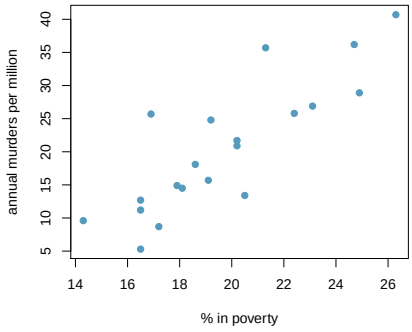
Sergio I Garcia-Rios
Cornell University

Application exercise 6.1: Murders and poverty

Team names: _____

Write your responses in the spaces provided below. WRITE LEGIBLY and SHOW ALL WORK! Only one submission per team is required. Concise and coherent are best!

We want to build a model for for predicting annual murders per million from percentage living in poverty in a random sample of 20 metropolitan areas. The scatterplot below shows the relationship between these variables, and the summary table contains all values you will need to construct the linear model.



	annual murders / million (y)	% in poverty (x)
mean	$\bar{y} = 20.57$	$\bar{x} = 19.72$
sd	$s_y = 9.88$	$s_x = 3.24$
	correlation	$R = 0.84$

1. Calculate the slope.

   $b_1 = R \times \frac{s_y}{s_x} = 0.84 * \frac{9.88}{3.24} = 2.56$

2. Calculate the intercept.

   $b_0 = \bar{y} - b_1 \times \bar{x} = 20.57 - 2.56 * 19.72 = -29.91$

3. Write out the linear model.

   $\widehat{murder} = -29.91 + 2.56\ poverty$