1. a) $E(\bar{X} - \bar{Y}) = \mu_1 - \mu_2$ $Var(\bar{X} - \bar{Y}) = \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}$

b) $\bar{X} - \bar{Y} \pm Z_{\alpha/2} \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$

c) $2258 - 2637 - 2.326348 \sqrt{\frac{(1519)^2}{663} + \frac{(1138)^2}{413}} \approx -568.22$

We are 99% confident that eating fast food regularly

adds no more than 568.22 calories on average.

Note: $2637 - 2258 - 2.326348 \sqrt{\frac{(1138)^2}{413} + \frac{(1519)^2}{663}}$ is also a

reasonable answer.

2. $S_p^2 = \frac{23(.13)^2(24) + 29(.12)^2(30)}{52} \approx .4203$

95% CI: $.10 - (-.96) \pm 2.006647(.6483)\sqrt{\frac{1}{24} + \frac{1}{30}}$

$(.7037, 1.4163)$

3. Test abdominal fat for Resistance Exercise vs. Aerobic Exercise

$S_p^2 = \frac{29(.11)^2(30) + 29(.13)^2(30)}{58} = .435$

$t = \frac{-.42 - (-.84)}{\sqrt{.435(\frac{1}{30} + \frac{1}{30})}} \approx 2.4663$

P-value: $2P(T \geq 2.4663) = .0166$

Reject $H_0: \mu_1 - \mu_2 = 0$ in favor of $H_1: \mu_1 - \mu_2 \neq 0$ at sig level 0.05.

Aerobic exercise is better at getting rid of fat.