X_1 = GPA X_2 = IQ X_3 = Gender (1 = Fem, 0 = M)

X_4 = Interaction between GPA and IQ X_5 = Interaction between GPA & Gender

$\hat{\beta}_0 = 50$ $\hat{\beta}_1 = 20$ $\hat{\beta}_2 = .07$ $\hat{\beta}_3 = 35$ $\beta_4 = .01$ $\beta_5 = -10$

1.

B. For a fixed value of IQ and GPA, females earn more on average than males. Considering the value is positive, and that 1 = Female for X_3, this shows that women are making more.

II. Salary of female with IQ of 110 and GPA of 4.0

β_0 β_1 β_2 β_3 β_4 β_5

$50{,}000 + 20 \times 4.0 + .07 \times 110 + 35{,}000 \times 1 + (4.0 \times 110) + (-10{,}000 \times 4)$

$80 \quad 7.7 \quad 4.4 \quad -40{,}000$

$= \$45{,}092.10$

III. True, $\beta_4 = .01$, so very small or weak relationship between the two. The small coefficient would suggest that each's impact is likely independent of the other.

2. a. Sales $= 7.032 + (.0475 \times 137) = 13.5395$

R squared = .611875

b Sales $= 9.311 + .202 \times 10 = 11.331$

R squared = .337032

c Sales $= 12.3514 + .05469 \times 137 = 19.84373$

R squared = .052

d Newspaper is weakest w/ 5% r. Strongest is TV at 61%