0.8977959$
Hence we have no evidence reject H_0. Liquid fertilizer results in greater growth than granular fertilizer.