VENTURA, JOHN CHRISTIAN   BSIT 2-A

No. of samples (n) = 20

$$\bar{X} = \frac{\Sigma x}{n} = \frac{3+2+1+1+1+3+4+1+2+2+8+4+8+1+5+6+1+1+2+2}{20}$$

$$= \frac{58}{20} = 2.9$$

$$\bar{Y} = \frac{\Sigma x}{n} = \frac{1.93+2.55+1.72+2.48+2.87+1.87+1.34+3.03+2.54+2.34+1.4+1.45+1.72+3.8+2.13+}{20}$$
$$\frac{1.81+2.33+2.53+2.04+3.2}{}$$

$$= \frac{45.08}{20} = 2.254$$

$$COV_{x,y} = \frac{\Sigma(x_i - \bar{x})(y_i - \bar{y})}{N}$$

X_i	$X_i - \bar{X}$	y_i	$y_i - \bar{y}$	$(X_i - \bar{x})(y_i - \bar{y})$
3	0.1	1.93	-0.324	-0.037
2	-0.9	2.55	0.296	-0.225
1	-1.9	1.72	-0.534	1.102
1	-1.9	2.48	0.226	-0.342
1	-1.9	2.87	0.616	-1.083
3	0.1	1.87	-0.384	-0.043
4	1.1	1.34	-0.914	-1.056
1	-1.9	3.03	0.776	-1.387
2	-0.9	2.54	0.286	-0.216
2	-0.9	2.34	0.086	-0.036
8	5.1	1.4	-0.854	-4.59
4	1.1	1.45	-0.804	-0.935
8	5.1	1.72	-0.534	-2.958
1	-1.9	3.8	1.546	-2.85
5	2.1	2.13	-0.124	-0.357
6	3.1	1.81	-0.444	-1.519
1	-1.9	2.33	0.076	-0.057
1	-1.9	2.53	0.276	-0.437
2	-0.9	2.04	-0.214	-0.234
2	-0.9	3.2	0.946	-0.81
$\Sigma x_i = 58$		$\Sigma y_i = 45.08$		-17.602

$$COV_{x,y} = \frac{-17.602}{20}$$

$$= -0.88$$

Var(X)

$$s^2 = \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}$$

$$s^2 = \frac{SS}{n-1} \qquad = \qquad s^2 = \frac{97.8}{20-1}$$

$$s^2 = \frac{97.8}{19}$$

$$s^2 = 5.1473684$$

Slope (b) $\quad b = \dfrac{Cov(x,y)}{Var(x)}$ $\qquad\qquad$ Intercept (a) $\quad a = \bar{y} - b\bar{x}$

$b = \dfrac{-0.88}{5.1474} = 0.17096 \approx 0.1710$ $\qquad$ $a = 2.254 - (0.1710 \times 2.9)$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad = 2.254 - 0.4959 = 1.7581$

EQUATION OF THE REGRESSION LINE IS $\qquad$ $y = 0.1710x + 1.7581$

third decile $(x=3)$ $\qquad$ $y = 0.1710 \times 3 + 1.7581 = 2.2711$

Therefore, I conclude that the equation of the regression line is

$\qquad$ $y = 0.1710x + 1.7581$; and the predicted GPA for a freshman

$\qquad\qquad$ in the third decile is 2.2711