Instructions: Answer each question as thoroughly as possible. Round answers to 4 decimal places as needed. Exact answers are best when possible. Be sure to answer all parts of each question.

1. A pharmaceutical company conducts an experiment to test the effect of a new cholesterol medication. The company selects 15 subjects randomly from a larger population. Each subject is randomly assigned to one of three treatment groups. Within each treament group, subjects receive a different dose of the new medication. In Group 1, subjects receive 0 mg/day; in Group 2, 50 mg/day; and in Group 3, 100 mg/day. The treatment levels represent all the levels of interest to the experimenter, so this experiment used a fixed-effects model to select treatment levels for study. After 30 days, doctors measure the cholesterol level of each subject. The results for all 15 subjects appear in the table below. Conduct a one-way ANOVA test to see if there are effects to the medication and dosage level. If you detect a difference, use Tukey's method to determine how to group the effects. Clearly state your hypothesis, check your normality assumptions and state your conclusion in the context of the problem.

Dosage		
Group 1, 0 mg	Group 2, 50 mg	Group 3, 100 mg
210	210	180
240	240	210
270	240	210
270	270	210
300	270	240

2. A botanist wants to know whether or not plant growth is influenced by sunlight exposure and watering frequency. She plants 40 seeds and lets them grow for two months under different conditions for sunlight exposure and watering frequency. After two months, she records the height of each plant. The results are shown below. Conduct a two-way ANOVA test to see if there are effects to the medication and dosage level. If you detect a difference, use Tukey's method to determine how to group the effects. Clearly state your hypothesis, check your normality assumptions and state your conclusion in the context of the problem. Be sure to test for interaction effects.

Watering Frequency	Sunlight Exposure			
	None	Low	Medium	High
Daily	4.8	5	6.4	6.3
	4.4	5.2	6.2	6.4
	3.2	5.6	4.7	5.6
	3.9	4.3	5.5	4.8
	4.4	4.8	5.8	5.8
Weekly	4.4	4.9	5.8	6
	4.2	5.3	6.2	4.9
	3.8	5.7	6.3	4.6
	3.7	5.4	6.5	5.6
	3.9	4.8	5.5	5.5