

Expectations for Project Work (Due Dec. 5)

Form a group of about 3 students and together select one of the approved topics for your project. Please note the due date carefully - late projects will not receive full credit. Projects must be typewritten on 8 1/2 x 11 paper - but math formulas, equations, diagrams can be written in by hand only if done neatly. In your project you should pay particular attention to the following guidelines:

- The project is a report on an investigation or question. This means your report should begin with an introductory paragraph in which you discuss the question or problem that you are examining and introduce briefly how you approached your work, perhaps give a brief statement of something that you discovered or a conclusion you will examine in more detail later in the report. The next part of your report will be the main body in which you discuss your work, give your analysis, and demonstrate your results. The last part of your report should be a nice summary of your findings and conclusions backed up by the evidence you presented in the middle part of your report.
- As with any report or project for a university course, you should edit your report at least once before submitting it for grading. Things to look for in the editing process include typographical errors, grammar and spelling errors, and awkward writing. All members of the group should read the final draft of the project, approve it before it is submitted, and sign their name on the title page. If there is group member who has made no contribution to the project, the instructor should be informed and that student's name not included in the report.
- Equations and calculations should be accompanied by explanations given in complete sentences of what these calculations mean.
- If tables or graphs are attached at the back, then the main body of the report should include correct references to page numbers and figures.
- Sources used for information or data should be described and adequate references for these sources given. Material taken from references must be summarized in one's own words. Students should be aware of issues of plagiarism in "copying and pasting" information.

YOU MUST ANSWER ALL QUESTIONS ASKED AND INCLUDE EVERYTHING IN YOUR PROJECT.

The analysis of the problem, organization of work, grammar, and spelling will all be considered in the project grade. Specifically, in evaluating the projects we will consider the following.

Mechanics: (5 points) Spelling/grammar; neatly typed on 8 1/2 by 11 paper; title page with project title and names of group members; references cited correctly.

Mathematics & Analysis: (15 points) Correct use of mathematical concepts; math concepts accurately described and explained; calculations correct; appropriate use of models/reasoning; logical reasoning in presenting arguments or making conclusions.

Group Work/ Presentation : (5 points) Thoughtful approach to the topic; depth of research; organization of ideas; clarity of discussion; unusual aspects of project; appropriate group effort.

Individual Work : (5 points) After you have submitted your projects, you will be asked to evaluate the contribution of the members of your group. These evaluations will be taken into consideration for each member's individual grade.

Topics for Project in Math 1030

1. Investigating Water Usage (Ch 2, 3: estimation, unit conversion, making sense of large numbers, percents). How much water do you use daily? The total water use in the US is estimated at 408 billion gallons per day, which includes both fresh water and salt water, withdrawn for all uses. In this project we'll look at in-house water use and at water used for lawns.

In-House Water Use: First, discuss in your group how to estimate i) the average number of gallons that flow from faucets per minute in your house or apartment, and ii) the average number of minutes per day (use data from at least three days) that you use faucets in your house or apartment for purposes other than washing dishes, bathing/showering. Next, based on your group results, estimate the average number of gallons of water a person in the US draws daily from faucets in a house for purposes other than dishwashing, bathing/showering. According to the US Geological Survey, water drawn from faucets for purposes other than dishwashing, bathing/showering represents about 13.4% of the **total** in-house water used by a person daily. Using this information, estimate the average number of gallons of in-house water a person uses each year in the US. If this water were to fill a 13 foot high room with a square floor, what would the dimensions of the floor be? Report your findings in the form of an essay on per person water use in the US. Discuss your estimation methods, report both individual and group estimates made, and discuss the possible sources of error in your estimates.

Water Used for Lawns: The data below show the Salt Lake City Corporation water use records for one year for a family in Salt Lake City. The SLC Corporation uses one unit to represent 100 cubic feet of water. As you can see the number of units used increases from March through October when lawn watering activities are highest. Estimate the percentage of this family's water use that goes towards watering the lawn. Be sure to describe how you obtained your estimate. This family's lawn is 3200 square feet of Kentucky Bluegrass which requires about 30 inches of water per year. In both absolute and relative terms, compare the amount of water this lawn requires per year and the amount used by this family for lawn care per year.

<u>Month</u>											
1	2	3	4	5	6	7	8	9	10	11	12
<u>Units Used</u>											
6	7	7	13	35	50	56	54	30	7	6	7

Most lawns in Utah use Kentucky Bluegrass which requires a lot of water. Investigate what other varieties of grass might be used that would require less water per year and the percentage saving in water possible. Also investigate what water conservation practices should be followed in order to maintain a lawn without wasting water. (Some useful we sources are: The Utah Division of Water Resources; web sites: <http://water.usgs.gov> and <http://www.nr.utah.gov>)