Syllabus for: (name of class)	**Math 25 *College Trigonometry***	
Semester & Year:	Spring 2013	
Course ID and Section Number:	Math 25-E2707 (032707)	Math 25-E3327 (033327) "Hybrid"
Number of Credits/Units:	4 units	
Day/Time: Location:	MW 6:05-**8:10pm** (E2707) PS Room 117.	MW 6:05-**7:30pm** (E 3327 "Hybrid"), PS 117; with additional Days TBA, Times TBA, Room TBA
Instructor's Name:	Teresa "Tami" Matsumoto	
Contact Information:	Office location and hours: PS 102, M 3-4, T 2-3, F 3-4; also by chance and by appointment Phone: (707) 476-4543 Email: tami-matsumoto@redwoods.edu	

Course Description (catalog description as described in course outline):   A study of trigonometric functions, radian measure, solution of right triangles, graphs of the trigonometric functions, inverse trigonometric functions, trigonometric identities and equations, laws of sines and cosines, solution of oblique triangles, polar coordinates, complex numbers in trigonometric form, De Moivre's theorem, and conic sections. *Note: A graphing calculator is required.*

Student Learning Outcomes (as described in course outline) :
1. Read, write, and speak accurately about mathematical ideas and use correct mathematical notation.
2. Students should be able to use graphing technology to visualize trigonometric curves, explore mathematical concepts, and verify their work.
3. Students should be able to use the theories of trigonometric functions and conic sections as fundamental problem-solving tools.
4. Students should demonstrate the characteristics of an effective learner, such as note-taking, critical reading, communication through writing, verbal discussions, etc.
5. Students should be able to apply the mathematics of trigonometric functions to real-world problems and applications.
6. Students should be able to use numerical, graphical, symbolic, and verbal representations to solve problems and communicate with others.

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

The student code of conduct is available on the College of the Redwoods website at:
http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf

Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods homepage.

College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

Math 25: Trigonometry – E 2707 and E 3327

Tami Matsumoto — *Spring 2013* — PS 117
"Regular" Section E2707 (MW 6:05-8:10pm) ~and~ **"Hybrid" Section E3327** (MW 6:05-7:30pm)

Instructor: Teresa ("Tami") Matsumoto, CR Math Department

Phone:	**476-4543** (Please leave a voice-mail message if I am not there)
Office:	**PS 102** (in Physical Science building)
Office Hours:	M 3-4, T 2-3, F 3-4; also by chance and by appointment
Mailbox:	If you have anything to turn in, slide it under my office door (PS 102), or deliver it to the Division office in PS 101. Make sure it is clearly marked with my name on it (and yours, too).
email:	tami-matsumoto@redwoods.edu NOTE: When you email me put "Math 25" in the Subject line along with a useful description of the message

Phone number for cancelled class announcement: 476-4210 #5 (Only for Math & Science classes in Eureka)

To find out if class is cancelled, call **(707) 476-4210 #5** *after about 8:30 am.*

College Trigonometry is a transfer-level math course needed for preparation for calculus. Math 25 and Math 30 (College Algebra) together constitute what is often referred to as "Precalculus" and both courses are required prerequisites for Math 50A Calculus.

Course Description (from the CR catalog):
MATH-25 College Trigonometry - (4 units LEC) Grade only. CSU and UC.
A study of trigonometric functions, radian measure, solution of right triangles, graphs of the trigonometric functions, inverse trigonometric functions, trigonometric identities and equations, laws of sines and cosines, solution of oblique triangles, polar coordinates, complex numbers in trigonometric form, De Moivre's theorem, and conic sections.
Note: Graphing calculator required, TI-83 or 84 recommended. Prerequisite: MATH-120

"**HYBRID**": One section is called "hybrid" because it is partly like a regular class, and partly online. This section has two class meetings every week, so you do get SOME lecture and "face time" with the instructor, but the class meetings are shorter than in a "traditional" Math 25 class.

Course Structure -- Here is the basic structure of the "hybrid" course:
- You study the material in the text (which is organized into 9 learning units).
- You attend class lectures, and you do homework (part in the textbook, and part online "pretest" homework assignments). You are welcome to stay for the 2nd part of lecture for the students in the other section.
- For each unit, you take a "Unit Exam" (in the ASC, online and proctored, outside of class meeting time) by the deadline for that unit.

Objectives: The CR Math Dept. has six main objectives for you with this course:
1. Read, write, and speak accurately about mathematical ideas and use correct mathematical notation.
2. Students should be able to use graphing technology to visualize trigonometric curves, explore mathematical concepts, and verify their work.
3. Students should be able to use the theories of trigonometric functions and conic sections as fundamental problem-solving tools.
4. Students should demonstrate the characteristics of an effective learner, such as note-taking, critical reading, communication through writing, verbal discussions, etc.
5. Students should be able to apply the mathematics of trigonometric functions to real-world problems and applications.
6. Students should be able to use numerical, graphical, symbolic, and verbal representations to solve problems and communicate with others.

Mathematics Department Policy Regarding "Faculty Withdrawal" of Students after Census Day: A student who is absent from class for the amount of time equal to two weeks of classes will be withdrawn from the course, unless there are extenuating circumstances that are communicated to the instructor in a timely manner. This "faculty withdrawal" can occur between Week 4 and Week 10 of the semester.

Materials you will need:

- **Required Text**: *Algebra & Trigonometry*, by Michael
  Sullivan, published by Prentice Hall
  (6th or 7th or 8th edition).
  This book is used in both Math 25 and Math 30. A
  limited number of
  textbooks are available at the CR library and can be checked
  also be purchased very inexpensively from various online bo
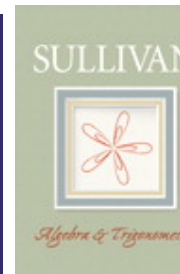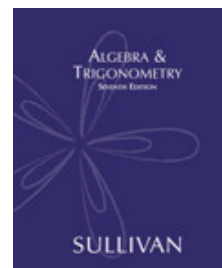
- **Bound Notebook with Grid Paper**:
  Roaring Spring #77475 or Ampad #26-251 (about $2 - $6), for example. Make sure it is **bound** and has
  graph paper in it. You will use this throughout the course to build yourself a reference book (see the
  "Reference Book Information" handout also).

- **Time. Lots!!** In your own weekly schedule please make sure that you have blocked out at least 15 hours
  (possibly as much as 20 hours), per week, to devote to this class.

- **An Email Account and Access to the Internet**. I expect you to have access to a computer and expect to be
  able to contact you easily.

- **Calculator**: A *Graphing* Calculator (TI-83 or TI-84 recommended). On the Eureka campus, a limited number
  of rental calculators are available. Call the math/science division office 476-4211 for information,
  availability, and instructions.

- **Paper**:   Homework Paper and scratch paper, lots of it! It is fine with me if you RE-USE paper. Paper
  that's only been used on one side is still fine (in general) on the other side. You will also need some graph
  paper. Get it in a pad or a package of loose-leaf sheets (rather than stuck in a notebook), or print it from the
  web. Many people find it helpful to get graph paper with heavier lines on every fifth line to make counting
  easier.

- **Pencils**:   Lots. Math problems should be done in pencil in this class (as in math classes in general). If you
  like softer lead (I find it writes darker easier) then you might like "2B" mechanical pencil lead (I prefer "2B"
  to "HB" which I find not as easy to work with).

- **Erasers**:   At least one.
  - **A ruler**:   Important for drawing graphs carefully and correctly.

Course Grading: Your final course grade will be determined by a combination of point totals in the course and
the professional judgment of the instructor. Plusses and minuses will be assigned where appropriate. Written
Assignments will be used to weight your grade. The tentative approximate weighting for the course is:

Textbook: Reading, Problems, Reference Book	10%
Other assignments	10%
Online Pretest/Homework	20%
Unit Exams (9 of them)	35%
Mid-term (aka "Trig Final")	15%
Final Exam (aka "A.G. Final")	10%

Approximate Grade cutoffs:

A or A-	Guaranteed for 85% and above
B- (or better)	Guaranteed for at least 72%
C- (or better)	Guaranteed for at least 60%
D (or better)	Guaranteed for at least 50%

HELP?!   If you have questions, please get help! It is *your* responsibility to seek help if you need it. I will answer
    some questions in class, but unfortunately, we will not have enough time to answer all of everyone's
    questions. See the "HELP" handout.

CAVEAT: The above procedures are subject to change.

Math 25 E2707/E3327

Week#	Monday	Tue	Wednesday	Thu	Fri
1	Jan 14 Math Classes Begin • Introduction • Right Triangle Definitions • Radians, Degrees	Jan 15	Jan 16 **[UNIT 1]** • Angle Conversions • Arcs, Sectors • Rt Triangle IDs	Jan 17	Jan 18
2	Jan 21 CR / HSU Holiday (MLK Jr)	Jan 22 HSU CLASSES BEGIN	Jan 2325 **[UNIT 1]** • Circular Motion • Exact values; Calculator	Jan 24	Jan 25 **Unit 1 TARGET**
3	Jan 28 *CENSUS DAY* **[UNIT 2]** • General Angles	Jan 29 **Unit 1 Deadline**	Jan 30 **[UNIT 2]** • Unit Circle	Jan 31	Feb 1
4	Feb 4 **[UNIT 2]** • Rt Triangle Applications	Feb 5 **Unit 2 TARGET**	Feb 6 **[UNIT 3]** • sine ,cosine graphs Graphs & Transformations	Feb 7	Feb 8 **Unit 2 Deadline**
5	Feb 11 **[UNIT 3]** • Phase Shift Simple Harmonic Motion	Feb 12 **Unit 3 TARGET**	Feb 13 **[UNIT 4]** • tan,cot,sec,csc graphs Review Inverse Fns	Feb 14	Feb 15 No Classes (Lincoln)
6	Feb 18 CR Holiday (Washington)	Feb 19 **Unit 3 Deadline**	Feb 20 **[UNIT 4]** • Inverse Trig Functions	Feb 21	Feb 22 **Unit 4 TARGET**
7	Feb 25 **[UNIT 5]** • Trig IDs • Intro Sum & Diff Formulas	Feb 26 **Unit 4 Deadline**	Feb 27 **[UNIT 5]** • Sum & Diff Formulas Dbl, Half-angle formulas	Feb 28	Mar 1 Deadline to Petition to Graduate
8	Mar 4 **[UNIT 5]** • Product-to-Sum Sum-to-Product	Mar 5 **Unit 5 TARGET**	Mar 6 **[UNIT 6]** Trig Eq'ns	Mar 7	Mar 8 **Unit 5 Deadline**
CR Spr Brk DST *	Mar 11	Mar 12	Mar 13	Mar 14	Mar 15 ***π Day***
9 HSU SprBrk	Mar 18 **[UNIT 6]** • Law of Sines Law of Cosines	Mar 19	Mar 20 **[UNIT 6]** • Ambiguous Case Areas of Triangles	Mar 21	Mar 22 **Unit 6 TARGET**
10	Mar 25 **REVIEW for Midterm: Units 1-6**	Mar 26 **Unit 6 Deadline**	Mar 27 **REVIEW for Midterm: Units 1-6**	Mar 28	Mar 29 Deadline for Student-Initiated Drop **MT TARGET**
11 31st Easter	Apr 1(HSU Holiday) **[UNIT 7]** • Review Complex Numbers • Polar Coordinates Complex in Polar Form	Apr 2 **MT Deadline**	Apr 3 **[UNIT 7]** Complex Polar, DeMoivres Powers	Apr 4	Apr 5
12	Apr 8 **[UNIT 7]** Complex Polar, DeMoivres Roots	Apr 9 **Unit 7 TARGET**	Apr 10 **[UNIT 8]** Parabolas	Apr 11	Apr 12 **Unit 7 Deadline**
13	Apr 15 **[UNIT 8]** • Ellipses, Hyperbolas	Apr 16	Apr 17 **[UNIT 8]** Applications	Apr 18	Apr 19 **Unit 8 TARGET**
14	Apr 22 **[UNIT 9]** Translations	Apr 23 **Unit 8 Deadline**	Apr 24 **[UNIT 9]** • Rotation	Apr 25	Apr 26
15	Apr 29 **[UNIT 9]** • Rotation	Apr 30 **Unit 9 TARGET**	May 1 **REVIEW for FINAL**	May 2	May 3 *Eureka MSE BBQ*
CR FINALS WEEK	May 6 **REVIEW for FINAL**	May 7 **Unit 9 Deadline**	May 8 **Final TARGET**	May 9	May 10 **Final Deadline**

Brief Descriptions of Math 25 Units

Unit	Brief Description
1	**Angles; Trigonometric Functions defined using Right Triangles** • Unit 1 begins with a discussion of angles and various ways to measure angles: radians, decimal degrees, and degrees-minutes-seconds. You are probably familiar with degrees, but in mathematics it is more convenient to use radians. You will also learn to convert between the three measurements. • The six trigonometric functions are then defined in terms of right triangles (in Unit 2, you will learn a second approach to the definition in terms of the unit circle). You will also learn how to compute the exact values of these functions at certain angles, and approximations at more general angles. It is Math Department policy that students should be able to compute the exact values of all the circular (trigonometric) functions at the "standard" angles, i.e., all multiples of pi/6 and pi/4 radians and 30 and 45 degrees. • Finally, you will also learn some of the basic identities that are satisfied by the trigonometric functions.
2	**Trigonometric functions generalized beyond right triangles; applications involving right triangles** • The first part of Unit 2 continues the development of the trigonometric functions by studying their values at general angles. First, these values are computed by using the reference triangle technique. Then an alternative approach, using the unit circle, is given. In fact, this actually provides a second alternative definition of the trigonometric functions. It is very important that you learn both approaches to the definition and calculation of trigonometric functions. • In the second part of Unit 2, you will see how trigonometry can be used to solve a large variety of applications involving right triangles.
3	**Graphs of Sine and Cosine Functions; Simple Harmonic Motion** In this unit, you will study the basic properties of the graphs of the sine and cosine functions, with variations. You will also apply your knowledge of these to various spring problems.
4	**Graphs of all Trigonometric Functions; Graphs of some Inverse functions** In this unit, you will study the graphs of tangent, cotangent, secant, and cosecant, with variations. You will also study the inverse trigonometric functions. The textbook is quite brief in these three sections, so supplementary material and exercises areincluded.
5	**Fundamental Trigonometric Identities** In this unit you will learn more about the trigonometric functions. In order to use them for solving real-world problems, you need to know more about their relationships with each other through the various trigonometric identities.
6	**More Trigonometric Identities; Applications involving triangles that are not right triangles** This unit consists of two parts. • The first part finishes the study of trigonometric identities begun in Unit 5. In this section you will use the various trigonometric identities to help solve equations involving trigonometric functions. • The second part is a study of methods for solving general triangles, using the Law of Sines and the Law of Cosines. Included are many different applications, along with a short section on two new formulas for the area of a triangle.
Trig Final	**TRIGONOMETRY FINAL EXAM** Material covered: All Material from Units 1 through 6.
7	**Polar Coordinates; Polar Equations; Complex Numbers** The Analytic Geometry section of the course begins with this unit, which consists of two parts. • The first is an introduction to polar coordinates for points in the xy-plane, and polar equations and their graphs. • The second is a study of complex numbers. The two topics are related by the polar form of a complex number, which then leads to simple formulas for finding powers and roots of complex number via DeMoivre's Theorem.
8	**Conic Sections (Standard position)** This unit begins our study of the conic sections: parabolas, ellipses, and hyperbolas. We will only consider conics in standard position (parabolas with vertex at the origin, ellipses and hyperbolas with center at the origin), and in standard orientation in this unit. We will study translated conics and rotated conics in Unit 9.
9	**Conic Sections (translated and/or rotated); parametric equations** In this unit, we continue our study of the conic sections with investigations on translation and rotation of axes.
A.G. Final	**ANALYTIC GEOMETRY FINAL EXAM** Material covered: Primarily material from Units 7, 8, 9.

Math 25 – Spring 2012
ASSIGNMENTS -- *What exactly do you have to do?*

1. **Textbook and Reference Book (10%)**
    Reading and Problems – For each Learning Unit, read the description and instructions on the web (the calendar has links to them) – **This tells you which pages in the text to read** and **which problems in the book to do**. Your work on the textbook problems is to be turned in and will be looked over quickly. You must verify the answers yourself – but doing them is an essential part of the process by which you learn the material. It is recommended that you work through examples in the text as you read through it, and work additional problems that are not assigned. The CD-ROM that comes with the text (7th edition) has good examples to view while you are reading and learning from the text.

    Reference Book – **You will create a "Reference Book"** throughout the course. Bring it to class regularly (especially for "Reference Book Quizzes") and it will be graded throughout the term. See the "Reference Book" handout for specific directions.

2. **Other Assignments (10%)** Some assignments will be different from problems in the book. Some may be explained on handouts, some may be discussion board assignments, some will be brief quizzes. Some will be in class without notes (not necessarily announced ahead of time), some will be "*Reference Book Quizzes*" on which you will be allowed to consult your own personal Reference Book, and some will be online.

3. **Written Assignments** – In addition to the assigned textbook problems (which will be collected but not graded), for each unit, there will be a short written assignment to turn in – these WILL be GRADED. The point of these **very short** assignments is to get practice **writing** mathematics correctly. This is the only time I will grade your written work carefully, so you must take great care with these short assignments to write them out clearly and correctly. You will be given specific guidelines for these so that you know what you are expected to do. These can be redone and resubmitted, if they are not done well. The overall scores on these will be used to weight your final course grade.

4. **Pretest/Homework (20%)** –

"Hybrid" Section: Each unit has a "**Pretest/HW**" assignment in the "Optimath" Online Testing System. For each unit, you should do the "Pretest/HW" assignment more than once (at least three or four times). Your **highest** scores on these assignments count as part of your course grade.	"Regular" Section: Each unit will have designated homework that will count for this grade – some will be on Optimath, some will be from the text. The Optimath assignments can be done more than once. The highest score counts toward your course grade.

    [NOTE: "Optimath **PRACTICE** assignments do not count directly toward your grade like the **Pretest/HW** assignments do.]

5. **Exams (online, in ASC)**

"Hybrid" Section: Exams will be taken online, in a proctored environment, in the ASC. N.B. *Exams done online during class meeting time will not count for credit* – if you take an exam while we are in class, your score will be 0	"Regular" Section: Exams will be done on paper and will be taken in class, unless there is a take-home exam, or a take-home portion of an exam.

    Unit Exams (35%) – For each Unit, there is a Unit Exam which must be taken by the Unit deadline. [Note for "Hybrid" Section: Unit Exams can be taken more than once, but **NOT on the same day** for the same unit. Prepare to take the Unit Exam by or around the Unit "Target Date" – then you still have a couple days before the Unit deadline to re-take the Unit Exam if you wish. (allowed *once* each day). You are allowed an hour for each Unit Exam (but allow a little more time in your schedule in case of technical difficulties).]

    *   **Midterm Exam, aka "Trig Final" (15%)** – After Unit 6, there is a Midterm covering all material from Units 1 through 6. [Note for "Hybrid" Section: Like Unit Exams, you must take this in the ASC, but unlike Unit Exams there is no "pretest" that is exactly like this, and you are allowed to take the Midterm only two times at most. You are allowed two hours for the Midterm.]
    *   **Final Exam, aka "A.G. Final" (10%)** – After Unit 9, there is a Final Exam for this course which must be taken by the end of Finals Week. It will focus on material in Units 7, 8, and 9. [Note for "Hybrid" Section: As with the Midterm, you take this in the ASC, you are allowed to take the Final two times at most, and you will get two hours in which to do it.]

Guidelines for Written Assignments (in general):

1. Use pencil.

2. Write neatly and legibly, using one side of the paper.

3. Work down the page (not across in paragraph-type form) like you usually see in texts.

4. On your paper, state the problem clearly.

5. On your paper, state your answer clearly in a manner appropriate to the context.

6. Write equivalent equations clearly, when appropriate, rather than loose expressions.

7. Show each step clearly (no big mystery jumps).

8. Do *not* use equal signs where things are not really equal.

9. **Do** use equal signs to show equality appropriately.

10. Use variables correctly. For instance, do not change the case of a variable. Also if you are using a substitution, do not use the same variable in a different way (e.g. substituting $\sqrt{x}$ with u is OK, but it is NOT OK to substitute $\sqrt{x}$ by using x).

11. Notation: Be careful to use correct symbols, and to make them the right size (e.g., make fraction bars and radical symbols large or long enough to include all that should be included).

12. Marks showing things like canceling must be correct. That is, if you read an equation *before* the marks *and after* the marks, the equation should still be true.

13. Use units throughout the problem, when they apply.

14. Make a good sketch of a graph or diagram, when applicable. Use a ruler to make straight lines. Indicate pertinent features (use color), and label axes and lines.

15. Check your answer and show that your answer is correct.

16. Reflect on the problem. For example, consider whether your answer seems appropriate (not just that it is mathematically correct), and look back over your work to see what worked well or if you might have done something differently. Learn from this experience what is good and what could be better, to help you do future problems. After you give it some thought, write down your reflection(s), and include that when you turn in the assignment.

Your Own Personal Trigonometry REFERENCE BOOK

> *During the term, you will create your own personal Trigonometry Reference Book. In your Reference Book, you will write definitions, graphs, examples, and instructions of things that you learn in this class. This book will be useful to you throughout this course, and especially in math courses you take after this one!*

You will be allowed to use your Reference Book on our "Reference Book Quizzes" as well as when you are studying and working on your homework.

- **Get a bound notebook with grid paper** in it (sometimes called "quad ruled").   Composition books are about $2 to $4 dollars and are sold at the CR bookstore, Staples, and other places.
- **Make a Title Page**. The first page should be made into a title page. Create a title for your book, and include identifying information so it could be returned to you if you ever were to lose it.
- **Start the Table of Contents**. On the top of the next page (right side) write "Table of Contents" and reserve *the next several pages* for your Table of Contents to grow into. Skip at least 4 pages – more if your writing is large or if you anticipate entering particularly detailed information in your "T O C."
- **Page 1**. The first page that you write actual content information on should be numbered "1".
- **Number the following pages**. Number the pages, either odd and even on front and back, or you might prefer to number just the right-side pages 1, 2, 3, and so on, leaving the left sides blank at first.
- **Enter information regularly as you study and do your homework**. Keep just one basic topic on each page, even if you don't fill up every page. The important thing to remember is to make this useful for yourself, so that a year from now (for example), you will be able to find whatever you look for easily.
- **What to write**: At times, I will direct you to include specific information in your Reference Book. Also, as you study, go over your class notes and read corresponding material in the text, synthesize important information and put it into your Reference Book. Definitions and explanations *in your own words* will be easier for you to understand later. Include examples and pictures, too.

Your Reference Book will be graded several times during the term. Correctness will be spot-checked (due to lack of time – not for lack of interest!). The Reference Books are graded on three areas: completeness, general correctness, and presentation. Each of the three areas gets up to 5 points, for a total of 15 points. We will also have some quizzes on which you can refer to your Reference Book – so you should bring it with you to class regularly.

	Completeness	*Correctness*	*Presentation*
5 points "A"	Content includes pertinent information covered since last grading. Table of contents is up-to-date.	Perfect, or nearly so. Demonstrates excellent understanding of ideas in the material	Excellent! Clear, easy to read and to follow. Communicates clearly.
4 points "B"	nearly complete (over 80%)	Mostly very well done, but obvious errors and/or unclear. Demonstrates solid understanding.	Very good. Generally presented well.
3 points "C"	more than half of material since last grading	Some good, but many errors or may be very unclear, contain many vague items.	OK. Can follow, but not easy to read, or somewhat disorganized
2 points "D"	less than half complete	Roughly half or so is incorrect. Exhibits lack of understanding, or fails to exhibit much understanding.	Confusing. Difficult to follow and understand what is being presented
1 point "F"	more than nothing but significantly less than half	Less than half is correct. Does not demonstrate understanding of material. Exhibits minimal comprehension or minimal lack of effort.	Extremely difficult to follow or understand.