1. Sixteen college women record their total weight gain in their first semester of college. The six non-vegetarians gained 8.6, 6.4, 3.0, 5.5, 8.1, and 1.4 pounds. The six vegetarians gained 4.4, 5.1, -1.4, 0.9, 3.0, and 2.4 pounds. The four vegans gained 3.3, 0.4, 1.1, and 1.2 pounds.

a) How many degrees of freedom are there?

There are _____ – 1 = _____ degrees of freedom between the groups. There are _____ – 1 = _____ degrees of freedom for the non-vegetarians, _____ – 1 = _____ degrees of freedom

for the vegetarians, and _____ – 1 = _____ degrees of freedom for the vegans, making a total of _____ + _____ + _____ = _____ degrees of freedom within the groups.

b) What is the critical value?

For df_N = _____ and df_D = _____ in the α = _____ F table, F_0 = _____.

c) Calculate SS_W by hand.

Non-Vegetarians			Vegetarians			Vegans		
x	$x - \bar{x}_1$	$(x - \bar{x}_1)^2$	x	$x - \bar{x}_2$	$(x - \bar{x}_2)^2$	x	$x - \bar{x}_3$	$(x - \bar{x}_3)^2$
8.6	3.1	9.61	4.4	2.0	4.0	3.3	_____	_____
6.4	0.9	0.81	5.1	2.7	_____	0.4	_____	_____
3.0	-2.5	6.25	-1.4	_____	_____	1.1	_____	_____
5.5	0.0	0.00	0.9	_____	_____	1.2	_____	_____
8.1	2.6	6.76	3.0	_____	_____			
1.4	-4.1	16.81	2.4	_____	_____			

$\bar{x}_1 = 5.5$ $\sum(x - \bar{x}_1)^2 = $ _____ $\bar{x}_2 = 2.4$ $\sum(x - \bar{x}_2)^2 = 28.34$ $\bar{x}_3 = 1.5$ $\sum(x - \bar{x}_3)^2 = $ _____

$SS_W = \sum$ _____ = _____ + _____ + _____ = _____

d) Calculate MS_W by hand.

$MS_W = $ ———— = _____

e) Calculate SS_B by hand.

n_i	$\bar{x}_i$	$n_i\bar{x}_i$	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	$n(x_i - \bar{x})^2$	$\bar{x} = $ ———— = 3.338
6	5.5	33.0	2.16	4.67	28.02	
6	2.4	14.4	_____	_____	_____	
4	1.5	6.0	_____	_____	_____	

$\sum n = $ _____ $\sum n_i\bar{x}_i = $ _____ $SS_B = \sum$ _____ = _____

f) Calculate MS_B by hand.

$MS_B = $ ———— = _____

g) Calculate F by hand.

$F = $ ———— = _____

h) State the conclusion, followed by $F_{df, df}$ and a range for p.

Non-vegetarian, vegetarian, and vegan women _____ during the first semester of college, F___, ___ = _____,

p _____ .05.

i) Find the exact p value by doing a calculator test.

For ANOVA(_____, _____, _____), $p = $ _____.