Math 1020Q: Problem Solving

Welcome to the Wonderful World of Math 1020Q!

Description: An introduction to the techniques used by mathematicians to solve problems. Skills such as Externalization (pictures and charts), Visualization (associated mental images), Simplification, Trial and Error, and Lateral Thinking learned through the study of mathematical problems. Problems drawn from combinatorics, probability, optimization, cryptology, graph theory, and fractals. Students will be encouraged to work cooperatively and to think independently.

Prerequisites: Recommended preparation: MATH 1010 or the equivalent. Not eligible for course credit by examination. Not open for credit to students who have passed any mathematics course other than MATH 1010, 1011, 1030, 1040, 1050 or 1060, or 1070.

Outline

Week	Dates	Material	Assignment due on Date
1	Aug 29 – Sept 2, 2016	Chapters 1,2 – Problem Solving, PSSSP	
2	Sept 5 – Sept 9, 2016	Chapter 3 – Be Proactive	Automathography, Heap Letter
3	Sept 12 – Sept 16, 2016	Chapter 4 – See it	Symmetry
4	Sept 19 – Sept 23, 2016	Chapter 4 – See it, Chapter 5 – Simplify it	Prom Problem
5	Sept 26 – Sept 30, 2016	Chapter 5 – Simplify it, Exam #1	Parking Lot
6	Oct 3 – Oct 7, 2016	Chapter 6 – Stir it up	Forty Thieves
7	Oct 10 – Oct 14, 2016	Chapter 6 – Stir it up	Should you switch?
8	Oct 17 – Oct 21, 2016	Chapter 7 – Pause and Reflect	Faculty Debts
9	Oct 24 – Oct 28, 2016	Chaps 8,9 – Interpersonal, Communication	Grilled Cheese
10	Oct 31 – Nov 4, 2016	Estimation	Grappling with Groups
11	Nov 7 – Nov 11, 2016	Review and Exam #2	Maple Tree (10 ways to measure)
12	Nov 14 – Nov 18, 2016	Revisit PSSSP and work on Final Project	House Hunt
13	Nov 21 – Nov 25, 2016	Thanksgiving Break!	
14	Nov 28 – Dec 2, 2016	Revisit PSSSP and review for Final Exam	True and False
15	Dec 5 – Dec 9, 2016	Present Final Projects	

Learning Activities

You will be assigned projects during the semester to be worked on individually or in groups. One write-up will be submitted for each student. Projects will be graded on accuracy, creativity and presentation. The most important aspect of these projects is clear explanations of your approach and conclusions. Solutions without explanations will get very low scores. We will begin the projects in class, but

frequently significant additional time outside of class will be required to complete them. Groups may be asked to present their project solutions to the class.

Exam Info

There are two hour exams during the semester, currently scheduled for weeks 5 and 11. There will also be a final exam, which is cumulative.

The best way to prepare for the exams is to be familiar with all the stretches and text problems done in class, as well as the homework assignments. Many exam questions are related to the work done in class and in the homework assignments.

Each individual instructor will provide you further details on Exams throughout the semester.