STAT 340

Chapter 4 – Regression

Practice Question

We are interested in examining the influence of age on blood fat content.

Index i	Age (in years)	Blood fat content
1	46	354
2	20	190
3	52	405
4	30	263
5	57	451

1. Which is the explanatory variable, and which is the response?

2. Find a and b and write the equation for the least square regression line:
   $\hat{y} = a + bx$ where

$$b = r\left(\frac{s_y}{s_x}\right) \qquad \text{and} \qquad a = \bar{y} - b\bar{x}$$

   You can use: $\bar{x} = 41$, $\bar{y} = 332.6$, $s_x = 15.5$, $s_y = 106$, $r = 0.9$

3. Write the interpretation for slope and intercept.

4. Predict the value of blood fat content for a 30-year-old person using the regression equation in question (2).

5. Find the residual for question (4).

6. Find the SSE for the least square regression line that you found in question (2).

i	X	Y	$\hat{Y}$	$Y - \hat{Y}$	$(Y - \hat{Y})^2$
1	46	354			
2	20	190			
3	52	405			
4	30	263			
5	57	451			
Total = $\sum_{i=1}^{5}(Y_i - \hat{Y}_i)^2$					