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Section 4e: Practice Problems

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Using Stata: Arm Circumference and Height

1. Recall the regression relating arm circumference to height for the random sample of 150 Nepali children less than 12 months old

```
. regress armcirc height

      Source |       SS       df       MS              Number of obs =     150
-------------+------------------------------           F(  1,   148) =  124.30
       Model |  148.874597     1  148.874597            Prob > F      =  0.0000
    Residual |  177.263335   148  1.19772523           R-squared     =  0.4565
-------------+------------------------------           Adj R-squared =  0.4528
       Total |  326.137932   149  2.18884518           Root MSE      =  1.0944

------------------------------------------------------------------------------
     armcirc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      height |   .1579469   .0141671    11.15   0.000     .1299511    .1859428
       _cons |   2.695906   .8774225     3.07   0.003     .9620116      4.4298
------------------------------------------------------------------------------
```

   - Suppose arm circumference had been reported in inches instead of centimeters, but height was still recorded in centimeters

Example: Arm Circumference and Sex

a) Can you determine what the resulting slope estimate for height would be with this different reporting schema?

b) What would the R^2 value be with this different reporting schema?

Example: Arm Circumference and Sex

2. Recall the regression relating arm circumference to child's sex for the random sample of 150 Nepali children less than 12 months old

$$\hat{y} = 12.5 + -0.13x$$

- R^2 for this analysis was 0.002 or 0.2%
  - In this example, x is the binary variable for sex, coded as a 1 for female children, and 0 for male children. Suppose x was coded as 1 for male children and 0 for female children.

a) What would the estimate of R^2 be?

b) What would the estimate of r be?