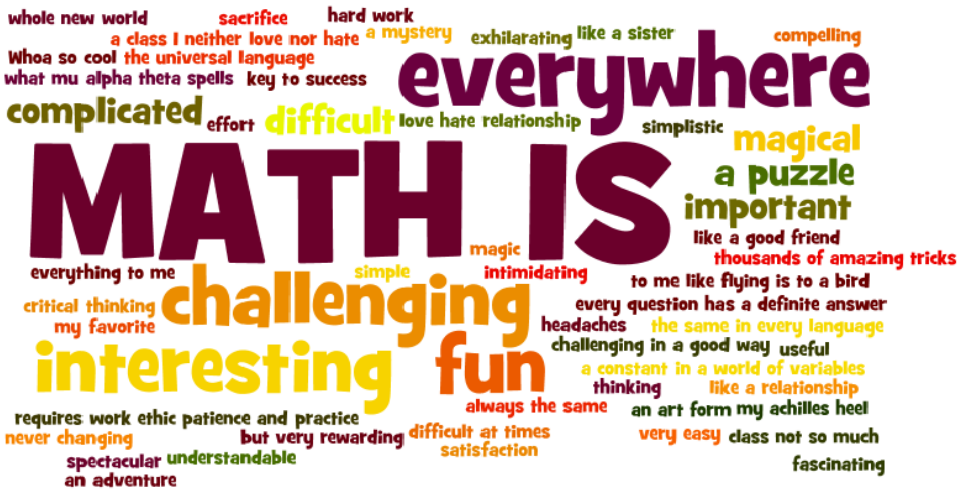
MATH REASONING

Sierra Nevada College



"Empowering students as architects of their own learning."

Course Code & No. – Section:	MATH 101 – Section 2
Course Title (Credits):	Math Reasoning (3)
Term & Year:	Fall 2017
Course Ref. Nos. (CRNs):	80250
Instructor:	Dr. Suzanne Gollery
Office Phone:	775-881-7456
Cell Phone:	775-813-4215 (8 AM to 9 PM please)
Email:	sgollery@sierranevada.edu
Office:	TCES 223
Office Hours:	Mon 1:00-2:30, Tues 2:30-3:45 PM, Wed 10:00-11:15 AM or by appointment
Class Meeting Time:	Tues and Thurs, 4:00-5:15 PM
Location:	Prim Library 320
Prerequisites:	Passing MATH 090 with a "C" or better, or meeting the College's entrance requirements for mathematics.
Required Texts:	*Topics in Contemporary Mathematics, 10th Edition* Bello, Kaul, Britton, 2014. Cengage Learning. ISBN- 10: 1-133-10742-7, ISBN-13: 978-1-133-10742-2.
Required Computer Programs:	Wolfram|Alpha (Pro version strongly recommended) Microsoft Office Minitab Express (Free 30-day trial)
Moodle Site:	http://sncmoodle.sierranevada.edu/course/view.php?id=747

Course Description

Mathematical ways of thinking and an overview of many areas of mathematics. Included are parts of algebra, geometry, graph interpretation, probability, statistics, and topology. Emphasis on problem solving. Interesting geometric puzzles and logic problems. Intended to hone a student's reasoning and critical thinking abilities. Prerequisite: Passing MATH 090 with a "C" or better, or meeting the College's entrance requirements for mathematics.

Student Outcomes

Upon completion of this course, a student will be able to:

1) Think correctly about numbers and have the ability to discern the reasonableness of a particular solution.
2) Model a mathematical problem using various strategies in order to solve a problem.
3) Understand the many uses of mathematics in other disciplines (with emphasis on Environmental Science).
4) Gather, organize, display, and summarize data.
5) Use technology as a tool to solve mathematical models.
6) Discover when to use a linear, exponential, or power function from the given data.

The Mathematical Association of America's (MAA) Committee on the Undergraduate Program in Mathematics (CUPM) in developing future mathematics curriculum has made the following preliminary recommendations:

- Students should achieve mastery of rich and diverse set of mathematical ideas and should experience mathematics as an engaging field with contemporary open questions.
- Students should be able to think analytically and critically, to formulate and solve problems, and to interpret their solutions. They should understand and appreciate the value and validity of careful reasoning, precise definition, and close argument.
- Students should have experience applying knowledge from one branch of mathematics to another and from mathematics to other disciplines.
- Students should be able to use a variety of technology tools.
- Students should be able to communicate mathematics both orally and in writing; they should be able to read mathematics.

Methods of Assessing Student Outcomes

Students will be assessed on the basis of their graded performance on four exams, one final exam, and a variety of assignments.

Tentative Class Schedule

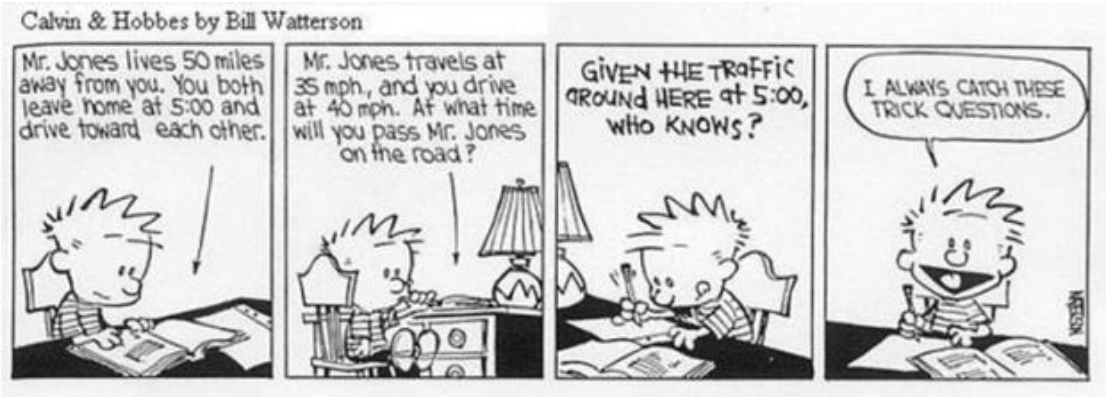
NOTE – topics, exam date, and any other aspect of the class schedule are subject to change if the instructor feels it is in the best interest of students to make changes. Changes will be announced in class and will be posted on the Moodle course website. Students will also be notified of significant changes by email.

Section One

CLASS DATES	CLASS TOPICS	CHAPTERS
T 8/22, R 8/24	Course Introduction Number Theory and the Real Numbers	5
T 8/29, R 8/31/25	Number Theory and the Real Numbers Excel and Wolfram|Alpha	5
T 9/5, R 9/7	Number Theory and the Real Numbers Practice for Exam 1	5
T 9/12	Exam 1: Chapter 5	

Section Two

CLASS DATES	CLASS TOPICS	CHAPTERS
R 9/14	Equations and Problem Solving	6
T 9/19, R 9/21	Equations and Problem Solving	6
T 9/26, R 9/28	Equations and Problem Solving	6
T 10/3	Exam 2: Chapter 6	



Section Three

CLASS DATES	CLASS TOPICS	CHAPTERS
R 10/5	Functions and Graphs	7
T 10/10, R 10/12	Functions and Graphs	7
T 10/17, R 10/19	Functions and Graphs Geometry	7, 8
T 10/24, R 10/26	Geometry	8
T 10/31	Exam 3: Chapters 7 and 8	

Section Four

CLASS DATES	CLASS TOPICS	CHAPTERS
R 11/2	Statistics	12
T 11/7, R 11/9	Statistics	12
T 11/14, R 11/16	Statistics Your Money and Your Math	12, 13
11/20-24	*Thanksgiving Holiday*	
T 11/28, R 11/30	Your Money and Your Math	13
T 12/5, R 12/7	Your Money and Your Math Exam 4: Chapters 12 and 13	13
F 12/10	Comprehensive Make-up Exam	

Grading Policy

- The grading curve is based on a 1000-point scale. Sierra Nevada College awards half grades (e.g., A– or B+), so a student with a point total within 1.5% of the cutoff for the letter grade will earn the appropriate half grade: (A 915-1000 points, A– 900-914, B+ 885-899, B 815-884, B– 800-814, C+ 785-799, C 715-784, C– 700-714, D+ 685-699, D 615-684, D– 600-614, F <600 points).
- Grades on all work will be posted in Moodle. It is your responsibility to check your grades to make sure that there are no errors. Please contact your instructor by e-mail if there is an incorrect or missing grade.

Point summary:

In-class exams (4 @ 100 pts. each)	400 pts.
Assignments – From Bello *et al.* , In-class assignments, and CPAs (All assignments will earn up to 10 points. Your point total will be rescaled, that is, weighted, based on the % accrued for the entire semester)	400 pts.
Take home final exam – due 11:00 PM, Friday Dec 15	200 pts.
TOTAL	1000 points

Assignment Grading Rubric

<u>10 point system</u>

10 points

- All portions of the assignment are completed
- It is obvious that significant effort was put into the assignment
- If any answers or computations are incorrect they are not major mistakes or do not hinder understanding of the material
- Interpretations are relevant and concise, and yet have enough information to convey an understanding of the material
- It is obvious that no answers were simply copied from another student or group, although answers may be similar from students or groups that work together

7.5 points

- All portions of the assignment are completed or possibly only a few very minor components are not completed
- A good effort was put into the assignment
- There are a few errors that result from a misunderstanding of the material
- The majority of interpretations are relevant but there may be some lack of understanding of the material
- It is obvious that no answers were simply copied from another student or group, although answers may be similar from students or groups that work together

5 points

- The assignment is not completed or multiple questions are skipped
- AND/OR the effort put into the assignment cannot be described as quality work
- AND/OR there are several errors that that result from a misunderstanding of the material
- Interpretations are vague or irrelevant and don't necessarily communicate understanding of the material
- It is obvious that no answers were simply copied from another student, although answers may be similar from students who work together

2.5 points

- More than half of the assignment is missing
- The effort can be described as minimal and half-hearted
- There are multiple errors that result from a misunderstanding of the material
- Interpretations are missing, extremely vague, or show a clear misunderstanding of much of the material
- OR answers were obviously copied from another student or group with a minimum of editing

0 points

- The assignment was not turned in or basically no real work was put into it.
- Answers are identical to those of another student or group

Important Class Policies

- You must bring a laptop with Internet access for Wolfram|Alpha , Microsoft Office, and Minitab Express on it in order to participate in classes and take exams – it is very important that you accept this responsibility. The exams and homework require the use of these programs, so they are integral to the class. You should ALWAYS bring your charging cable so you can use your laptop for the whole class period.

- You should bring your textbook to every class session.

- There are no late exams given, with no exceptions. One comprehensive make-up exam will be given on Friday, December 15 at 3:00 PM (our final exam time slot). This exam score will replace any exam that is missed, or can be taken to replace the lowest score of an exam over the semester.

- It is ***strongly*** recommended that you take notes during class sessions and that you use these notes for homework help and study them for the exams. If you need tips on how to take

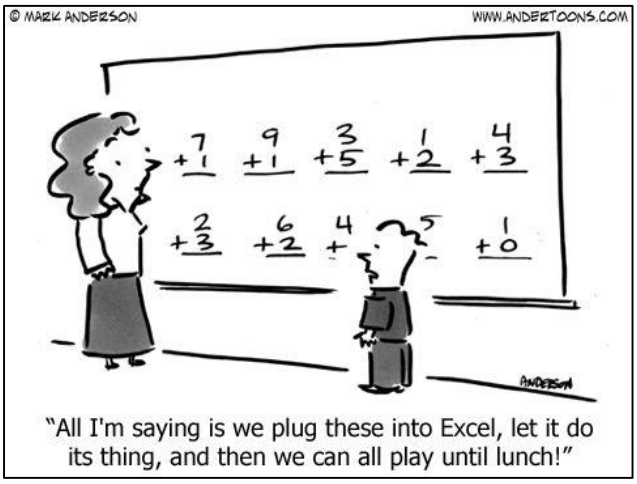
good notes ask your instructor or visit the Office of Academic Services and Instructional Support.

- Laptops and cellphones ***absolutely*** may not be used in class for personal use such as observing videos, instant messaging, texting, checking e-mail, doing assignments for other classes or surfing the web. Laptops should be closed unless needed for taking notes or an in-class assignment. Cellphones must be muted and put away, meaning that they are NOT allowed on the desks during class. You MAY excuse yourself from the class in a nondisruptive manner if you need to send or receive a text or call.

- You must be able to get emails about MATH 101 and be able to access our course Moodle site. If you don't want to use the SNC student email, then have your SNC email forwarded to a messaging system that you DO use. There are instructions for forwarding email under The SNC Email System in this syllabus.

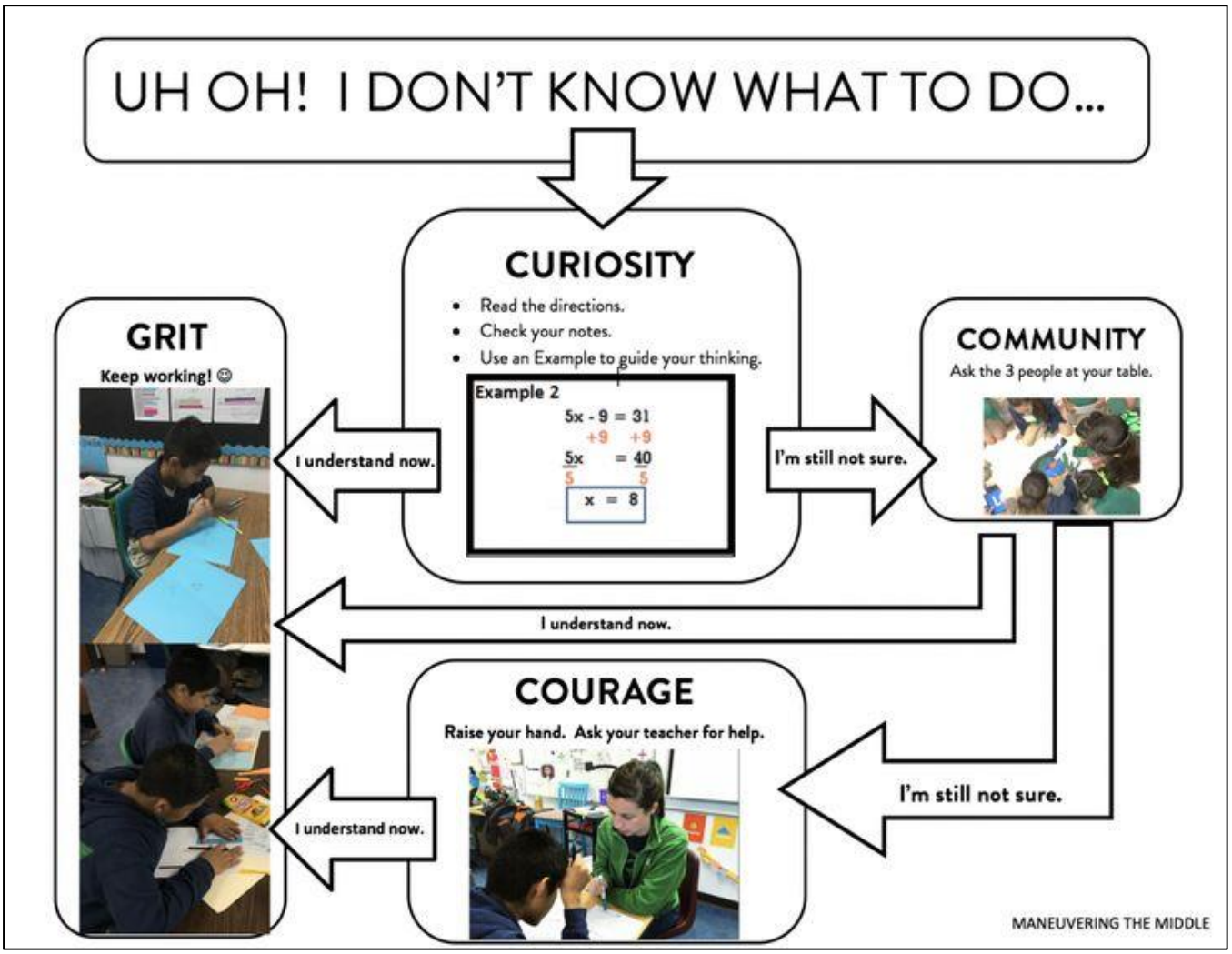
Recipe for Success in Math Reasoning

- Have or develop an intellectual curiosity and open mind in how mathematics can be used in applied in real-world situations.
- Don't always think that ideas are important only if they apply to your life right now. Math is a tool that you may value to help solve problems common to most people in your future, like buying a car, living on your income, or deciding how much pay raise to ask for.
- Become proficient in Wolfram|Alpha, Excel, and Minitab Express. Spend time exploring them on your own initiative. Your familiarity with these programs will make exams and homework much faster and easier.
- Attend office hours and review sessions. You probably chose SNC in part for easier access to your professors than possible at a university, so take advantage of this resource!!
- Take notes in class because they'll help you figure homework out later.



- Don't expect to understand all of the material right away in class. The purpose of homework is to try again and again until you get it.
- Be persistent. Don't be passive. Try to figure things out yourself BEFORE you ask for help, but also ask for help if you get stuck.

- Work with other students who are as serious (or more serious) than you about learning. Scientific studies show that people remember what they have learned better if they learn in a group. People remember things the best when they SHOW other people how to do it.
- Ask questions during the exams and final. I am happy to rephrase questions and help you understand what is being asked. I am likely to reassure you if you are on the right track.
- Don't miss classes and/or blow off homework and in-class activities. Practice is important for getting good at every skill, including math. It is my observation that very few students who do the assigned work are unable to pass exams and very few students who skip class, miss assignments, or copy from other students (even skillfully enough to earn full credit) are able to pass exams. This applies to all subjects that I have taught.



ADA Accommodations

In accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, students with a documented disability are eligible for support services and accommodations. If a student wishes to request an accommodation, please contact the Director of Academic Support Services, Henry Conover, at (775) 831-1314 x7534, hconover@sierranevada.edu or go to the OASIS offices on the third floor of Prim Library within the first week of the semester.

The SNC Email System

The SNC email system is the official communication vehicle among students, faculty members and administrative staff and is designed to protect the confidentiality of student information as required by the Family Educational Rights and Privacy Act of 1974 Act (FERPA). Students should check their college email accounts almost daily during the school year.

Students have a right to forward their SNC e-mail to another e-mail account (for example, @hotmail or @gmail). However, confidentiality of student information protected by FERPA cannot be guaranteed for SNC e-mail forwarded to an outside vendor. Having email redirected does not absolve a student from the responsibilities associated with official communication sent to his or her SNC email account.

Sanctions for Cheating and/or Plagiarism

The Honor Code

The faculty of SNC believes students must be held to high standards of integrity in all aspects of college life in order to promote the educational mission of the College and to encourage respect for the rights of others. Each student brings to the SNC community unique skills, talents, values and experiences which, when expressed within the community, contribute to the quality of the educational environment and the growth and development of the individual. Students share with members of the faculty, administration and staff the responsibility for creating and maintaining an environment conducive to learning and personal development, where actions are guided by mutual respect, integrity, responsibility and trust. The faculty and students alike must make diligent efforts to ensure high standards are upheld by their colleagues and peers as well as themselves. Therefore faculty and students accept responsibility for maintaining these standards at Sierra Nevada College and are obligated to comply with its regulations and procedures, which they are expected to read and understand.

Consequences of Violating the Student Honor Code

SNC students and faculty share the responsibility for maintaining an environment of academic honesty. Thus, all are responsible for knowing and abiding by the SNC Faculty/Student Honor Code published in the current SNC Catalog. Faculty are responsible for presenting the Honor Code and the consequences of violating it to students at the start of their classes AND for reporting all incidences of academic dishonesty to the Provost. Students are responsible for knowing what constitutes CHEATING, PLAGIARISM and FABRICATION and for refraining from these and other forms of academic dishonesty. Violations of the Honor Code become part of a student's academic record.

1st Offense: Student receives a zero for assignment/exam and counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

2nd Offense: Student fails course and receives counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

3rd Offense: Student is expelled.

The Sierra Nevada College Mission Statement:

Sierra Nevada College graduates will be educated to be scholars of and contributors to a sustainable world. Sierra Nevada College combines the liberal arts and professional preparedness through an interdisciplinary curriculum that emphasizes entrepreneurial thinking and environmental, social, economic and educational sustainability.

The Core Themes:

Liberal Arts	Professional Preparedness
Entrepreneurial	Thinking Sustainability