

## Regression Worksheet

Name Answer Key

1. Consider the following paired data points.

$x$	$y$	$xy$
1	17.89	
2	16.36	
3	14.32	
4	12.61	
5	10.18	
6	7.98	
7	6.05	
8	4.02	
9	1.72	
10	0.24	

(a) Find  $S_{xx}$ ,  $S_{yy}$ ,  $S_{xy}$ , and the regression equation.

$$\sum x = 55$$

$$\sum x^2 = 385$$

$$\sum y = 91.37$$

$$\sum y^2 = 1174.87$$

$$\sum xy = 335.18$$

$$S_{xx} = 385 - \frac{(55)^2}{10}$$

$$S_{xx} = 82.5$$

$$S_{yy} = 1174.87 - \frac{(91.37)^2}{10}$$

$$S_{yy} = 340.02$$

$$S_{xy} = 335.18 - \frac{(55)(91.37)}{10}$$

$$S_{xy} = -167.36$$

(b) Find  $SST$ ,  $SSR$ ,  $SSE$ , and the coefficient of determination,  $r^2$ .

$$SST = S_{yy} = 340.02$$

$$SSR = \frac{S_{xy}^2}{S_{xx}} = \frac{(-167.36)^2}{82.5} = 339.51$$

||  
SSR

$$SSE = 340.02 - 339.51$$

$$SSE = .51$$

$$r^2 = \frac{339.51}{340.02} = .99$$