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## Section 4d: Practice Problems

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## Example: Wages and Education Level

1. Recall equation of regression line relating estimated mean hourly wages (U.S. \$, 1985) to years of education: from Stata

$$\hat{y} = -0.75 + 0.75x$$

- This regression is based on a random sample of 534 U.S. workers in 1985. The standard error estimate of the slope,  $SE(\hat{\beta}_1) = 0.08$
- a) Estimate a 95% CI for the true population slope relating hourly wages to years of education
- b) What is the estimated 95% confidence interval for the mean difference in hourly wages (in year, 1985) for persons with 16 years of education versus 12 years of education?

## 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

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

- The estimated standard error of the slope estimate is  $SE(\hat{\beta}_1) = 0.24$
- 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 resulting 95% confidence interval for the true population slope be?