(a)

Always choose the closest answer.

1 - 4 A researcher has specified the model

      response to med $= y = b_0 + b_1 x_1 + b_2 x_2 +$ error

      $x_1 =$ sensitivity to trial dose

      $x_2 =$ body weight

100 subjects are each measured for y, x_1, x_2. The resulting data give

    $R = 0.9$ $s_y = 0.36$ $\hat{b}_0 = 0.6$ $\hat{b}_1 = 0.3$ $\hat{b}_2 = -0.2$

1. The fraction of s_y^2 explained by regression.

a) .67   b) .79   c) .87   d) .93   e) .98

$R^2 = .9^2 = .81$

2. The regression prediction $\hat{y}$ for the response of a subject having sensitivity 0.7 and weighing 1.78.

a) 0.37   b) 0.47   c) 0.57   d) 0.67   e) 0.77

$\hat{b}_0 + \hat{b}_1 x_1 + \hat{b}_2 x_2$

$.6 + (.3).7 + (-.2)1.78 = .454$

3. Suppose the plot is **elliptical.** For the group of all subjects having sensitivity 0.7 and weighing 1.78 what is the mean of y-scores?

a) 0.47   b) 0.57   c) 0.67   d) 0.77   e) 0.87

SAME AS (2) $= .454$

4. Suppose the plot is **elliptical.** For all subjects having sensitivity 0.7 and weighing 1.78 what is the standard deviation of y-scores?

a) 0.05   b) 0.15   c) 0.20   d) 0.25   e) 0.3

$\sqrt{1 - R^2}\, s_y = \sqrt{1 - .9^2}\,(.36)$

$= .157$

5. Give the estimated margin of error for $\bar{y}$ assuming the sample is random and the FPC is near one.

a) 0.03   b) 0.08   c) 0.11   d) 0.18   e) 0.26

$1.96\, s_y/\sqrt{n} = 1.96\, \dfrac{.36}{\sqrt{100}}$

$= .070$

6. Range of R.   a) [-1, 1]   b) [-.5, .5]   c) [-.25, .25]   d) [0, 1]

7. Casting straight line regression as MLR, what is the matrix of inputs for a straight line regression with (x, y) data points (1, 5), (2, 2), (3, 1)?

a) {{1, 2, 3}, {5, 2, 1}}   b) { {1, 1, 5}, {1, 2, 2}, {1, 3, 1} }

c) { {1, 1}, {1, 2}, {1, 3} }   d) {5, 2, 1}

X-VALUES ARE

1, 2, 3

SO $\begin{bmatrix} 1 & 1 \\ 1 & 2 \\ 1 & 3 \end{bmatrix}$ IS my X.