- 5.2 – **[10 pts]**
  1. In the list below
     - FOUR = 1 if in "four-day starved" group, FOUR = 0 otherwise
     - EIGHT = 1 if in "eight-day starved" group, EIGHT = 0 otherwise
     - STEEN = 1 if in "sixteen-day starved" group, STEEN = 0 otherwise
  2. $\mu_{stomvol} = \alpha + \beta_1 intake + \delta_1 FOUR + \delta_2 EIGHT + \delta_3 STEEN + \gamma_1 FOUR * intake + \gamma_2 EIGHT * intake + \gamma_3 STEEN * intake$
  3. In the table below

Group	*FOUR*	*EIGHT*	*STEEN*	Submodel ($\mu_{stomvol} =$)
1-day starved	0	0	0	$= \alpha + \beta_1 intake$
4-day starved	1	0	0	$= (\alpha + \delta_1) + (\beta_1 + \gamma_1) intake$
8-day starved	0	1	0	$= (\alpha + \delta_2) + (\beta_1 + \gamma_2) intake$
16-day starved	0	0	1	$= (\alpha + \delta_3) + (\beta_1 + \gamma_3) intake$

  4. In the list below.
     - α is intercept of 1-day starved (reference) group
     - β_1 is slope of 1-day starved (reference)group
     - δ_1 is difference in intercept of 4-day and 1-day starved groups
     - γ_1 is difference in slopes of 4-day and 1-day starved groups
     - δ_2 is difference in intercept of 8-day and 1-day starved groups
     - γ_2 is difference in slopes of 8-day and 1-day starved groups
     - δ_3 is difference in intercept of 16-day and 1-day starved groups
     - γ_3 is difference in slopes of 16-day and 1-day starved groups
  5. Shown below

$$\begin{aligned} H_O &: \mu_{stomvol} = \alpha + \beta_1 intake + \delta_1 FOUR + \delta_2 EIGHT + \delta_3 STEEN \\ H_A &: \mu_{stomvol} = \alpha + \beta_1 intake + \delta_1 FOUR + \delta_2 EIGHT + \delta_3 STEEN \\ &\quad + \gamma_1 FOUR * intake + \gamma_2 EIGHT * intake + \gamma_3 STEEN * intake \end{aligned}$$

  6. Shown below

$$\begin{aligned} H_O &: \mu_{stomvol} = \alpha + \beta_1 intake \\ H_A &: \mu_{stomvol} = \alpha + \beta_1 intake + \delta_1 FOUR + \delta_2 EIGHT + \delta_3 STEEN \end{aligned}$$