CALIFORNIA STATE UNIVERSITY SAN MARCOS
COLLEGE OF EDUCATION
Fall 2009

EDMS 543 –Mathematics Education in Elementary Classrooms
Friday: 7:30 A.M. – 2:15 P.M. Center for Children & Family 007-A
CRN: 41453

Instructor: Sharon D. Whitehurst-Payne, Ph.D.
Phone: 619-944-1097 (cell); (760) 750-8551
E-Mail: swhitehu@csusm.edu
Office: University Hall – Room 206
Office Hours: Before or after class or by appointment

College of Education Mission Statement

The mission of the College of Education Community is to collaboratively transform public education by preparing thoughtful educators and advancing professional practices. We are committed to diversity, educational equity, and social justice, exemplified through reflective teaching, life-long learning, innovative research and on-going service. Our practices demonstrate a commitment to student-centered education, diversity, collaboration, professionalism, and shared governance. *(Adopted by COE Governance Community, October, 1997).*

California Teacher Performance Assessment (CalTPA)

Beginning July 1, 2008 all California credential candidates must successfully complete a state-approved system of teacher performance assessment (TPA), to be embedded in the credential program of preparation. At CSUSM this assessment system is called the CalTPA or the TPA for short.

To assist your successful completion of the TPA a series of informational seminars are offered over the course of the program. TPA related questions and logistical concerns are to be addressed during the seminars. Your attendance to TPA seminars will greatly contribute to your success on the assessment.

Additionally, COE classes use common pedagogical language, lesson plans (lesson designs), and unit plans (unit designs) in order to support and ensure your success on the TPA and more importantly in your credential program.

The CalTPA Candidate Handbook, TPA seminar schedule, and other TPA support materials can be found on the COE website provided at the website provided:
http://www.csusm.edu/coe/CalTPA/ProgramMaterialsTPA.html

COURSE DESCRIPTION

This course focuses on how children develop mathematical understanding; children's mathematical thinking; curriculum development; methods, materials, planning, organization and assessment in various elementary school curricula; and curriculum integration. Methods of cross-cultural language and academic development are integrated into the course.

Course Prerequisites
Admission to the Multiple Subject/CLAD Teacher Credential Program is a prerequisite.

Course Objectives

1. Using reflective writings, teacher candidates will provide ongoing evidence of good depth of understanding as well as application to the classroom, of chosen ideas from weekly assigned readings.

2. Using the interview process to apply the pedagogical content knowledge that is being learned in the course, teacher candidates will improve their use of inquiry for assessment purposes by focusing on students' thinking about mathematics to better understand elementary level students with different understandings and plan appropriate interventions.

3. By merging theory and practice in order to enable their future students to understand a mathematical topic and make connections among ideas related to this topic, teacher candidates will participate in the design, construction, and presentation of a reform-minded mathematical activity that focuses on students' mathematical thinking.

4. By compiling an effective list of resources on a predetermined math topic, teacher candidates will demonstrate evidence that they are able to provide students with access to a balanced and comprehensive mathematics curriculum that promotes and enhances student learning and understanding, and provides conceptual understanding of the logic and structure of mathematics, problem-solving skills, and computational and procedural skills.

5. By reflecting on and weaving what has been learned in the course during the semester regarding mathematics standards, reform-minded mathematics ideas, constructivist teaching and learning methods which enhance how children think and problem solve, teacher candidates will incorporate assessment into the learning process.

FOCUS QUESTIONS

These focus questions will serve as a guide throughout this course. They will direct our thinking and study as we learn more about teaching children mathematics. When you complete this course, you should have knowledge, understanding, and experiences that will help you answer these questions:

1. How do children develop mathematical understanding, competence, and confidence?
2. How does the culture of the classroom affect mathematical communication and learning?
3. How does the teacher help all children become successful in learning mathematics?
4. How will you continue to develop your mathematical understanding, confidence, and competence?
5. How does the teacher incorporate the State Mathematical Content Standards and assessment principles into lesson designs?

Unique Course Requirements

Students will be required to have access to children in grades K-6 for the purpose of conducting a series of math interviews to learn about how children think and problem solve.

Each student will be required to implement and videotape a lesson in his or her observation classroom.

Required Texts

- Van de Walle, J. A., Karp, Karen, and Bay-Williams, Jennifer (2010). *Elementary and middle school mathematics: Teachin developmentally* (7th ed). Boston: Pearson Education, Inc.
  ISBN-13: 978-0-205-57581-7
  The text has a companion Web site at: www.myeducationlab.com.

- California Department of Education (2000). *Mathematics framework for California public schools, kindergarten through grade twelve* (2000 Revised Ed.). Sacramento, CA: Author. This document can be found on the WWW at: http://www.cde.ca.gov/re/pn/fd/documents/mathematics-frame.pdf. The Web site contains a downloadable PDF file. There are also copies in the library for checkout**.**

You are required to access the following Web sites and materials for this course.

- National Council of Teachers of Mathematics (2000). *Principles and standards for school mathematics*. Reston, VA: Author. This document can be found at: http://standards.nctm.org/

- Star Test Blueprints for Standards Items (grades 2-7)
  http://www.cde.ca.gov/ta/tg/sr/documents/bpcstmath2to7.pdf

FURLOUGH STATEMENT

Due to the devastating effects of current budget crisis in California, I have been furloughed nine days each semester of this academic year, representing a 9.23% reduction in both workload and compensation. A furlough is an unpaid day off on a faculty member's regularly-scheduled workday. In order to satisfy legal and ethical requirements of the California Labor Code, I am required to submit formal certification that I will not work on my furlough days. I am prohibited from teaching, conducting scholarly research, consulting with students, responding to email or voicemail, providing assignment feedback, or participating in any CSU work-related activities on my furlough days. Furlough dates vary by professor; my Fall Semester furlough dates are August 31, September 14 & 28, October 12 & 19, November 22 & 23, December 5 & 11.

The CSU faculty agreed to take furlough days in order to preserve jobs for as many CSU employees as possible, and to serve as many students as possible, in the current budget crisis. The agreement that governs faculty furloughs acknowledges that "cuts of this magnitude will naturally have consequences for the quality of education that we can provide." Within the furlough context, I will make every effort to support your educational experience at CSUSM. Visit CSUSM Budget Central [http://www.csusm.edu/budgetcentral/] to learn about the state budget crisis and how it impacts your educational opportunities. To avoid the continued loss of higher education availability in California, exercise your right to voice an opinion. Contact information for state legislators and the governor are provided at Budget Central.

Authorization to Teach English Learners

This credential program has been specifically designed to prepare teachers for the diversity of languages often encountered in California public school classrooms. The authorization to teach English learners is met through the infusion of content and experiences within the credential program, as well as additional coursework. Students successfully completing this program receive a credential with authorization to teach English learners.
(Approved by CCTC in SB 2042 Program Standards, August 02)

Teacher Performance Expectation (TPE) Competencies

The course objectives, assignments, and assessments have been aligned with the CTC standards for the Multiple Subject Credential. This course is designed to help teachers seeking a California teaching credential to develop the skills, knowledge, and attitudes necessary to assist schools and district in implementing effective programs for all students. The successful candidate will be able to merge theory and practice in order to realize a comprehensive and extensive educational program for all students. You will be required to formally address the following TPEs in this course:

CTC Standards Alignment:

The course objectives, assignments, and assessments have been aligned with the CTC standards for Multiple Subjects Credential. The following standards are a primary emphasis in this course:

- **Standard 3**: Relationship between Theory and Practice
- **Standard 4:** Pedagogical Thought and Reflective Practice
- **Standard 5:** Equity, Diversity and Access to the Core Curriculum for All Children
- **Standard 8A:** Pedagogical Preparation for Subject-Specific Content Instruction by MS Candidates (Mathematics)

Teacher Performance Expectation (TPE) Competencies:

Primary Emphases:

- TPE 1a-Subject Specific Pedagogical Skills for MS Teaching (Mathematics)
- TPE 2-Monitoring Student Learning During Instruction

Secondary Emphases:

- TPE 3-Interpretation and Use of Assessments
- TPE 4-Making Content Accessible
- TPE 5-Student Engagement
- TPE 6a-Developmentally Appropriate Practices in Grades K-3
- TPE 6b-Developmentally Appropriate Practices in Grades 4-8
- TPE 6d- Developmentally Appropriate Teaching Practices for Special Education: Teaching the Special Education Population in the General Education Environment
- TPE 7-Teaching English Learners
- TPE 8-Learning About Students

- TPE 9-Instructional Planning
- TPE 10-Instructional Time
- TPE 11-Social Environment
- TPE 13-Professional Growth
- TPE 14-Educational Technology in Teaching and Learning

College of Education Attendance Policy

Due to the dynamic and interactive nature of courses in the College of Education, all students are expected to attend all classes and participate actively. At a minimum, students must attend more than 80% of class time, or s/he may not receive a passing grade for the course at the discretion of the instructor. Individual instructors may adopt more stringent attendance requirements. Should the student have extenuating circumstances, s/he should contact the instructor as soon as possible. *(Adopted by the COE Governance Community, December, 1997).*

If you miss one class session (2 hours and 45 minutes) or are late (or leave early) more than two sessions, you cannot receive a grade of "A". If you miss one and a half class sessions, your **highest** possible grade may be a "C+". Attendance will be taken for both half of the daily session. Your attendance and personally signing in and remaining relates to your honesty and integrity.

If possible, please discuss with the instructor any extenuating circumstances that will cause you to miss class prior to your absence. Attendance will be taken at each class session. Furthermore, grades on assignments turned in late will be lowered unless **prior arrangements** have been made with the instructor. Absence is no excuse for not turning in assignments, as they may be sent electronically (e-mail) to the instructor.

Students with Disabilities Requiring Reasonable Accommodations

Students must be approved for services by providing appropriate and recent documentation to the Office of Disable Student Services (DSS). This office is located in Craven Hall 5205, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Students authorized by DSS to receive reasonable accommodations should meet with their instructor during office hours or, in order to ensure confidentiality, in a more private setting.

Course Requirements and Grading Standards

<u>ASSIGNMENTS</u> (The relative weight for each assignment is indicated as a percentage of the total course grade)

Detailed assignment guidelines and scoring rubrics (course packet) will be provided electronically to each student for all written assignments below. The course calendar/topics schedule is attached to this syllabus.

Reading Assignments/Reflections including Standards and Assessment Activities (20%)

Using the mandatory assigned readings, your experiences from your tutoring and observations, each week students should clearly articulate your thoughts on how you might **specifically apply** what you learned to how you plan to teach mathematics to your students. Please do not repeat verbatim from the readings. In addition, students will work in groups to present the standards for a particular grade level after readings.

Student Interviews (20%)

You will conduct two different student interviews based on questions in Part 3 of this document. For each interview, you will pose mathematical problems to any one student at a predetermined grade level. The purpose is for you to begin thinking about students' mathematical understanding, to learn how to effectively pose questions, and interpret the meaning of students' answers, and to provide you with an opportunity to interact with students.

Lesson Design (includes Technology, Reference list and Assessment) (40%)

You will first compile resources on a predetermined mathematical topic (10%) and then design a lesson that you will present and videotape in an elementary class (25%). The purpose of this activity is to help you learn how to design effective mathematical activities, to provide you with an opportunity to begin compiling mathematical resources, and to provide an opportunity for you to practice teaching mathematics in an authentic classroom setting. You will include a rubric as an assessment tool for your lesson design (5%) .

Individual Creative Projects (10%)

Literature book/Creative project**:** Develop (conceptualize and draft) a children's literature book/creative project that can be used to teach a mathematics concept and present it to the class. As a part of your personal and professional growth, you will begin to understand the context of how to design materials that provide access to all students and stimulate students' imagination in facilitating the learning of mathematics.

Active Attendance, Participation, Collaboration, and Professionalism (10%)

Defined as actively engaging and contributing in **all** class discussions and activities, students will be evaluated **daily**. Correspondingly attendance is an essential ingredient. [Deviations must be discussed with the instructor.] A prime example of the manifestation will occur during the presentations on the standards. A positive attitude is an important component for establishing the definition for active participation and collaboration. In addition, the student will be expected to exhibit professional behavior and demeanor at all times.

All University Writing Requirement

All CSU students must demonstrate competency in writing skills as a requirement for graduation. At Cal State San Marcos, students complete the graduation writing assessment through the All-University Writing Requirement. This requirement mandates that every course at the University must have a writing component of at least 2,500 words (approximately 10 pages). **The writing requirement for this course will be met through weekly writings, student interview analyses, and the creation of a lesson plan and mathematical resources.**

CSUSM Academic Honesty Policy

Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy. All written work and oral assignments must be original work. All ideas/materials that are borrowed from other sources must have appropriate references to the original sources. Any quoted material should give credit to the source and be punctuated with quotation marks.

Students are responsible for honest completion of their work including examinations. There will be no tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole."

Incidents of Academic Dishonesty will be reported to the Dean of Students. Sanctions at the University level may include suspension or expulsion from the University.

Plagiarism:

As an educator, it is expected that each student will do his/her own work, and contribute equally to group projects and processes. Plagiarism or cheating is unacceptable under any circumstances. If you are in doubt about whether your work is paraphrased or plagiarized see the Plagiarism Prevention for Students website http://library.csusm.edu/plagiarism/index.html. If there are questions about academic honesty, please consult the University catalog.

GRADING SCALE: Grades for this course will be based on the following grading scale:

A..... …95% - 100 %
A-……..90% - 94%

B+……..88% - 89%
B..... 83% - 87 %
B-…….. ….. 80% - 82%

C+……..78% - 79%
C..... 73% - 77 %
C-……..70% - 72%

Exemplary "A" Students:
- Demonstrate serious commitment to their learning, making full use of the learning opportunities available and searching out the implications of their learning for future use.
- Complete all assignments thoroughly and thoughtfully toward the goal of developing in-depth math projects.
- Make insightful connections between all assignments and their developing overall understanding of mathematical concepts; they continually question and examine concepts in a genuine spirit of inquiry.
- Students show a high level of achievement of course goals.

"B" Students:
- Simply comply with the course requirements and expectations.
- Complete all assignments, usually thoroughly and thoughtfully.
- Usually connect assignments to their developing overall understanding of mathematical concepts; may be satisfied with accepting their learning as it is received without deeply examining concepts or seeking a higher level of understanding.
- Students show reasonable achievement of course goals.

"C" Students:
- Demonstrate an inconsistent level of compliance to course requirements and expectations.
- Complete all assignments with limited thoroughness and thoughtfulness.
- Make limited connections between assignments and their developing overall understanding of mathematical concepts; may not be open to examining concepts on a deeper level and may actually dismiss the importance of such inquiry.
- Attempt, but show limited progress in achieving course goals.

Remember! You are required to maintain a B average (3.0 GPA) in your teacher education courses to receive a teaching credential in the State of California.

Lesson Design Assignment

EDMS 543

	Developing	Nearly Meets	Meets	Exceeds
TPE 1, 1a Subject Specific Pedagogical skills for MS Teaching Assignment (Teaching Mathematics in a Multiple Subject Assignment)	Candidates' lesson plan and presentation demonstrates little to no understanding of how to teach the state adopted academic content standard in mathematics	Candidates' lesson plan and presentation demonstrates some understanding of how to teach the state adopted academic content standard in mathematics	Candidates' lesson plan and presentation demonstrates considerable understanding of how to teach the state adopted academic content standard in mathematics	Candidates' lesson plan and presentation demonstrates exceptional understanding of how to teach the state adopted academic content standard in mathematics
TPE 4 Making Content Accessible	Candidates' lesson plan and presentation will demonstrate little to no understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidates' lesson plan and presentation will demonstrate some understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidates' lesson plan and presentation will demonstrate considerable understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidates' lesson plan and presentation will demonstrate exceptional understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum
TPE 6, 6a, 6b Developmentally Appropriate Teaching Practices – Grades K-3 & 4-8	Candidates' lesson plan and presentation will demonstrate little to no understanding in the use of developmentally appropriate teaching practices.	Candidates' lesson plan and presentation will demonstrate some understanding in the use of developmentally appropriate teaching practices.	Candidates' lesson plan and presentation will demonstrate considerable understanding in the use of developmentally appropriate teaching practices.	Candidates' lesson plan and presentation will demonstrate exceptional understanding in the use of developmentally appropriate teaching practices.

Secondary TPE's for this Assignment

- TPE 2 – Monitoring Student Learning During Instruction
- TPE 5 – Student Engagement
- TPE 9 – Instructional Planning
- TPE 10 – Instructional Time
- TPE 11 – Social Environment

Lesson Resources Assignment

EDMS 543

	Developing	Nearly Meets	Meets	Exceeds
TPE 4 Making Content Accessible	Candidates' resources and descriptions will demonstrate little to no understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.	Candidates' resources and descriptions will demonstrate some understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.	Candidates' resources and descriptions will demonstrate considerable understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.	Candidates' resources and descriptions will demonstrate exceptional understanding of how instructional resources can help provide all students with access to a balanced and comprehensive curriculum.

Secondary TPE's for this Assignment

- TPE 1a – Subject-Specific Pedagogical Skills for MS Teaching Assignments (Teaching Mathematics in a MS Assignment)
- TPE 5 – Student Engagement

Student Interviews Assignment

EDMX 543

	Developing	Nearly Meets	Meets	Exceeds
TPE 1, 1a Subject Specific Pedagogical skills for MS Teaching Assignment (Teaching Mathematics in a Multiple Subject Assignment)	Candidate's assessment and recommendations from the student interview demonstrates little to no understanding of how to teach the state adopted academic content standard in mathematics	Candidate's assessment and recommendations from the student interview demonstrates some understanding of how to teach the state adopted academic content standard in mathematics	Candidate's assessment and recommendations from the student interview demonstrates considerable understanding of how to teach the state adopted academic content standard in mathematics	Candidate's assessment and recommendations from the student interview demonstrates exceptional understanding of how to teach the state adopted academic content standard in mathematics
TPE 2 Monitoring Student Learning During Instruction	Candidate's assessment and recommendations from the student interview demonstrates little to no understanding of how to monitor student learning and how to effectively make use of this information when teaching.	Candidate's assessment and recommendations from the student interview demonstrates some understanding of how to monitor student learning and how to effectively make use of this information when teaching.	Candidate's assessment and recommendations from the student interview demonstrates considerable understanding of how to monitor student learning and how to effectively make use of this information when teaching.	Candidate's assessment and recommendations from the student interview demonstrates exceptional understanding of how to monitor student learning and how to effectively make use of this information when teaching.
TPE 3 Interpretation and Use of Assessments	Candidate demonstrates little to no understanding of how to effectively assess students' content knowledge through the use of student interviews.	Candidate demonstrates some understanding of how to effectively assess students' content knowledge through the use of student interviews.	Candidate demonstrates considerable understanding of how to effectively assess students' content knowledge through the use of student interviews.	Candidate demonstrates exceptional understanding of how to effectively assess students' content knowledge through the use of student interviews.
TPE 4 Making Content Accessible	Candidate's recommendations from the student interview demonstrates little to no understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidate's recommendations from the student interview demonstrates some understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidate's recommendations from the student interview demonstrates considerable understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum	Candidate's recommendations from the student interview demonstrates exceptional understanding in the use of pedagogical strategies that will provide all students access to the mathematics curriculum

Secondary TPE's for this Assignment

- TPE 5 – Student Engagement
- TPE 6, 6a, 6b – Developmentally Appropriate Practices in Grades K-3 & Grades 4-8.
- TPE 8 – Learning about Students and TPE 9 – Instructional Planning
-

Date	Topic and Assignments (Tentative)	Readings
Session 1	Introduction to Mathematics Education: Developing Mathematical Understanding Characteristics of Effective Classrooms: Overview of Instructional Practices Problem Solving and sample alternative algorithms	1 – Teaching Mathematics in the Era of NCTM Standards 2 - Exploring What It Means to do Mathematics 3 – Teaching Through Problem Solving 6– Teaching Mathematics Equitably to All Children Appendices A & B
Session 2	CA Mathematics Content Standards (CA and NCTM) **Group presentations of assigned standards** Designing Instructions Assessment- Connecting Instruction with Assessment (Sample Interview) **Reflection on Standards-Lesson Designs-Assessment**	This document is available on: http://www.cde.ca.gov/re/pn/fd/documents/mathematics-frame.pdf. 4-Lesson Designs (Problem Based Classroom) 5- Building Assessment into Instruction Appendices A & B Article on teaching mathematics equitably to all students per student's choice
Session 3	Number Concepts and Operations **Number Concepts interview due** **Reflection**	8 - Developing Early Number Concepts and Number Sense 9 - Developing Meanings for the Operations 10-Helping Children Master the Basic Facts
Session 4 ****	Place Value and Whole Number Computation **Number Sense and Place Value Interview,** **Either Addition/Subtraction Interview OR** **Multiplication/Division Interview (Not both) due** **Place Value Lesson Presentation** **Whole Number Computation Lesson Presentations** **Reflection**	11 - Whole-Number Place-Value Development 12 - Strategies for Whole Number Computation
Session 5 ****	Fractions Constructing Understanding of Fractions; Fraction Computation **Fraction interview due** **Fraction lesson presentations** **Reflection**	15 -Developing Fraction Concepts 16 Developing Strategies for Fraction Computation 17 Developing Concepts of Decimals and Percents 18 Proportional Reasoning
Session 6 ****	Measurement & Geometry- Customary and Metric system **Measurement and/or Geometry interviews due** **Measurement and/or Geometry lesson presentations** **TPE workshop** **Reflection**	19 -Developing Measurement Concepts 20 – Geometric Thinking and Geometric Concepts
Session 7 ****	Probability & Data Analysis – Developing meaningful experiences Exploring concepts of chance, simple and independent events **Data Analysis & Probability interview due** **Probability & Data Analysis lesson presentations** **Reflection**	21 – Developing Concepts of Data Analysis 22 - Exploring Concepts of Probability
Session 8 ****	Algebraic Reasoning and Functions – Exploring patterns, variables, and equations. Developing function concepts. Algebraic concepts will be discussed weekly. **Algebra interview due** **Algebra lesson presentations** **Presentation of Creative Projects**	14– Algebraic Thinking: Generalizations, Patterns and Functions Summary 23 – Developing Concepts of Exponents, Integers, and Real Numbers
Technology	This competency will be infused throughout the course. Use this chapter as an ongoing reference.	7 – Technology & School Mathematics

Part 2 – Course Assignments and Rubrics

STUDENT INTERVIEWS GRADING RUBRIC: EDMS 543

How are the interview reflections to be completed?

For each of three interviews, write a meaningful reflection (no more than 2 pages) on:

1) the interview process and the results of your interview, as well as

2) specific, prescriptive recommendations that you would give your interviewee in light of his/her current level of mathematical understanding. Develop the reflection with an eye to helping your interviewee in terms of making effective instructional decisions for him/her.

The reflection should not exceed two pages, and it **MUST** answer the following two questions:

1. **What specifically did you learn about this child's mathematical understanding?** You should provide ample evidence of knowledge gained from this experience. Be very specific about what it is that your interviewee understands or does not understand and how he/she demonstrated this understanding or lack of understanding.
2. **What specifically would you do for this child if you were his/her teacher?** This part of the reflection is clearly related to what was learned about the child by way of the interview. Be very specific and clear about what you would recommend as a follow-up.

For specific details on both of these two discussion points, please refer to "Student Interviewing Guidelines" in your course packet.

As you format your reflection, please bullet the two questions above you are responding to very clearly.

How are the assignments assessed?

Each interview will be assessed using a generic 5-point scoring rubric and should:

- reflect good depth of understanding of the child's current mathematical level based on the interview problems.
- give specific and clear instructional recommendations for the child.
- be free of grammatical or typographical errors.
- be word processed

5 – Reflection shows good depth of understanding as well as clear, specific recommendations. The reflection is free of grammatical or typographical errors. Both sections reflect the criteria stated above.

4 – Reflection shows general depth of understanding and clear, specific recommendations. There may be a very minor grammatical or typographical error. One of the sections is slightly weak on one of the criteria listed above.

3 - Reflection shows moderate depth of understanding and recommendations are adequate. There may be few grammatical or typographical errors. Both sections are slightly weak or one is very weak.

2 - Reflection shows little depth of understanding and recommendations are not specific and clear. There may be considerable grammatical or typographical errors. Both sections are substantially weak.

1 – An attempt at a reflection was submitted. Your name is on the paper.

0 - No assignment was turned in.

WEEKLY READINGS GRADING RUBRIC: EDMS 543

How are the weekly assignments that are readings to be completed?

Write a meaningful one-page reflection on the assigned readings for the week based on two ideas that impressed you from the readings. Develop that reflection with an eye to demonstrating that you both read and understood the readings. Do not quote or explain the readings; paraphrase and critically analyze only. Do not write a separate reflection for each idea! Occasionally a reading may be assigned from a source other than the course textbook.

Each reflection should not exceed one page, and it **MUST** answer the following two questions:

1. **What did I learn from the readings?** This paragraph is in your own words and is clearly written with a distinct description of two important/impressive ideas that you learned from the readings. It provides ample evidence that you both read and synthesized the material.

2. **How am I going to use what I learned in teaching children mathematics?** This paragraph is clearly related to what was learned in the articles to classroom practice. The relationship of your two chosen ideas to the classroom should be evident in the description of teaching practice, curriculum, classroom management, and/or developing students' mathematical thinking.

As you format your reflection, please bullet the two questions above you are responding to very clearly.

How are the readings assignments assessed?
The weekly assignments that are readings will be assessed using a generic 5-point scoring rubric and should:

- reflect good depth of understanding of the two chosen ideas from the assigned material as well as application to the classroom.
- be free of grammatical or typographical errors.
- be word processed according to specific directions given in the course syllabus under "Weekly Assignments".

5 – Reflection shows good depth of understanding of the two chosen ideas from the assigned material as well as application to the classroom. The reflection is free of grammatical or typographical errors. Both sections reflect the criteria stated above.
.

4 – Reflection shows general depth of understanding of the two chosen ideas from the assigned material as well as application to the classroom. There may be a very minor grammatical or typographical error. One of the sections is slightly weak on one of the criteria listed above.

3 – Reflection shows moderate depth of understanding of the two chosen ideas from the assigned material as well as application to the classroom. There may be few grammatical or typographical errors. Both sections are slightly weak or one is very weak.

2 – Reflection shows little depth of understanding of the two chosen ideas from the assigned material as well as application to the classroom. There may be considerable grammatical or typographical errors. Both sections are substantially weak.

1 – An attempt at a reflection was submitted. Your name is on the paper.

0 – No assignment was turned in.

STUDENT INTERVIEWING GUIDLINES

EDMS 543

These assignments are designed to give you an opportunity to focus on a single child's thinking about mathematics. It will also help you to improve your use of inquiry for assessment purposes and to better understand elementary level students with different understandings.

You should interview one child. You are responsible for writing up a follow-up reflection. Papers should be submitted together**, along with the student work** (no names on the work, please).

Interviews will be directed toward primary (K-2) or upper elementary (3-5) students.

Be aware that each interview option is grade band specific and your interviewee should be in that grade range. The next two interviews are left to your choice from among seven mathematical content areas. By the end of the course, you should have turned in 2 student interviews in all. Interviews are due according to a predetermined schedule attached to the syllabus.

BEFORE THE INTERVIEW

- You should arrange with a teacher (or parent of a child you know) to interview one child for 20-30 minutes in a quiet place outside of the classroom, if possible (or at his/her home).

- Ask the teacher (or parent) what manipulatives the child has experience using and see if it is possible to have these materials available during the interview. You will always want paper and pencil and the appropriate manipulatives for each interview. Be considerate of the type of manipulative you give the child for each interview. For example, you would not want to give the child marbles as the manipulative if the interview questions deal with "pizza". Or you would not want to give the child coins if the interview questions deal with sharing cookies. **Do not give food items such as gum, cookies or candy for manipulatives, as these may be distracting to the child as well as prohibited in his/her diet or culture. You can always, however, make construction paper cut-outs of these items if they are referred to in the interview questions. Be creative and discriminating about manipulatives for each interview!**

- Develop a list of questions you may want to use if the child is not forthcoming with a response. For example, if the child says, "I just knew it", you might respond with, "What did you think about first?" or, "If you were helping a friend, how would you explain what you did?"

DURING THE INTERVIEW

Work with the child individually. Begin the interview by informing the child that you will be giving him/her a series of math problems to solve and that you are interested in his/her thinking process and in the strategies s/he uses to solve these problems. Tell the child that s/he can solve the problems in any way s/he wants. Introduce the child to the manipulatives available and inform him/her that s/he may use them if s/he wishes.

Interviewing Guidelines

You should provide the child with a written copy of each problem from the interviews you received in class--only give the child one written problem at a time (not the entire interview). Orally read each problem along with the child and provide him/her with sufficient time to complete each problem.

After the child answers each problem, you should ask a variety of probing questions that will help you to better understand the child's thinking and to assess his/her mathematical understanding. **You will want to note the questions you ask and the child's responses,** and it may be necessary to ask the child to wait while you are writing--it is OK to ask the child to wait. **You should not tape-record/video-tape the interview without parental permission.**

During the interview, be sure to consider the following:

The best thing you can be is genuinely curious. Remember, the point of the interview is to discover how the child thinks--**NOT** to guide the child to the correct answer.

Be careful to respond similarly to correct and incorrect answers. Be curious about all solution strategies-not just the ones leading to incorrect solutions.

Your primary role is to listen. Make sure you allow enough "wait time"--children need time to think before answering.

The following strategies are recommended to preserve the dignity of the learner.

1. Attempt to first find out if the child can solve a given problem on his/her own without support.

2. If the child is having difficulty with a given problem, provide support such as saying "how might drawing a picture of this problem help you?" or "how might these manipulatives help you think through this problem?"

3. If after providing support the child is still unable to solve the problem, it is very important to provide the child with a follow-up question that still relates but that the child will be able to solve. This might entail making the numbers in the problem smaller or more manageable.

These strategies also provide you with determining if the child can solve the problem on his/her own, with support, or not at all, and the child still feels good about his/her ability.

If you end an interview early for any reason, be sure to discuss your reasoning in your write-up.

AFTER THE INTERVIEW

You should write a reflection (no more than two pages in length) that includes a clear discussion and development of **each** of the two bulleted points under the "Grading" section that follows.

NOTE: PLEASE ANSWER THESE QUESTIONS THOROUGHLY!! FULL CREDIT WILL NOT BE GIVEN UNLESS BOTH QUESTIONS ARE ADDRESSED!!

GRADING

Each interview will be graded according to a 5-point scoring rubric. **The grading rubric will detail and describe the grading criteria and levels 0 - 5**. Specifically, I will be looking for nicely written papers that clearly and specifically express what you learned about:

What specifically did you learn about this child's mathematical understanding? Here you will want to make claims about the mathematics your student understands or doesn't understand. I am looking for more of an explanation than just your student could or couldn't solve a particular problem. You should briefly explain what the child said and did for each interview question.

What specifically might you do for this child if you were his/her teacher? Here you might want to include discussions about such issues as curriculum, instructional strategies, etc. You **must give at least 2 examples of problems or tasks you would give this child as a follow-up to your assessment of this child's current level of mathematical understanding in relation to the interview questions.** For example, it is not enough to say that you would give your interviewee more fraction word problems, or would add manipulatives to this child's mathematical activities. Write out specific fraction word problems and the specific manipulative(s) you would use and in what context you would use them if these are your recommendations for your interviewee.

***NOTE:** When you turn in your write-up, you should also **include the child's written work** (if it exists) with the child's name removed. If it does not exist, please explain why. For all interviews, submit your reflection with the child's work. Paper-clip (do not staple) this packet together.

****Interviews are due the class session that relates to the given content area in the interview (refer to syllabus).**

*****Please see me if you need clarification on any aspect of the interview assignments.**

CLASSROOM PRESENTATION GUIDELINES:

EDMX 543

PURPOSE

The purpose of this activity is to assess your ability to create and teach a **reform-minded** mathematics lesson designed for a stated grade or grade-level span, e.g. K-2, 3-4, etc. (your choice). That is, students will participate in the design, construction, and presentation of a **reform-minded mathematical activity** that focuses on **children's mathematical thinking**. In class, we will collectively determine some of the key elements to reform-minded teaching methods which enhance children's mathematical thinking. **For this assignment, your goal should be to merge theory and practice in order to enable students to understand a mathematical topic and make connections among ideas related to this topic. In addition, your activity should promote student engagement, curiosity, flexibility, and persistence in solving mathematical problems.**

Goals related to your participation in this activity include learning how to distinguish reform-minded lessons from traditional approaches, becoming acquainted with resources to support your teaching of mathematics and where to access those resources, and exploring the decision-making teachers experience when developing lessons for their students. You will be provided with an opportunity to practice teaching mathematics while you are learning about reform-minded mathematics in class. In addition, you will receive copies of your peers' lessons in an effort to begin a mathematics resource file.

Who?

Students will work in small groups across grade levels of approximately three individuals on a particular mathematical topic (options for topics and group member decisions will be determined in class). Each student will do his/her work but will share ideas with the group in order to generate additional ideas and to explore the spectrum of concepts.

Plan of Action:

When planning your activity, you should try to be creative while effectively incorporating the key components of the reform ideas into the activity. You should consider creating an integrated lesson that incorporates another content area such as language arts, social studies, science, etc. This integrated approach to teaching is very effective both in terms of student learning and classroom time considerations. **Warning:** Be careful not to lose sight of the mathematical issues in your fun activity!

Lesson Plan/presentation and Resources Guidelines
Your group should:

- Decide on a specific mathematical objective you want your students to learn. You must create a **unique activity** on which to base your lesson plan. It should not be taken directly from a textbook or any other elementary mathematics resource. **It should be your own original creation and design.**
- Be certain that your activity does not lose sight of your mathematical objective. Continually ask, "What will all students be able to learn from this activity?" The answer to this question should be in alignment with your objective(s).
- Make certain that your lesson is in concert with *The California Mathematics Content Standards* **document. (You certainly need to make good use of this document when you design your lessons.**

As future educators, all your mathematics lessons **must** always align with these standards.)

ABOUT INSTRUCTIONAL RESOURCES FOR YOUR LESSON TOPIC…

Investigate what information is available that relates to your topic. You are required to compile a thorough, effective list of such resources to demonstrate evidence that you are able to provide students with access to a balanced and comprehensive mathematics curriculum. A balanced program of mathematics instruction consists of interrelated components that promote and enhance student learning and understanding: conceptual understanding of the logic and structure of mathematics, problem-solving skills in mathematics, and computational and procedural mathematical skills. A balanced mathematics curriculum also purports to interrelate ideas and information within and across mathematics and other subject area.

You will learn more about and use appropriate computer-based technology to facilitate the teaching and learning process. These competencies are an extension and reinforcement of what you have learned in Education 422.

Technology resources that may facilitate the teaching and learning process are to be researched and analyzed. These include but are not limited to relevant software, multimedia, computer-assisted instruction, and productivity and presentation tools. You may want to consult with your master teacher for ideas regarding technologies that would add value to teaching your elementary mathematics lesson. Your goal as a professional educator is to consider the content you will teach and be able to select the appropriate technological resources to support and enhance learning for **all** students in relation to their experiences and level of academic accomplishment. All software, multimedia, presentation tools etc., must be actually reviewed by you as a condition for including them in your resources list. It is not enough to just list them because you have "heard about it".

Children's literature relating to mathematical ideas is very abundant and may be accessed in libraries, teacher supply store, bookstores, and on-line (amazon.com, etacuisenaire.com, mathsolutions.com, e.g.). Don't forget your master teacher! Your resources page should list several examples of children's literature related to your topic. You must actually have physical access to each piece of children's literature you cite in your resources list. It is not enough to just list them; you must have personally examined and analyzed each example in your list for relevance and appropriateness to your topic.

Professional journal articles such as those published by the National Council of Teachers of Mathematics (NCTM) are to be accessed. However, your resources must reflect proper form. Please consult the APA manual for proper citation form. The CSUSM library carries *Teaching Children Mathematics*.

For example, *Teaching Children Mathematics* or *Arithmetic Teacher* journals can offer a wealth of information in your math strand and topic. The NCTM also has numerous publications and resources that would be helpful to you in designing your activity. Be certain to seek out other mathematics or education journals that would be relevant to your assignment. Remember that you are also required do a thorough search on the Internet to locate other resources, including but not limited to, elementary mathematics journal articles related to your topic.

Teacher reference books and support materials include mathematics textbooks and other pedagogical Books relating to elementary mathematics content areas. An example is *Navigating Through Geometry in Grades 3-5* by M. K. Gavin et al (NCTM). Other examples are the Van de Walle text as well as the *Mathematics Framework for California Public Schools*.

*Critically and carefully analyze **any and all resources** accessed, including those from the Internet. Keep in mind that you want to align your lesson with reform-minded mathematics methods and resources which reflect those attributes of effective teaching and learning as discussed in class. Your resources must be cited in proper APA for. Refer to the Publication Manual of the American Psychological Association, 5th edition.*

Other sources to gather ideas from: the San Diego County Office of Education, teacher supply stores, and of course, your cooperating teacher.

Each group member will **present** the lesson activity that has been created to a class of elementary school children (preferably in your cooperating teacher's classroom) and should not be any longer than 20 -30 minutes in duration **from beginning to closure**. Each group member will be responsible for presenting the lesson activity in his/her own classroom on DVD for 10 – 15 minutes. Select the section you would like to share with your peers. Be prepared to discuss the results of your lesson with your classmates the day your lesson topic is due according to the course syllabus. Your lesson will be different from your peers, either by the day or by the grade level.

THE DAY YOUR LESSON PLAN AND RESOURCES ARE DUE

On the day of your presentation topic is due (refer to the course syllabus), you will need to turn in a nicely prepared document which will include the lesson design for your activity. You are to use the lesson design used by this university. Your lesson design packet must include a separate "RESOURCES" PACKET **consisting of all teacher support materials; children's literature; journal articles; software and multimedia; and Web sites that relate to your topic.** These should be in proper APA bibliographic citation format**.**

1. **Children's mathematical software and/or support technologies**
2. **Annotated WWW sites which you used and/or which would be of interest to your peers**
3. **Children's literature dealing with mathematics**
4. **Relevant journal or research-related articles**
5. **Teacher support materials/reference books**

If you prepare a packet of materials that is filled with important information, and we share that information in class, then you will each have a wealth of information on some of the important mathematical topics for use when you teach! Your support materials must be complete enough to support replication of the lesson you present.

Grading Criteria

In this assignment, the lesson design packet will be worth 40% of the total grade for the course. This is an opportunity for you to learn and grapple with such things as where to find mathematics resources, how to prepare lesson plans and what to consider when writing a lesson design, the challenges of teaching your mathematics lesson, etc. ***The grading rubric for the lesson plan and activity will be based on the degree that the following criteria are met:***

1. Your lesson plan and activity should reflect **reform-minded teaching and learning methods** whereby **all** children learn mathematical concepts and procedures with understanding, and reflect and communicate their knowledge as they engage in interesting and problematic tasks. In addition, your lesson must adhere to *The California Mathematics Content Standards*. The California standards addressed by your lesson plan and activity should be listed by number and annotation in your lesson design.
2. A complete, detailed, informative **lesson design packet** that should specify, among other things, grade level, content area, specific goals, learning objectives, time frame, materials used, activity procedures, provide for closure/debriefing, special needs accommodations, and assessment methods as stated in the universal lesson design. Please ensure that all lesson design components are well developed. In addition, all resources components must be included in as discussed above.

3. The lesson design should follow **SDAIE methods of instruction**, including accommodation for cultural and linguistic diversity (English language learners) as well as special needs learners (students with learning and physical challenges as well as early finishers). Your lesson design should provide for differentiated teaching strategies to meet the specific mathematical needs of special populations. You must provide differentiated learning accommodations for your students!

4. A clear presentation of the lesson design that **focuses on children's mathematical thinking where** they can build new mathematical knowledge through problem solving, provide rationales for their solutions, make connections among and between mathematical ideas, and eventually are able to apply and generalize what they have learned to new situations.

5. **Assessment rubrics** for student assessment/evaluation must be included in your activity and lesson design. Be specific as to how you will determine that each student has "arrived" at his/her intended destination--your goals and objectives for them in the lesson. You should also include formative (ongoing) **assessment rubrics** that you will use during your activity/lesson. Therefore, both formative and summative assessment rubrics must be included in your activity and lesson design.

Your lesson should be creative and unique, should make good use of what we know about how students think (within the context of your chosen topic); is grade appropriate, is well thought out and prepared; is sensitive to the needs of all students; and reflects reform-minded teaching methods. This is a time for you to try things out in the execution of your lesson design activity. Your classmates may provide you with feedback for your information only.

** **THE LESSON DESIGN IS DUE THE DATE THAT TOPIC IS DUE (REFER TO COURSE SYLLABUS ABOVE).**

Part 3
Student Interview Practice

You will need to have manipulatives and paper available for this interview.

Recommended grade level: K-2

1. Can you show me 23 counters (cubes, beans, etc)?

2. You have 3 packages of pencils. There are 8 pencils in each package. How many pencils do you have altogether?

3. You have 8 seashells. Your friend wants to give you some more seashells so that you will have 17 seashells. How many more seashells should your friend give you?

4. A large mini-van (or bus) is taking 19 children to the park for a picnic. The teacher tells the driver that each child will have to **either** share a seat with one other child, or share a seat with two other children. The mini-van has 7 seats. How many children will have to sit 3 to a seat, and how many children will have to sit 2 to a seat?

OPTIONAL:

5. You have some money in your piggy bank. You found a dime (10 cents) on the sidewalk. You put the dime in your piggy bank and now you have 25 cents in your piggy bank.
How much money was in your piggy bank before you put the 10 cents in?

Number Sense and Place Value Interview
EDMS 543

GRADE LEVEL: K-2

- Be sure to choose a child that can count to at least 60.
- You should provide your students with paper and pencil.
- You will need to have access to Unifix™ cubes and/or base-ten blocks.

Place 32 cubes out on a desk (in stacks/groups of 10).

1. "How many cubes are there on this table?"
   (notice how the student counts the total number…does he/she count by 10s? does he/she recognize that he/she needs 3 sets of 10 to make 30, etc?

Don't remove the 32 cubes from the last question. Also, make sure you have several stacks of 10 cubes available on the table for this question.

2. "Show me 52 cubes."
   (notice if the student adds by sets of 10 or whether he/she counts individual cubes.)

Don't remove the 52 cubes from the last question. Show the student the number 52 written on a sheet of paper.

3. a) "What does the five mean in this number?" (showing the student the written number, "52". "Can you show me with the cubes?"
   b) "What does the two mean in this number?" (showing the student the written number, "52". "Can you show me with the cubes?"

Place cubes on a desk in stacks of 10 as well as loose.

4. Max has 38 comic books and for his birthday his father gave him 25 more comic books. How many comic books does Max have now?

<u>Optional</u>

With NO manipulatives and NO paper & pencil (for the student to do in his/her head).

5. Allyson has 24 pennies in her piggy bank. She found 35 more pennies and put them in her bank. How many pennies does she have in her bank now?
   (Notice if the student uses 10s in his/her mental computations. If the student tries to count by 1s, notice if he/she starts with the 24 or 35).

Addition/Subtraction Interview
EDMS 543

GRADE LEVEL: 1-3

For this interview, you should provide students with:

- Paper and pencil
- Something to count with (Unifix™ cubes, base 10 blocks, etc)

1. Nicole ordered 45 cupcakes for her birthday. At the party, her guests ate 27 cupcakes. How many cupcakes does Lucy have left?

   * if the child cannot solve this problem, try the same problem with smaller number such as 12, 7

   ** if the child cannot solve the problem with the easier numbers, skip problem 2 and problem 3.

2. Aaron loves to make cookies. He had 14 cookies on a plate. His mom gave him some more cookies and now Aaron has 21 cookies. How many cookies did his mom give him?

You need to write problem 3 vertically on a piece of paper that you can hand to the student.

3. 43 ← if the child cannot solve this problem, try 13
   -26 - 6

Note: If the child cannot solve problems 1 or 3 (with the smaller numbers), end the interview with an easy problem, and maybe have the child make up a problem for you.

You need to write problem 4 horizontally on a piece of paper that you can hand to the student.

4. 16 + ____ = 23

5. Lizzie collects lizards and beetles. She has 8 creatures in her collection so far. Altogether they Have 36 legs. How many of each kind of creature dies she have so far?
   (FYI—beetles have 6 legs and lizards have 4 legs. Ask the student if he/she knows how many legs these creatures have)

Multiplication and Division
EDMS 543

GRADE LEVEL: 2-5

For this interview, you should provide students with

- Paper and pencil
- Manipulatives for counting (counters)

1. A restaurant puts 3 slices of cheese on each sandwich. How many slices of cheese will the restaurant need to make 8 sandwiches?
2. a) Forty-two students in a class were going to work on some projects in groups. If you were asked to divide the class into 3 groups with the same number of students in each group, how many students would there be in each group?

   b) What if you were asked to put these same 42 students into groups with 3 people in each group. How many groups could you make? (What you are looking for here is whether students can automatically transfer their knowledge from problem 2a to this problem since the answer will be the same. Or is their knowledge fixed to the context?)

Show your student 7 x 5 written on a piece of paper.

3. a) What is the answer to this problem?

   b) What does this mean? (while pointing to the written 7 x 5 on the paper)

   (If the student has trouble explaining, try asking "Can you create a real-life problem that would represent 7 x 5?")

Show your student 32 ÷ 4 written on a piece of paper.

4. a) What is the answer to this problem?

   b) What does this mean? (while pointing to the written 32 ÷ 4 on the paper)

   (If the student has trouble explaining, try asking "Can you create a real-life problem that would represent 32 ÷ 4 ?")

Optional:

5. Each go-cart needs 4 tires. You have 22 tires. How many go-carts can you make?

   (The idea here is to look to see what students do with the remainder.)

Fraction Interview
EDMS 543

GRADE LEVEL: K-2

1. 2 children want to share 3 cookies so that each child gets the same amount. How much can each child have?

   (If the child does not use the last cookie, prompt by saying, "They want to share this cookie too. Can you show how they would do that?)

2. 4 children want to share 9 candy bars so that each child gets the same amount. How much can each child get?

3. Who gets more pizza: a child at a table where 6 children are sharing a small pizza equally, or a child at a table where 5 children are sharing a small pizza equally?

4. During chocolate week at school, a class of first graders decided to have a party. At one table, 2 children want to share 3 chocolate bars equally. At another table, 4 children want to share 6 chocolate bars equally. At what table will a child get more chocolate to eat?

OPTIONAL PROBLEM: IF THERE IS TIME AND YOU THINK IT IS APPROPRIATE.

5. Tina and Tony painted pictures this afternoon. Tina used half a jar of blue paint for her picture. Tony used a fourth of a jar of blue paint for his own picture. How much blue paint did Tony and Tina use altogether for their paintings? Would the paint they used fill up more or less than one jar?

Measurement Interview

GRADE LEVEL: K-3

For this interview, you should provide students with

- Paper (long enough to accommodate the lines to be drawn by the student) and pencil
- A ruler

Don't provide the ruler for problems 1 and 2.

1. On a sheet of paper, show me the length of an inch, a foot and a centimeter (cm)
   a. Is a yard longer or shorter than a foot?
   b. How many feet are in a yard?
   c. How many inches are in a foot?

2. Draw a line that is 5 inches long.

3. What is this called (holding up the ruler)? What is it used for?

4. Have the student measure the length of various lines that you have pre-drawn for the student to measure (perhaps lines that are 8 inches, 15 inches, 5 ½ inches, 2 ¼ inches, and 4 ¾ inches).

Geometry Interview
EDMS 543
GRADE LEVEL: 2-4

For this interview, you should provide the students with:

- Something circular (like a round lid to a jar, a Frisbee, a large coin, a CD, etc.)
- Something square (like a square napkin, a floor tile, a CD jewel case, etc.)
- Something triangular (like a pipe cleaner triangle; a picture of something containing a triangle, etc.)
- Something rectangular (like an 8 ½ x 11 piece of paper, a 3 x 5 note card, a rectangular book, etc.)

For problems 1 through 4:

Give the student one of the shapes (objects) at a time, and ask him/her to describe the shape as if he/she were describing it to a friend over the phone (without using the word for the shape).

For example, you might tell the student, "Let's pretend that you and I are on the phone and you needed to describe the shape of a particular object to me without saying the name of shape. What would you say about this shape? Remember, I can't see the object over the phone."

NOTE: You should observe if the student is focused on the shape of the objects you provide, or on the secondary characteristics of the objects. For example, for the circular shape, does the student describe the color of the lid? the flowers on the napkin?

5. Ask the student to draw (in this order) a:
    - Circle
    - Square
    - Triangle
    - Rectangle

STATISTICS, DATA ANALYSIS, AND PROBABILITY
EDMS 543

GRADE LEVEL: 1-4

For this interview, you should provide the students with:

- Paper and pencil, colored markers
- Something that the students can compare in 4-5 colors (colored marbles, color tiles, construction paper squares)

For this first question, you will need to have constructed a bar graph that displays various numbers of the same objects in different colors (3 green, 5 blue, 4 yellow, 8 red, 9 purple marbles)

For young children, you might consider a "picto-graph".

1. You have a bag of marbles of different colors (tiles, construction paper squares). This picture (show the student your graph) describes the number of each color of marbles (tiles, etc).
   a. Do you know what kind of picture this is called? (You can tell them if they do not know)
   b. Which color of marble do you have the most of? How do you know?
   c. Which color marble do you have least of? How do you know?
   d. How many (eg, green) marbles do you have? How do you know?
   e. Let's pretend that we have 7 orange marbles. How would you show that number on this picture?

For this question, you will need to show students a <u>non-transparent</u> bag with 5 green marbles (tiles, etc) and 2 red marbles (tiles, etc.) inside the bag.

2. a. If you were to close your eyes and select one marble from my bag, do you think you would get a green or a red marble? WHY?

Teacher: Pick out one of the green marbles from the bag so there are now only 4 green and 2 red marbles.

b. If you were to close your eyes and select one marble from my bag, do you think you would get a green or a red marble? WHY?

Teacher: Pick out one more of the green marbles from the bag so there are now only 3 green and 2 red marbles.

c. If you were to close your eyes and select one marble from my bag, do you think you would get a green or a red marble? WHY?

Teacher: Pick out one more of the green marbles from the bag so there are now 2 green and 2 red marbles.

c. If you were to close your eyes and select one marble from my bag, do you think you would get a green or a red marble? WHY?

Algebra Interview
EDMS 543

GRADE LEVEL: 3-5

- You should provide your students with paper and pencils
- You might bring something that the student can count with (counting cubes, etc.)

1) Have you heard the story of Alice in Wonderland? (If the student has not, make up a story that will coincide with the tasks in this interview). Let's pretend that Alice is 4 feet tall, and that she grows 3 feet in height for each ounce of cake she eats.
    a. How tall will Alice be after eating 6 ounces of cake?
    b. If she is now 16 feet tall, how many ounces of cake did she eat?

If the student answers Problem #1 correctly, then proceed to #2 (otherwise, go to #3)

2) If Alice starts off at 24 feet tall, and she drinks 5 ounces of water to get back to her original height of 4 feet, how much did she shrink for each ounce of water she drank?

3) While picking flowers, you collect:

    2 daisies
    Twice as many roses as daisies
    9 flowers in all

    Daisies = _____ Roses = _____ Carnations = _____

4) If 6 small coins weigh the same as 2 medium sized coins, then:

    1 medium sized coin = _____small coins

IF THE STUDENT ANSWERS #4, THEN PROCEED TO #5

5) If 4 small nails weigh the same as 2 medium sized nails, and if 2 medium sized nails weigh the same as 1 large nail, then:

    1 medium = _____small
    1 large = _____medium
    1 large = _____small