

Syllabus Math 2010

SYLLABUS FALL 2009 Math 2010, Tuesday 5:15 - 7:45 pm MATH FOR ELEMENTARY TEACHERS I

Instructor: Kris Cunningham
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Office: Dixie Middle School, room 113
Office Hours: By appointment

Required Text: *Mathematics for Elementary Teachers A Contemporary Approach* by Gary L. Musser, William F. Burger, Blake E. Peterson Cost: Approximately \$110.00. You also need to purchase a student manipulative kit. The kit is for pre-service teachers and will be helpful during practicum and student teaching. The book and kit are used for the entire 2010/2020 series. There is a student solution manual that is helpful. Another useful resource is *Math On Call* by Great Source (approximately \$18.00).

Class Description: This class is the first of two-semester sequence in mathematics that is appropriate to the needs of elementary and middle school teachers. Topics include: problem solving, sets, numeration systems, whole numbers, algorithms of arithmetic, number theory, rational numbers, and decimals. Both classes in the sequence are required for prospective elementary school teachers.

Class Prerequisites: Math 1050/1050E, or the equivalent. As of Spring 2003, you must earn a C or better in Math 2010 in order to take Math 2020.

Class Purpose: This class is not designed to teach you fundamental skills in elementary math; it presumes prior competency in 'doing' grade-school math. Rather, this class examines the theory (the 'why') behind the 'how' of elementary math. The content and processes of mathematics will be presented in a logically sound approach in order to help you:

1. Learn to view mathematics as fascinating and stimulating activity that provides skills, insights, and modes of thinking that are essential to modern life.
2. Become a more confident problem solver, who is able to think critically and creatively in a variety of quantitative, spatial and logical situations.
3. Become a more accomplished communicator with a capacity to construct well-reasoned explanations of mathematical algorithms.

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4. See the connections between mathematics and other subjects in real-world applications.
5. Learn the foundations necessary to build adequate instructional opportunities for mathematical students across grades K-8.

Class Objectives: All mathematics classes at Dixie College will:

1. Require students to perform mathematical processes including fractions, percentages, decimals, proportions/ratios, algebraic equations, and/or calculus techniques.
2. Provide students with application problems that use a variety of methods including arithmetical, algebraic, and geometric methods.
3. Challenge students to make inferences from mathematical models that include formulas, graphs, and tables.
4. Provide students with real-life applications that use a variety of mathematical functions.

Upon successful completion of Math 2010, a student will demonstrate, through testing, the ability to:

1. Identify and apply a sound problem solving process to a variety of mathematical problems.
2. Describe and apply a variety of problem solving strategies to individual problems.
3. Identify and apply instructional algorithms to basic arithmetic operations.
4. Demonstrate elementary arithmetic algorithms using manipulatives that include: mats, strips, units, sets, blocks, and bars.

Policies and Procedures:

1. **Attendance and participation:** You are expected to attend class and to participate in all the class activities. Tardiness and unexcused absences may result in the loss of points.
2. **Hours of lectures each week:** 3 hours
3. **Plagiarism:** You cheat, you fail.

Accommodation for Special Populations: "Proper documentation of a disability is required in order to receive services or accommodations. Any student eligible for and requesting reasonable academic accommodations due to a disability must provide a letter of accommodation to their professor from the Disability Resource Center within the first two weeks of the beginning of classes. Please contact the Center on the main campus to follow through with the documentation process. We are located in the Student Services Center Room #201, or you may call for an appointment and further information regarding the Americans with Disabilities Act (ADA) at 652-7516."

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Please, if you have a conflict and cannot make the final at the assigned date and time, see me immediately. Institutional policy states that you must meet at the assigned final exam time for this class.

Assessments:

1. Completing **Homework** on each chapter is necessary in order for you to fully explore the subject being discussed. Homework assignments are to be completed by the first class period after they are assigned in the syllabus. Unless otherwise indicated in class, each assignment will be to do the listed problem for each section. **NO LATE WORK WILL BE ACCEPTED.** Homework assignments should be neat and orderly. All answers should be validated with the proper work (i.e., show your work when appropriate). Without supporting work, the assignment will be considered incomplete.
2. You are to keep a **Math Journal**; it will be worth 75 points. Your journal will be in a 3-ring notebook (at least 2") with 5 dividers. The 5 dividers will be labeled: **Articles, Classroom Observations, Homework, Notes/Vocabulary, and Participation/Reflections.** You may choose to have a 6th divider for 'Masters'. In the **Classroom Observations** section, you will need to have 15 hours of classroom observations and personal reflections, based on at least 1 hour of elementary mathematics classroom observation per week. You will receive the observation form in class. Check with me on teachers that you can observe. Observations will be turned in weekly. These observations should be done at an appropriate level of instruction. If you are taking other education classes, see me to determine if we can combine observations. Your observations will include all relevant information, using the format given in class. If you complete 25 hours of observations this semester, you may earn **30 BONUS** points. (That's right, over a quarter of a letter grade).
3. There will be **three announced exams** and each will be worth **200 points**.
4. The **final** will be comprehensive (Chapters 1-8) and will be worth **200 points** as well.
5. You will create a project on **Fractions** (worth 200 points). It will be counted as a **Performance Assessment** with more information and rubric given in class.
6. The total point distribution will be approximately **1280 points**.



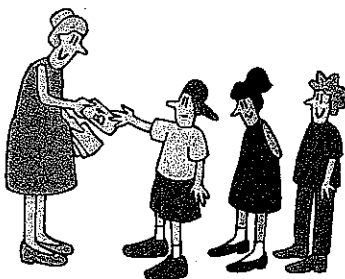
Grading Policy: Grades will be based on the ratio of earned points to possible points. The points are divided into the following categories:

Homework	50 points
Professional Articles (Review of 3 articles that I will give you)	30 points
Journal	75 points
Chapter Reflections	40 points
Participation/Attendance	30 points
Exam 1 (Chapters 1 and 2)	200 points
Exam 2 (Chapters 3 and 4)	200 points
Exam 3 (Chapters 5 and 6)	200 points
Exam 4 (Chapters 7, 8 and Final)	200 points
Fraction Project	200 points
Classroom Observations	75 points

Grade Scale: Grades will be assigned by a total percentage earned divided by the total possible. The usual assignment of grades by percentage is as follows:

100 - 94	A	79 - 77	C+
93 - 90	A-	76 - 74	C
89 - 87	B+	73 - 70	C-
88 - 84	B	69 - 60	D
83 - 80	B-	Below 59	F

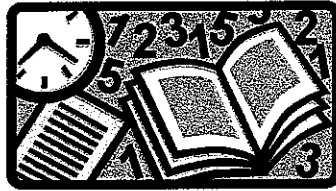
(I reserve the right to make changes in this syllabus if I think that such changes will enhance your learning more effectively than the original plan).



Additional Materials needed for Math 2010: colored pencils, scissors, ruler, and glue stick.

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SECTION	PART B PROBLEMS
1.1	2, 3, 5, 12, 17, 18, Sierpinski triangle
1.2	1, 2, 4, 5, 7, 9, 3D drawings, Pascal's Triangle
Chapter Review/Problems for Writing and Discussion	1, 2, 10, Logic Puzzles
2.1	1, 10, 12, 14, 18
2.2	1, 18
2.3	1, 2, 5, 14, Mod 4 Art
2.4	2, 6, 8, 9
Chapter Review/Problems for Writing and Discussion	5
3.1	1, 4, 5, 9, 12, Problems Wrtng/Dis #1
3.2	3, 6, 12, 15, 16, Prob Wrtng/Dis #1
3.3	5, 6, 7, 11
Chapter Review/Problems for Writing and Discussion	3
4.1	5, 9, 20
4.2	2, 14, 18,
4.3	1, 3
Chapter Review/ Problems for Writing and Discussion	1
5.1	Sieve of Eratosthenes, 1, 2, 3, 8, Divisibility Tests
5.2	2, 4, 6, 9
Chapter Review/Problems for Writing and Discussion	3, 10
6.1	1, 2, 4, 6, 10, 13, 18, 27
6.2	1, 4, 14
6.3	2, 9
Chapter Review/Problems for Writing and Discussion	1, 3, 10
7.1	3, 7, 11, 17, Prob Wrtng/Dis #1
7.2	1, 6, 13, 26,
7.3	3, 4, 7, 11, 17, Prob Wrtng/Dis #1
7.4	1, 3, 17, 18, 26, 29
Chapter Review/Problem for Writing and Discussion	2, 7, 8
8.1	1, 7, 9, 12, 18
8.2	3, 6, 8, 12, 15
Chapter Review/Prob for Wrtng and Disc.	2, 7



Professional Article Review Requirements

You will read 3 Articles that will be given to you in class. For each article review you will:

- ❖ Read the article
- ❖ Make a title page with article title, your name, course name, and date (centered horizontally and vertically)
- ❖ Write a review that:
 - ∞ Is 1 page
 - ∞ Is typed and double-spaced
 - ∞ Answers the questions: "What I learned" and "How I'll use this information in my classroom"

All students will read "Never Say Anything a Kid Can Say!" by Steven C. Reinhart. This article review is due on Tuesday, August 25, 2009.

For the second and third articles you will choose 2 from articles that will be distributed during the first class period (refer to the class calendar for due dates)

Article Review #2 is due on Tuesday, _____.

Article Review #3 is due on Tuesday, _____.

You will put each article that you read and review in the 'Article' section of your journal. After I grade your 1 page review for each article, you will also put the review in your journal after the appropriate article.

(Note: Each article for Math 2010 was taken from the National Council of Teachers of Mathematics Journals *Mathematics Teaching in the Middle School* or from ASCD's *Educational Leadership* magazine).

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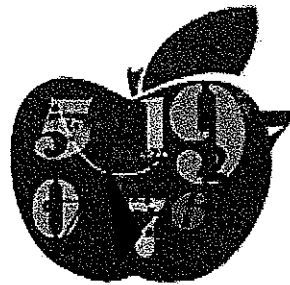
All About Fractions Project

This project will have the same value as a test (200 pts). You will work on it during the time that we do not have class. It will be due on Tuesday, _____ . You will share the completed project with the class.

Fractions are one of the concepts that many students (and teachers) struggle. We will be discussing different approaches to teaching fractions during chapters 5 and 6.

Be creative and make something that will help you teach fractions for the grade level that you are focusing on. Some ideas (not limited to the list below) are:

1. An alphabet book of fractions
2. Songs about fractions
3. Photos of fractions in our world
4. A fraction quilt
5. A movie about fractions
6. A powerpoint on fractions



Let your imagination be your limit. I'm looking forward to seeing some awesome, creative projects.

4	3	2	1
Project is applicable for described grade level. Meets the needs of gifted and special needs children	Project is applicable for described grade level.	Project is too advanced or too elementary for stated grade level. Needs some adjustment.	No grade level was indicated.
Project shows a great deal of creativity in how fractions can be taught to students.	Project shows an adequate amount of creativity.	Project is like many other fraction programs.	Project shows no creativity.
Project is engaging for students	Project is generally engaging. Could be improved upon.	Project has some engaging components.	Project is not engaging.
Project is teacher friendly, easy to use.	Project is easy to use, but requires extra teacher prep time.	Project takes time, extra materials, extra prep time.	Project will take additional time to prepare and use.

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The following are schools that you can contact to find a math classroom to observe. Further instructions will be given in class.

SCHOOL	ADDRESS	AREA	PHONE NUMBER
Bloomington	425 Man of War	Bloomington	673-6266
Bloomington Hills	919 E. Brigham Road	Bloomington Hills	674-6495
Dixie Downs	1795 W. 1230 No.	Dixie Downs	673-8978
Little Valley	2330 E. Horseman Dr	St. George	652-4771
Panorama	301 North 2200 East	East St. George	628-6881
Red Mountain	263 East 200 South	Ivins	656-3802
Riverside	2500 S Harvest Lane	Washington Fields	652-4760
Fossil Ridge Inter.	383 S. Mall Drive	East St. George	652-4706
Dixie Middle	825 S. 100 East	St. George	628-0441
Pine View Middle	2145 E 130 No	East St. George	628-7915
Snow Canyon Middle	1215 N. Lava Flow Dr	Snow Canyon	674-6474

(Note: Please see me if you have a question about your observations. You will select a school and let me know which one it is by the 2nd class period).



**CALENDAR FOR MATH 2010
Fall Semester 2009**

Class is from 5:15 pm - 7:45 pm unless otherwise indicated.

Bring textbook to every class period, except test days.

Bring manipulative kit and Journal (3-ring binder) to every class period *including* test days, when test is NOT in the Testing Center.

Tuesday, August 25, 2009

- ✓ Student Info Sheet
- ✓ Pick up three articles
- ✓ Welcome
- ✓ Introduction to class syllabi, materials, manipulatives, calendar, journal, etc.
- ✓ Intro to class members (Venn Diagram)
- ✓ Kagan class building activity
- ✓ Sierpinski's Triangle
- ✓ Smartie Activity and Reflection
- ✓ Chapter 1 Vocabulary foldable
- ✓ HW Section 1.1 Vocabulary, discussion, and activity
- ✓ HW Section 1.2 Vocabulary, discussion, and activity (need isometric paper)
- ✓ Logic puzzles
- ✓ Problem Solving Group Activity (Pros and Cons of Problem Solving)
- ✓ Ticket Out

Tuesday, September 1, 2009

- ✓ Article #1 Due/Communication Line
- ✓ Sierpinski's triangle due
- ✓ HW 1.1 and 1.2 due
- ✓ Chapter 1 foldable due
- ✓ Chapter 1 Reflection due
- ✓ Logic Puzzle due
- ✓ Smartie Reflection due
- ✓ Problem Solving Paper
- ✓ cm cube activity
- ✓ Mod 4 Art
- ✓ Pascal's Triangle Activity
- ✓ Rodringo Game
- ✓ Chapter 2 vocabulary packet
- ✓ Sets Activity with buttons
- ✓ HW 2.1 Vocabulary, discussion, and activity
- ✓ HW 2.2 Vocabulary, discussion, and activity
- ✓ HW 2.3 Vocabulary, discussion, and activity



- ✓HW 2.4 Vocabulary, discussion, and activity
- ✓Review for Test Chapters 1 and 2

Tuesday, September 8, 2009

- ✓Problem solving reflection due
- ✓cm cube activity due
- ✓Mod 4 art paper due
- ✓Pascal's Triangle due (2 sheets)
- ✓Turn in Observation 1
- ✓HW 2.1, 2.2, 2.3, and 2.4 due
- ✓Chapter 2 Reflection due
- ✓Turn in Observation 2
- ✓Take Test Chapters 1 and 2. You may use 1 3" by 5" card. Test will be in NIB 150

Tuesday, September 15, 2009

- ✓Turn in Observation 3
- ✓Math Curse
- ✓Addition and subtraction WS
- ✓Cross out singles game with prizes
- ✓Contig with prizes
- ✓Multiplication with colored disks and base ten blocks
- ✓Property activity and foldable
- ✓Arrow arithmetic worksheet
- ✓Addition and subtraction mat
- ✓Divisibility tests worksheet
- ✓partial addition worksheet
- ✓Learning Targets "I Can....." for Test 1 and 2

Tuesday, September 22, 2009

- ✓Learning Targets "I Can..." for Test 1 and 2 due
- ✓Arrow arithmetic worksheet due
- ✓Addition/subtraction mat due/work on problems
- ✓Observation 4 and 5
- ✓HW 3.1 vocabulary, discussion, and activity
- ✓HW 3.2 vocabulary, discussion, and activity
- ✓HW 3.3 vocabulary, discussion, and activity
- ✓HW 3.4 vocabulary, discussion, and activity
- ✓Over-the-hill subtraction



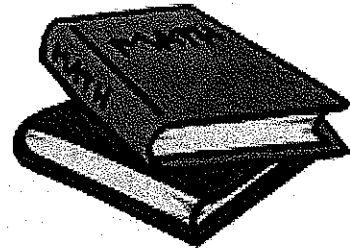
Tuesday, September 29, 2009

- ✓HW 3.1, 3.2, 3.3, and 3.4 due
- ✓Chapter 3 Reflection due
- ✓Observations 6 and 7 due
- ✓Egyptian multiplication and division WS
- ✓Lattice Multiplication

- ✓ Multiplication activity with triangle cards
- ✓ Pastures worksheet
- ✓ Indy 500 worksheet
- ✓ King of the Mountain WS
- ✓ Multiplication Patterns (small group work)
- ✓ 1-2-3-4 Worksheet
- ✓ Response to Intervention (RTI) article/activity
- ✓ Article #2 due next week

Tuesday, October 6, 2009

- ✓ Egyptian multiplication and division WS due
- ✓ Lattice Multiplication due
- ✓ King of Mountain WS
- ✓ Pastures WS due
- ✓ Indy 500 WS due
- ✓ 1-2-3-4 WS due
- ✓ Article #2 due
- ✓ Observation 8 due
- ✓ Balances and Tables WS
- ✓ Factor Tower WS
- ✓ Rectangle factory
- ✓ Pattern Block activity (triangles)
- ✓ HW 4.1 Vocabulary, discussion, and activity
- ✓ HW 4.2 Vocabulary, discussion, and activity
- ✓ HH 4.3 Vocabulary, discussion, and activity
- ✓ Review for Test Chapters 3 and 4



Tuesday, October 13, 2009 (Mid term)

- ✓ HW 4.1, 4.2, and 4.3 due
- ✓ Chapter 4 Reflection due
- ✓ Balances and Tables WS due
- ✓ Factor Tower WS due
- ✓ Observation 9 due
- ✓ Pattern Block activity due
- ✓ Take Test Chapters 3 and 4 in NIB 150. You may use 1 3" by 5" card

Tuesday, October 20, 2009

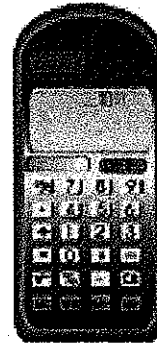
- ✓ Observation 10 due
- ✓ Sieve of Eratosthenes WS
- ✓ HW 5.1 Vocabulary, discussion, and activity
- ✓ HW 5.2 Vocabulary, discussion, and activity
- ✓ Geoboard fractions
- ✓ Dot paper fractions
- ✓ Article #3 due next week
- ✓ Learning Targets "I Can..." Chapters 3 and 4 Test WS

Tuesday, October 27, 2009

- ✓HW 5.1 and 5.2 due
- ✓Sieve of Eratosthenes WS due
- ✓Article #3 due
- ✓Learning Targets "I Can" due
- ✓Observation 11 due
- ✓Chapter 5 Reflection due
- ✓Geoboard fraction WS due
- ✓Dot paper fraction due
- ✓Kagan Fraction worksheet
- ✓Fractured Fractions WS
- ✓HW 6.1 Vocabulary, discussion, and activity
- ✓HW 6.2 Vocabulary, discussion, and activity
- ✓HW 6.3 Vocabulary, discussion, and activity

Tuesday, November 3, 2009

- ✓Kagan Fraction WS due
- ✓Fractured Fractions WS due
- ✓HW 6.1, 6.2, and 6.3 due
- ✓Observation 12 due
- ✓Tangram Fractions WS
- ✓Fraction Circles
- ✓Pattern block Fractions
- ✓Fraction Line-up with cards. Write a reflection
- ✓Fraction project due next week



Tuesday, November 10, 2009

- ✓Observation 13 due
- ✓Turn in pattern block fraction WS
- ✓Fraction Reflection paper (1 page)
- ✓Fraction Projects due. **Everyone will present to the class**
- ✓Review for Test Chapters 5 and 6

Tuesday, November 17, 2009

- ✓Observation 14 due
- ✓Take Test Chapters 5 and 6 in NIB 150. You may use 1 3" by 5" card with notes.

Tuesday, November 24, 2009 NO CLASS THANKSGIVING BREAK

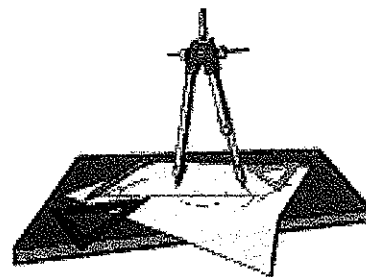
Tuesday, December 1, 2009

- ✓Observation 15 due
- ✓Decimal activities
- ✓HW 7.1 Vocabulary, discussion, and activity
- ✓HW 7.2 Vocabulary, discussion, and activity
- ✓HW 7.3 Vocabulary, discussion, and activity

- ✓HW 7.4 Vocabulary, discussion, and activity
- ✓High Noon activity
- ✓Proportion WS
- ✓Ratio WS
- ✓Learning Targets "I Can...." for Test 5 and 6

Tuesday, December 8, 2009

- ✓HW 7.1, 7.2, 7.3, and 7.4 due
- ✓Chapter 7 Reflection due
- ✓High Noon activity due
- ✓Proportion WS due
- ✓Ratio WS due
- ✓Decimal activities due
- ✓Learning Targets "I Can" for Test 5 and 6 due
- ✓HW 8.1 Vocabulary, discussion, and activity
- ✓HW 8.2 Vocabulary, discussion, and activity
- ✓Five representations of Algebra
- ✓Integers with 2-color counters
- ✓Negative exponents
- ✓Algebra lab Gear/Algeblocks
- ✓Peer review of journal
- ✓Review for Chapter 7 and 8 Test and Cumulative Final



Tuesday, December 15, 2009

- ✓HW 8.1 and 8.2 due
- ✓Chapter 8 Reflection due
- ✓Journal due for professor review
- ✓Take Test 7 and 9/Final Test in NIB 150. You may use 2 3" by 5" cards with notes.

Note: I reserve the right to make minor adjustments to this calendar as necessary.



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