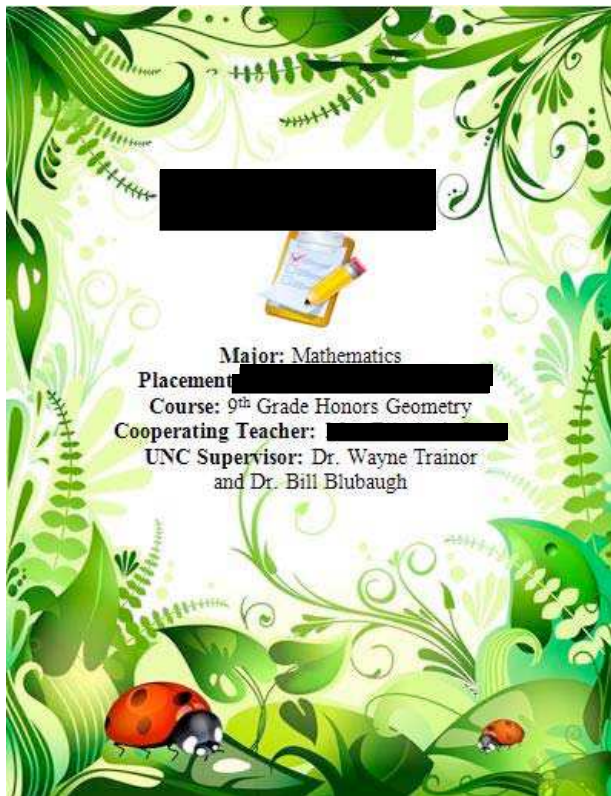**Portfolio Name:** Secondary PTEP Work Sample Portfolio

Last Modified: 02/20/2010
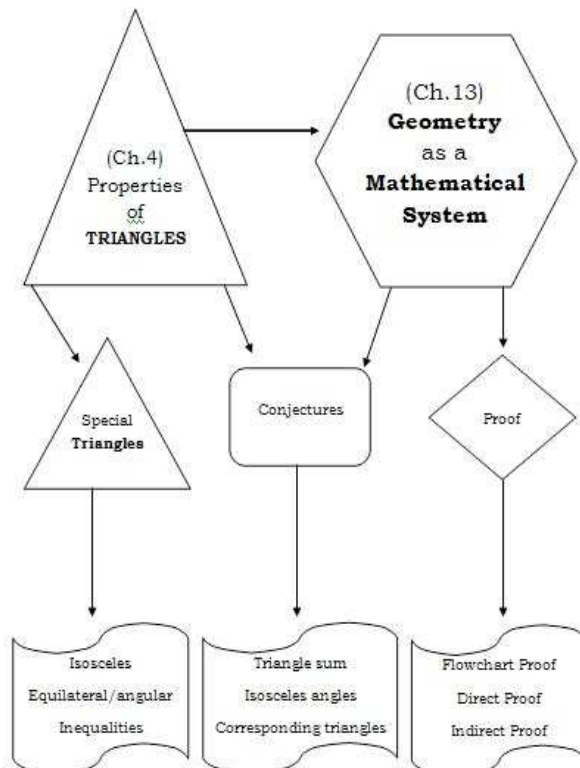
Download: Zip File
☑ include feedback

Initial Work Sample

Major: Mathematics
Placement ▮▮▮▮▮▮▮▮▮▮
Course: 9th Grade Honors Geometry
Cooperating Teacher: ▮▮▮▮▮▮
UNC Supervisor: Dr. Wayne Trainor
and Dr. Bill Blubaugh

Sect I: Planning Process

Topic Map

(Ch.4) Properties of **TRIANGLES** → (Ch.13) **Geometry as a Mathematical System**

Special **Triangles**

Conjectures

Proof

Isosceles	Triangle sum	Flowchart Proof
Equilateral/angular	Isosceles angles	Direct Proof
Inequalities	Corresponding triangles	Indirect Proof

Unit Outline

Properties of Triangles and Geometry as a Mathematical System

I. Special Triangles

    a. Day 1: Properties of special triangles

    b. Day 2: Triangle inequalities

II. Conjectures

    a. Day 1: Triangle sum conjecture

    b. Day 3: Are there shortcuts?

    c. Day 4: Corresponding parts of congruent triangles

    d. Day 5: Definition of Congruence

III. Proof

    a. Day 4: Flowchart Thinking

    b. Day 5: Premises of Geometry, Planning Proof

    c. Day 6: Introduction to Direct Proof

        i. Proving previous conjectures

    d. Day 7: Introduction to Indirect Proof

Unit Description

    During this unit, students will discover and prove various properties of triangles. In the first section of this unit, the students will discover new properties of isosceles and equilateral triangles through use of technology. Quite a bit of the lessons in this unit will use calculator software called "Cabri," which is basically the computer software "Geometer's Sketchpad" on a TI-84 Plus. Once the students have discovered and understand the various properties of triangles, we will talk about useful shortcuts they can use when they are working through problems on homework and tests instead of proving the properties every time. After the shortcuts have been defined, I will begin teaching indirect and direct proof through the use of direct instruction and some discovery-based instruction. The bulk of this lesson is based on discovering conjectures of triangles and proving the various properties of triangles directly and indirectly.

Unit Title: Discovering and Proving Triangle Properties (Chapter 4)
                Geometry as a Mathematical System (Chapter 13)

Unit Goals: Students will learn and understand…
- Why triangles are so useful in structures.
- Relationships between the sides and angles of triangles.
- The conditions that guarantee two triangles are congruent.
- How some conjectures are logically related.
- Proof strategies.

Overview of lessons within unit:
Day 1 (10/26):
<u>4.1 & 4.2:</u> Triangle sum conjecture and Properties of special triangles (Discovery activity, Cabri)
Day 2 (10/28):
<u>4.3:</u> Triangle Inequalites (Discovery, Cabri)
Day 3 (10/30):
<u>4.4 & 4.5:</u> "Are there congruence shortcuts?" and "Are there other congruence shortcuts?"

Day 4 (11/4):

<u>4.6 & 4.7:</u> Corresponding parts of congruent triangles and Flowchart thinking (lecture)

Day 5 (11/6):

<u>13.1 & 13.2:</u> Premises of geometry and Planning a geometric proof (lecture)

Day 6 (11/9):

<u>4.8 & 13.3:</u> Proving isosceles triangle conjectures & Triangle proofs (intro to direct proof--lecture)

Day 7 (11/11):

<u>Chapters 3 & 4:</u> Review

Day 9 (11/13):

TEST (Chapters 3, 4, 13)

Length of Unit: 4 weeks (Host teacher will begin with ch. 3 for first week, I take over through ch.4, ch.13, review, and test for 3 weeks)

Sect II: Description of the Setting

Acquiring information about the setting of the school you will potentially be working at is vital to the success of your presented curriculum. It is important for a teacher to know what kinds of lives their students are living outside of school so they can be a proper judge when it comes to deciding what the students should and would be able to do. If the vast majority of students in a classroom receive little to no support at home, then it will most likely be ineffective to assign 20 homework problems every night. This is not to say students with unsupportive home lives should be given a free pass through their education, yet an instructor will need to give some constructive thought as to how they will help the students to understand concepts while in the classroom.

Weld County School District 6 houses 19,000 students ranging from Kindergarten through 12th grade in 35 schools, three of which being public high schools. According to Greeley-Evans "Facts and Figures," as of January, 2009, approximately 4,160 students are housed in the three District 6 high schools. Of the 19,000 students in attendance in District 6, 53% are Hispanic, 44% are White (Caucasian), 1% are Asian, 1.3% are African American, and less than 1% are Native American. The graduation rate of Hispanic students is 56%, 81% for White (Caucasian) students, 77% for Asian students, 58 % for African American students, and 33% for Native American students. Throughout the district, 53% of students are eligible for free and reduced price lunch meals under the federal poverty guidelines. The Greeley-Evans community is predominantly conservative, yet a vast majority of the faculty within the schools is liberal, which is quite common in most suburban cities here in Colorado. Some recent successes for District 6 include having three years of consistent improvement in CSAP scores, four students have received the Boettcher Scholarship (four year college scholarship) in 2007 and 2008, and 66 students succeeded as national Advanced Placement Scholars in 2008.

████████████████ houses 1,300 students in grades nine through twelve. The campus is located at 35th Avenue and 22nd Street right across from a residential neighborhood, and a King Soopers shopping center equipped with several restaurants which students with permission to have off-campus lunch walk to during the 50 minute lunch period from 11:10am to 12pm. Class is in session from 7:40am to 3pm with a block of time for Access from 9:11am to 9:37am. Access is a period of time in which students can speak with any of their teachers and get extra help when they do not have time to do so before or after

school. The school runs on a block schedule with eight, 87 minute-long classes. Students attend four blocks a day, and the schedule switches every other day; for example, students will attend blocks one through four on Monday, Wednesday, and Friday, and blocks five through eight on Tuesday and Thursday. This schedule outlook is categorized by blue and gold days. Students attend blocks one through four on blue days, and blocks five through eight on gold days. The blue and gold day weekly schedules are switched every week.

The class which I will be predominantly incorporating into this work sample is block one, Honors Geometry. This class is designed for students on track for enrollment in the International Baccalaureate (IB) Program. The class consists of 33 students, 14 boys and 19 girls; one student is a junior and one is a sophomore, while the rest are freshmen. Nine students are Hispanic, one student is African American, and the rest are Caucasian. Eleven students are enrolled in this class through AVID, one student is an English Language Learner, a majority of the students are categorized as gifted and talented, and none of the students are categorized with special needs.

"AVID" stands for Advancement Via Individual Determination. This program is designed for students in grades four through twelve who achieve fairly well in academics, yet do not quite have the grades necessary to be accepted into college. The program helps these students get motivated, with a great deal of help, to push through tough courses and earn the grades necessary to be able to go to college. The students in the Honors Geometry class I will be teaching are all on a tentative four-year track to attend college post graduation, which is why majority of the class is categorized as being gifted and talented. The students signed up for the course with an understanding of the challenges they will be facing in the next four years. The one student in the class who is an English Language Learner is already proficient in the English language, so he will most likely not need any accommodations throughout the course.

The high school itself is designed as one giant circle. When you walk into the halls from the main office, there is a large circle in the center of the hallway that splits into six hallways; so the base of the campus looks similar to the general shape of a hexagon. The classroom I am observing is arranged for lecture-based instruction. It is equipped with 40 desks, two whiteboards at the front, a teacher station, a table along one side of the room for students coming in to take tests or receive extra help, and a teacher-sized desk in place for teacher candidates from the University of Northern Colorado. The ceiling of the classroom is the most interesting design I have seen in any school; instead of a flat ceiling, the height of the classroom comes together in a sort of pyramid shape. The walls of the room are painted with various designs from previous graduating classes; this aspect gives the room a bit of free personality and the freshmen get to see how much fun it is to be a senior in IB mathematics at the end of the year. The teacher posts the Colorado Model Content Standards being covered each day on the left corner of the whiteboard, as well as various mathematics rules along the small wall space above the whiteboard. The design of the classroom is a warm setting with quite a bit of personality which is highly conducive to learning.

The average teacher to student ratio at ████████████████ one to 24. In the class I will be teaching, however, the teacher to student ratio is one to 33. This is because there are four honors geometry classes, and more than 120 freshmen signed up to take the class. Although there are quite a few students in this class, the teacher to student ratio should not cause any problems because the vast majority of the students are individually motivated to succeed in the class and the room is large enough to house plenty of students

experience will be a great test for me, as a teacher, to see if my dream is truly what I want.

The setting of a classroom depicts what is possible for expectations and academic goals. In the Honors Geometry class at Greeley West High School, I have high expectations for the students because they have already proven themselves as being high-achieving, and they all work hard despite their individual home lives. I do not know whether these students have support at home, yet the IB program encourages them to have high expectations for themselves and work exceptionally hard over the next four years. Since I am used to being in classes with several students categorized with special needs and several students with a lack of support at home, my experience in the classroom will be extremely different this semester. Yet I think by being around so many students who are motivated to be in school, it will help me come up with ways to motivate the unmotivated when I get to a classroom filled with students who are going to be the complete opposite of the students I am teaching this semester. Wherever I end up teaching, it is important that I understand the school setting as well as the community which builds that setting; my expectations of students will constantly be changing as the community endlessly evolves.

References

"███████ ████ ████ ████ █ ███████ ██████   Web.   13   Sept.   2009

<http://█████████org/home.aspx>.

"Weld County School District Six - About School District 6." *EChalk*. Web. 13 Sept. 2009.

<http://www.greeleyschools.org/group_profile_view.aspx?id=6fb4e09b-3f36-4c57-aeda-

1819214051d5>.

Sect III: Colorado Model Content Standards, Unit Goals, & Lesson Objectives

████████████████

Subject: Mathematics
Course: Honors Geometry
Course Textbook: *Discovering Geometry: An Investigative Approach*, Author: Michael Serra. Key Curriculum Press (2003)

Unit Title: Discovering and Proving Triangle Properties (Chapter 4)
Geometry as a Mathematical System (Chapter 13)

Unit Goals: Students will learn and understand…
· Why triangles are so useful in structures.
· Relationships between the sides and angles of triangles.
· The conditions that guarantee two triangles are congruent.
· How some conjectures are logically related.
· Proof strategies.

Unit Summary:

Standard four, under the Colorado Model Content Standards, is being covered in several aspects within this unit. The main focus of the unit is under grades 9-12, benchmark three because the students will be discovering conjectures for the properties of triangles. Since the students are provided with TI-84 Silver Edition graphing calculators, the bulk of the discoveries in this unit will be investigated through the use of technology. Students will test and prove their discovered conjectures using flowchart proofs as well as direct and indirect proof writing.

Unit Breakdown:

I. Lesson 1: Triangle Sum Conjecture and Properties of Special Triangles (4.1 & 4.2)
   A. Colorado Model Content Standards:
      1.Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
        a. Grades 9-12, Benchmark 3: Make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate.
   B. Objectives:
      1.Content Objectives:
        a. Students will come to the conclusion that all angles in a triangle sum to 180°.
        b. Students will be able to recognize that isosceles triangles have at least two congruent angles.
      2.Language Objectives:
        a. Students will write a summary of today's lesson.
        b. Students will write up formal triangle conjecture statements as well as converse statements.
   C. Assessment:
      1.Informal Assessment
        a. Key point questions:
          i. Triangle sum conjecture:
            "The sum of the angles in every triangle is _____."
          ii. Isosceles triangle conjecture:
            "If a triangle is isosceles, then _____."
        b. Homework:
          i. Pg. 201) 2-8, 11, 12, 17-20
          ii. Pg. 206) 1-7, 9, 11, 13, 15-18
      2.Formal Assessment
        a. Quiz

II. Lesson 2: Triangle Inequalities (4.3)
   A. Colorado Model Content Standards:
      1.Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
        a. Grades 9-12, Benchmark 3: Make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate.
   B. Objectives:
      1.Content Objectives
        a. Students will discover the triangle inequality conjecture.
        b. Students will discover the side-angle inequality conjecture.
        c. Students will discover the triangle exterior angle conjecture.
      2.Language Objectives
        a. Students will write a summary of today's lesson.
   C. Assessment:
      1.Informal Assessment:
        a. Key point questions:
          i. Triangle Inequality Conjecture:
            "The sum of the lengths of any sides of a triangle is _____the length of the third side."
          ii. Side-Angle Inequality Conjecture:
            "In a triangle, if one side is longer than another side, then the angle opposite the longer side is _____."
          iii. Triangle Exterior Angle Conjecture:
            "The measure of an exterior angle of a triangle is _____."
        b. Homework:
          i. Pg. 216: 1-17odd
      2.Formal Assessment:
        a. Quiz (if time allows)

III. Lesson 3: Congruence Shortcuts (4.4 & 4.5)
   A. Colorado Model Content Standards:
      1.Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
        a. Grades 9-12, Benchmark 3: Make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate.
   B. Objectives:
      1.Content Objectives
        a. Students will discover the SSS congruence conjecture.
        b. Students will discover the SAS congruence conjecture.
        c. Students will discover the ASA congruence conjecture.
        d. Students will discover the SAA congruence conjecture.
      2.Language Objectives
        a. Students will write congruence statements, and decide whether the statements are true or false.

b. Students will write a summary of today's lesson.
C. Assessment:
1. Informal Assessment:
a. Key point questions:
  i. SSS Congruence Conjecture:
     "If the three sides of one triangle are congruent to the three sides of another triangle, then _____."
  ii. SAS Congruence Conjecture:
     "If two sides and the included angle of on triangle are congruent to two sides and the included angle of another triangle, then _____."
  iii. ASA Congruence Conjecture:
     "If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then _____."
  iv. SAA Congruence Conjecture:
     "If two angles and a non-included side of one triangle are congruent to the corresponding angles and side of another triangle, then _____."
b. Homework:
  i. Pg. 222: 1-6, 8-15, 18, 20
  ii. Pg. 227: 1-15all, 18, 19, 22-24
2. Formal Assessment:
a. Quiz (if time allows)

IV. Lesson 4: Corresponding Parts of Congruent Triangles and Flowchart Thinking (4.6 & 4.7)
A. Colorado Model Content Standards:
1. Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
a. Grades 9-12, Benchmark 3: Make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate.
B. Objectives:
1. Content Objectives:
a. Students will use congruence shortcuts to discover properties of triangles.
b. Students will begin generating proofs to previous conjectures using flowcharts.
2. Literacy Objectives:
a. Students will write a summary of today's lesson.
C. Assessment:
1. Informal Assessment:
a. Key point questions
b. Building a flowchart
c. Homework
2. Formal Assessment:
a. Specific exercises done in class to be turned in for a grade.

V. Lesson 5: Premises of Geometry and Planning a Geometric Proof (13.1 & 13.2)
A. Colorado Model Content Standards:
1. Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
a. Benchmark 3: Make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate.
B. Objectives:
1. Content Objectives
a. Students will be introduced to the properties of arithmetic and the properties of equality.
b. Students will develop a general definition of congruence.
c. Students will discover the postulates of geometry with instructed guidance.
d. Students will discover the format of formal proof writing with instructed guidance.
e. Students will begin writing formal proofs to various conjectures through use of flowchart thinking.
2. Language Objectives
a. Students will write up formal proofs to various conjectures.
b. Students will write a summary of today's lesson.
C. Assessment:
1. Informal Assessment
a. Key point questions; check for understanding
b. Homework
2. Formal Assessment
a. Proof-writing will be formally assessed in a quiz either during the next class or the post test (quiz depends on time).

    A. Colorado Model Content Standards:
        1.Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
            a.   Grades 9-12, Benchmark 3: Make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate.
    B. Objectives:
        1.Content Objectives
            a.   Students will review and discover/write a conjecture for a vertex angle bisector.
            b. Students will review and discover/write a conjecture for equilateral/equiangular triangle.
            c.   Students will prove geometry postulates introduced in section 13.1 by first writing a flowchart plan to organize thinking, then writing a formal two-column proof.
        2.Language Objectives
            a.   Students will be writing up formal proofs
            b. Students will write a summary of today's lesson.
    C. Assessment:
        1.Informal Assessment
            a.   Key point questions; check for understanding
            b. Homework
        2.Formal Assessment
            a.   Quiz covering lessons 5 and 6 (if time allows)

VII.   Lesson 7: Indirect Proof (13.5)
    A. Colorado Model Content Standards:
        1.Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
            a.   Grades 9-12, Benchmark 3: Make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate.
    B. Objectives:
        1.Content Objectives
            a.   Students will begin writing paragraph proofs of previous conjectures.
            b. Students will discover and write a paragraph proof to the tangent conjecture.
        2.Language Objectives
            a.   Students will be writing up paragraph proofs with organized thinking.
            b. Students will write a summary of today's lesson.
    C. Assessment:
        1.Informal Assessment
            a.   Key point questions; check for understanding
            b. Homework
        2.Formal Assessment
            a.   Students will write up the paragraph proof of the tangent conjecture on a separate sheet of paper which will be turned in for a grade.
            b. Next class will be review for a unit test (post test).

Assessment Summary:

     The assessment strategies being used in this unit are designed to enhance instruction because they allow students to build confidence in their thinking and understanding. Since the structure of this course is entirely based on discovery learning, key point questions and conjecture findings help the students take proper notes and have the resources they need when they are working through homework problems. Having quizzes on a fairly regular basis helps the teacher see how well the students understand the material; it also helps with classroom management because the students are aware of their need to pay attention during class and make sure they are learning the material so they can be successful. When students communicate their reasoning in front of the class, they give themselves confidence and they allow their classmates to hear the voice of a peer rather than the teacher. The assessments within this unit align directly with standard four by having the students make and test their own discoveries of the various triangle conjectures.

Sect IV: Lesson Plans with supporting materials

Please see the attached document.

Sect V: Pre and Post Assessment instruments

Please see the attached document.

Sect VI: Analysis of Pre and Post Assessment

Please see the attached documents.

Sect VII: Reflective Essay

Reflective Essay

There is no precise formula for becoming a great teacher. The format of the initial work sample has put me through an experience that I believe has helped me recognize all of the positive and negative aspects of teaching. The sections which taught me the most about teaching and encouraged my decision to pursue this career were sections four, five, and six. These sections helped me grow a deeper appreciation for the purpose of the Colorado Model Content Standards as well as the National Council for the Teachers of Mathematics Standards. Sections one through three were useful and I enjoyed them, yet I learned a lot more from the previously stated sections.

While working through artifacts and reflections for the Secondary Teacher Education Program in the first two phases, I was often confused and frustrated with the idea of using standards-based instruction and assessment. I was mainly confused because I had not been able to implement any instruction or assessment in

the classroom, and I truly did not see the purpose of having any standards. Now that I have written and taught an entire unit, as well as several individual lessons, I see how necessary and useful the Colorado Model Content Standards and the Colorado Model Teacher Standards are. Content standards are extraordinarily necessary so that no matter how I choose to organize my lesson plans, the content covered in my overall curriculum will be the same as a mathematics teacher in any other public school district in the state of Colorado. For my initial work sample, I had the opportunity to work with a host teacher who ran her classroom and wrote her entire curriculum based on the Colorado Model Content Standards. This was an excellent insight as to how I would be implementing standards-based instruction in the classroom. I grew very fond of my host teacher, as well as the students I taught, throughout the process of completing this work sample.

Section four of this initial work sample was all of the lesson plans for the unit I taught at the end of October and beginning of November. The entire lesson plan writing experience of this work sample helped me grow a deep appreciation of instructional planning. Through teaching my unit, I learned how quickly a well-planned lesson can turn into a train wreck if I am not prepared for a particular set of questions, or if the technology I initially planned to use decided not to function properly. Writing a lesson plan helps organize your thinking and prepare you for the content you will be teaching in each class. However, the written lesson plan will never formulate exactly how a lesson will run for each minute of class. Another thing that will happen quite frequently is the lessons you write will most likely go exactly how you did not want them to go, and you will need to make adjustments for the next class.

Sections five and six of the initial work sample require working quite a bit with assessment and analyzing classroom instruction based on the results of assessment. After giving one class of students a pre assessment and having them follow up the unit I taught with a post assessment, my understanding of standards-based and instructional assessment grew substantially. The standards-based portion of assessment is entirely necessary in order to ensure the students I am teaching are learning the same mathematics as any student in any public school district in the state of Colorado. Although I enjoyed the process of writing the assessments and learning how to format a mathematics test, I quickly gained an appreciation for teachers who simply sketch shapes on a test rather than attempting to draw every image on computer software. I used Geometer's Sketchpad to draw every triangular shape on my tests, and I got quite frustrated after the fifth shape, especially since my host teacher preferred me to write two different versions of the each test. I completely understand the reasoning for having two different versions of each test, because it prevents students from cheating and it allows the teacher to easily see if students are cheating; however, writing two different versions of an 87 minute long geometry test with at least one shape per question will make you second-guess the questions you choose to put on the test as well as how elaborate the drawings are. I enjoyed every minute of the stress that went into writing the assessments for the unit I taught; I learned a lot about formatting and I had to constantly think about what the students would understand and how they would interpret every question.

I have enjoyed every minute of writing this initial work sample. Granted, there were quite a few stressful moments and there were days when I wished I could type in my sleep. However, everything I have learned from this semester and working through this work sample will benefit my teaching as well as my efforts on the advanced work sample. Getting to know the setting of the school I worked with and
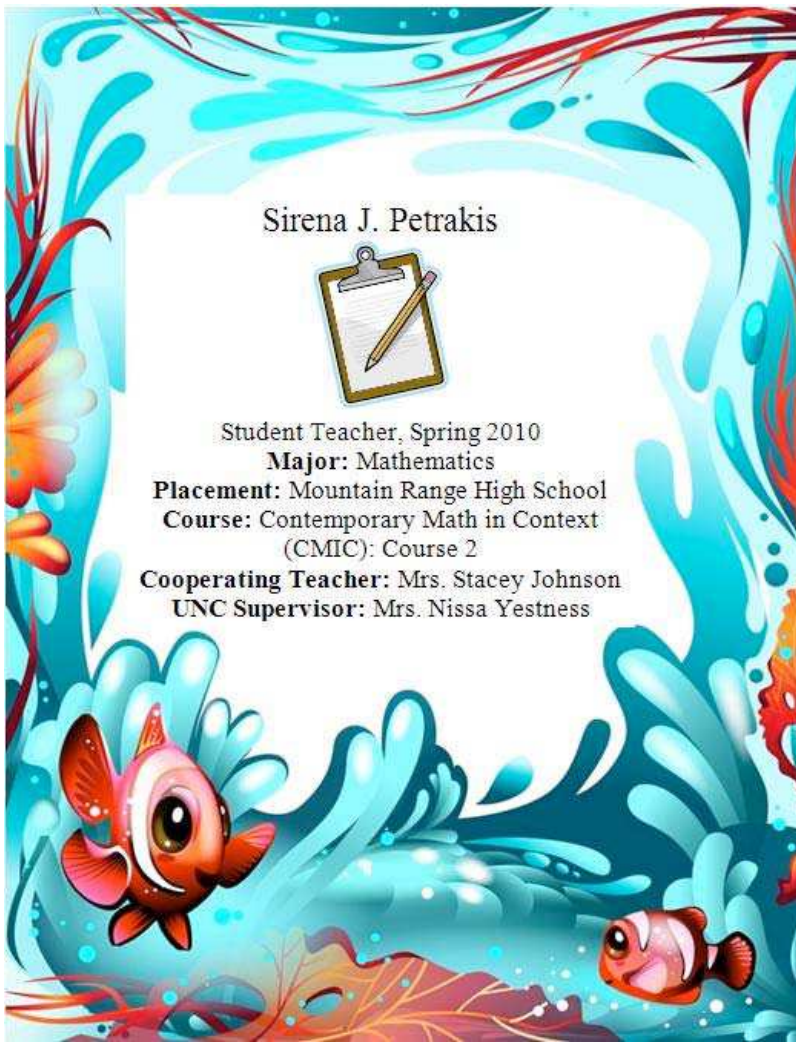
understanding the aspects of every student as an individual has helped me visualize teaching in a different light. I am excited to start student teaching, meeting a new group of students, and getting used to a completely different school setting. I imagine writing lesson plans, homework assignments, quizzes, and tests will get easier as time goes on and I will become proficient with classroom management as well as individualization of instruction.

The beauty of teaching is there will always be a new day. One day will be horrible, the next will be fabulous. The trick to getting through the rollercoaster weeks ensued in this profession is to walk into every class period with an open mind and heart.

Sect VIII: References

References

1. "Algebra Tiles." *National Library of Virtual Manipulatives*. Utah State University, 2008. Web. 16 Oct. 2009. <http://nlvm.usu.edu/en/nav/frames_asid_189_g_4_t_2.html?open=activities&from=category_g_4_t_2.html>.

2. "Colorado Model Content Standards: Mathematics." *Colorado Department of Education*. 2009. Web. Fall 2009. <http://www.cde.state.co.us/cdeassess/documents/OSA/k12_standards.html>.

3. "Concepts in Geometry - Lesson Plan Library." *Discovery Education Classroom Resources*. Web. Fall 2009. <http://school.discoveryeducation.com/lessonplans/programs/conceptsInGeometry/>.

4. "Congruent Triangles." *National Library of Virtual Manipulatives*. Utah State University, 2008. Web. 16 Oct. 2009. <http://nlvm.usu.edu/en/nav/frames_asid_165_g_3_t_3.html?open=instructions&from=category_g_3_t_3.html>.

5. Embse, Charles V., and Eugene Olmstead. *Cabri Jr.: Interactive Geometry Activities and Investigations*. Dallas, TX: Texas Instruments Incorporated, 2006. Print.

6. *NCTM Standards*. Web. Fall 2009. <http://standards.nctm.org/>.

7. Sasse, Beth. Honors Geometry: Investigations. Self-created collection of discovery worksheets.

8. Serra, Michael. *Discovering Geometry: An Investigative Approach*. Alexandria: Key Curriculum, 2002. Print.

9. *The Geometer's Sketchpad*. Version 4. Emeryville, CA: Key Curriculum Press, 2006. Computer software.

10. Whitelaw, Ian. *A Measure of All Things: The Story of Man and Measurement*. New York: St. Martin's, 2007. Print.
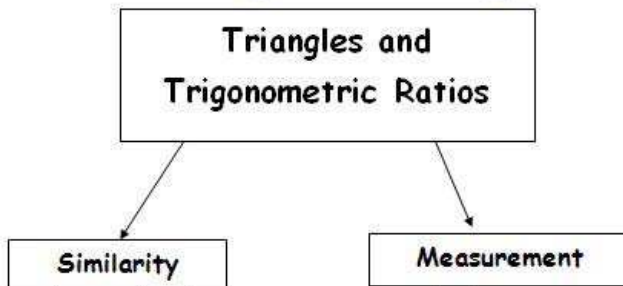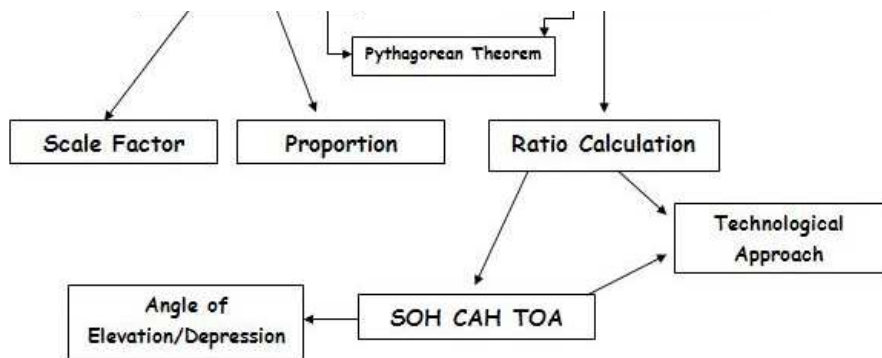
Advanced Work Sample

Sirena J. Petrakis

Student Teacher, Spring 2010
Major: Mathematics
Placement: Mountain Range High School
Course: Contemporary Math in Context
(CMIC): Course 2
Cooperating Teacher: Mrs. Stacey Johnson
UNC Supervisor: Mrs. Nissa Yestness

Section I:

Topic Map
Unit Goal

Student ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮
February, 2010

Topic Map

Triangles and
Trigonometric Ratios

Similarity   Measurement

Unit Outline

Triangle Similarity and Trigonometric Ratios

I. Similar Triangles

    a. Day 1: Congruent angles and proportionate sides

    b. Day 2: Scale Factors and Proportionality

II. Pythagorean Theorem

    a. Day 3: Real World examples

    b. Day 3: Real World implications of similar triangles

    c. Day 3: The importance of accurate measurement

    d. Day 3: Implication of right triangles

III. Trigonometric Ratios

    a. Day 4: Parts of a right triangle

    b. Day 4: Introduction to use of Sine, Cosine, and Tangent

    c. Day 4: SOH-CAH-TOA

        i. "Some Old Hippie, Caught Another Hippie, Trippin on Acid."

        ii. The use of three new buttons on the calculator

    d. Day 5: Using SOH-CAH-TOA to measure angles

    e. Day 6: Angle of Elevation and Depression

        i. SOH-CAH-TOA in the real world

Unit Description

During this unit, students will be determining the scale factor of a variety of similar triangles; they will then use the scale factor to calculate the corresponding sides of a similar triangle. Once concept of similarity is understood, students will review the Pythagorean Theorem as an introduction to the use of right triangles. Right triangles are the base of trigonometric ratios, and once students have a firm grasp of the various parts which make up a right triangle, we will begin the study of Sine, Cosine, and Tangent. The students will spend quite a bit of time practicing the concepts within this unit through worksheets and textbook problems. Once we have gone through the practice set of SOH-CAH-TOA, the students will get to see how Sine, Cosine, and Tangent become useful in the real world through the study of the angles of elevation and depression. After discussing real world example of SOH-CAH-TOA, the students will take a

Unit Title: Triangle Similarity and Trigonometric Ratios (Unit 6)

Unit Goals: Students will learn and understand…
· The properties which make up a pair of similar triangles.
· How to calculate the lengths of missing sides of a scaled triangle.
· The purpose of the Pythagorean Theorem in real life as well as the importance of the use of right triangles.
· The general purpose of sine, cosine, and tangent.
· The use of sine, cosine, and tangent in real world scenarios.

Overview of lessons within unit:
Days 1 & 2 (2/12 & 2/16):

Triangle similarity (worksheet activity)

Day 3 (2/18):

Similarity and the Pythagorean Theorem (group work & worksheet activity)

Days 4 & 5 (2/19 & 2/22):

Trigonometric Ratios: Sine, Cosine, and Tangent (SOH-CAH-TOA riddle activity)

Day 6 (2/23):

Angle of Elevation and Depression ("Bugs" activity)

Day 7 (2/25):

Jeopardy Review and Clarification!

Day 8 (2/26):

Quiz

Following week (3/1-3/5):

Depending on results of quiz, review as necessary, and take unit test. Also, we will be spending quite a bit of time preparing for the CSAP (which will occur on 3/9, 3/10, and 3/11)

Length of Unit: Approximately 2-3 weeks (this depends entirely on student progression and understanding of unit concepts)

Section II: Description of the Setting

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███████████████████████

February, 2010

Acquiring information about the setting of the school you will potentially be working at is vital to the success of your presented curriculum. It is important for a teacher to know what kinds of lives their students are living outside of school so they can be a proper judge when it comes to deciding what the students should and would be able to do. If the vast majority of students in a classroom receive little to no support at home, then it will most likely be ineffective to assign 20 homework problems every night. This is not to say student with unsupportive home lives should be given a free pass through their education, yet an instructor will need to give some constructive thought as to how they will help the students to understand concepts while in the classroom.

Adams County District 12 Five Star Schools houses 40,000 students ranging from Kindergarten through 12th grade in 51 schools, five of which being public high schools. Adams County District 12 schools are located in Broomfield, Northglenn, Thornton, and Westminster. Mountain Range High School, specifically, is located in Westminster. Of the 40,000 students in attendance in District 12, 60.49% are White (Caucasian), 30.71% are Hispanic, 5.22% are Asian, 2.70% are African American, and less than 1% are Native American. Throughout the district, 11,100 students are on free and reduced-price lunch meals under the federal poverty guidelines; 4,500 students are English Language Learners; 3,600 students are in the special education program; there are 2,900 students listed as "gifted and talented" and there are 68 languages spoken in this district. The Westminster community has a fairly even mix of conservative and liberal families yet vast majorities of the faculty within the schools are liberal. District 12 is one of the largest districts in the state of Colorado, and has the most rewarding career program for dedicated faculty and staff members within each school.

Mountain Range High School houses 2,048 students in grades nine through twelve. The campus is located at 125th Avenue and Huron Street right. Class is in session from 7:15am to 3pm. On Monday, Tuesday, and Friday, the students and teachers attend eight, 50 minute periods. On Wednesday, periods one, three, and eight meet for 107 minutes; this includes 20 minutes of Silent Sustained Reading in first period, Mustang TV in third period, and Advisory in eighth period. School gets out at 12:30pm on Wednesday, and the teachers have the afternoon to meet with their department to plan what needs to happen within the next unit and each teacher gives advice about how they are planning to teach certain topics. On Thursday, periods two, four, five, six, and seven meet for 87 minutes each. The school schedule is a bit confusing to get used to at first, but after a couple of weeks, the block days help make scheduling for the week quite a bit easier than it would be to plan for five straight days of 50 minute classes.

Of the 2048 students at Mountain Range High School, 67.53% are White (Caucasian), 23.54% are Hispanic, 2.64% are African American, 4.69% are Asian, and 1.61% are Native American. Although MRHS was only established back in 2006, their CSAP scores have been quite sufficient in their first few years. In 2009, 53% of their 9th and 10th graders scored proficient or advanced on the math portion of the CSAP; a great improvement from the 49% in 2008. Overall, 52% scored proficient or advanced on the CSAP in 2009, a slight drop from the 54% in 2008.

The class which I will be predominantly incorporating into this work sample is period 2, Contemporary Mathematics in Context: Section 2 (CMIC 2). This class is part of the CMIC mathematics program here in District 12 which attempts to "spiral" the mathematics curriculum and allows students to learn concepts through investigations of a variety of topics each year; the traditional curriculum would coach the students through courses such as Algebra, Geometry, and Trigonometry separately, this curriculum spirals everything together. The class consists of 29 students, 14 boys and 15 girls; 10 students are freshmen, 15 are sophomores, and 4 are juniors. 10 of these students are Hispanic, while the rest (19) are Caucasian. None of the students in this classroom are categorized as English Language Learners or on the Individualized Education Program.

The high school itself is designed as two flights of a giant hallway. As you drive by the school, you can easily see where all of the hallways are and when you first walk in, everything is split into three main

hallways. The classroom I am teaching in is arranged for lecture-based instruction. It is equipped with 30 desks, one whiteboard at the front, a teacher desk with a computer equipped with 2007 software, a projector, and a cabinet equipped with a class set of graphing calculators. The desks are designed so that students can easily form into groups of four, yet the rooms are not very big. None of the teachers have their own classrooms, there is a teacher work room with a work space for each staff member; this allows the teachers to do their work and communicate with fellow staff. Teachers are advised to write their class objectives on the board every morning so that students will always be aware of what is expected of them. Although there are not really any fun paintings or posters in any of the classrooms, the school itself still provides a warm setting which is highly conducive to learning.

The setting of a classroom depicts what is possible for expectations and academic goals. In the CMIC program at Mountain Range High School I expect most students to succeed quite well, whereas a few students may struggle to understand why everything in mathematics has been split so unusually throughout the various courses. I do not know whether these students have support at home, yet the faculty and staff at Mountain Range High School are highly approachable and always make themselves available to help the students whenever they can. Since I am used to being in a smaller district at smaller schools with a traditional curriculum, my experience at MRHS will certainly be different this semester. Yet I think by being around so many highly motivated staff members all day every day, I do not think I will have any trouble getting used to my surroundings. In fact, I have already gotten to know the staff quite well and am looking forward to an exciting semester which will probably fly by extremely fast. Wherever I end up teaching, it is important that I understand the school setting as well as the community which builds that setting; my expectations of students will constantly be changing as the community endlessly evolves.

References

http://www.adams12.org/en/annual_report

http://www.schoolview.org/schoolperformance/index.asp

Section III:
Content Standards
Unit Goal
Lesson Objectives

████████████
█████████████████████████

February, 2010

School: Mountain Range High School
Subject: Mathematics
Course: Contemporary Mathematics in Context (CMIC): Course 2
Course Textbook: Coxford, Arthur F., and James T. Fey. *Contemporary Mathematics in Context: A Unified Approach*. 1st ed. Vol. 2. New York, NY: Glencoe/McGraw-Hill, 2003. Print.

Unit Goals: Students will learn and understand…
- Ways that triangles are used to maintain rigidity in structures with one side of variable length (triangle similarity).
- Properties and applications of the sine, cosine, and tangent ratios for right triangles.

Unit Summary:

This unit will require quite a bit of interpretation on the part of the students. Students will need to be able to sketch pictures of right triangles and write the given information on their sketches. This entire unit will require students to understand number sense and be able to tell if they are doing something wrong when their calculated measurements do not make sense with the given information. The use of sine, cosine, and tangent, at this point, should not be difficult for students; this course gets quite difficult after this unit. So, quite a few, if not all, of these lessons will be discussed over several days because it is important that the students develop a firm grasp of this material in order to succeed in the upcoming unit.

Unit Breakdown:
I. Lesson 1: Triangle Similarity
    A. Colorado Model Content Standards:
        1. Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.
            a. Benchmark 3: Use number sense to estimate and justify the reasonableness of solutions to problems involving real numbers.
    B. Objectives:
        1. To recognize the difference between two similar polygons and two non-similar polygons
        2. To describe the properties of similarity
        3. To be able to calculate a scale factor as well as lengths of missing sides

    C. Assessment:
        1. Informal Assessment:
            a. Key Point Questions:
                i. What is the difference between similar and non-similar polygons?
                ii. Basic algebraic questions asking the students to calculate scale factors and corresponding sides.
        2. Formal Assessment:
            a. In class assignment:
                i. Similar triangles worksheet. Requires students to decide which triangle is similar and which is the original, divide to find the scale factor, and calculate measurements of missing sides on a variety of triangles.

II. Lesson 2: Pythagorean Theorem
    A. Colorado Model Content Standards:
        1. Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.
            a. Benchmark 3: Use number sense to estimate and justify the reasonableness of solutions to problems involving real numbers.

    B. Objectives:
        1. To review an already well-known concept
        2. To ensure the understanding of the importance of right triangles in this unit

    C. Assessment:
        1. Informal Assessment:
            a. Key Point Questions:
                i. What is the Pythagorean Theorem and how do we use it?
        2. Formal Assessment:
            a. In class assignment:
                i. Interpret and calculate lengths of missing sides in a variety of word problems.

III. Lesson 3: Trigonometric Ratios
    A. Colorado Model Content Standards:
        1. Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.
            a. Benchmark 3: Use number sense to estimate and justify the reasonableness of solutions to problems involving real numbers.
        2. Standard 4: Students use geometric concepts, properties, and relationships in problem-

solving situations and communicate the reasoning used in solving these problems.
- a. Benchmark 4: Use trigonometric ratios in problem-solving situations.
3. Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.
- a. Benchmark 1: Use ratios, proportions, and percents in problem-solving situations.

B. Objectives:
1. To recognize the use of triangles with a variable-length side in manufactured goods, and to analyze effects of the variability on angles and heights in those goods.
2. To determine the sine, cosine, and tangent of an angle in a right triangle.
3. To solve indirect measurement problems.

C. Assessment:
1. Informal Assessment:
- a. How can we use SOH-CAH-TOA to find the lengths of the missing side(s)?
- b. How can we use SOH-CAH-TOA to find the measure of the missing angle(s)?
2. Formal Assessment:
- a. In class/Homework assignment:
  - i. Calculate the trigonometric ratio for a variety of problems presented, as well as the missing sides and angles in a variety of different situations.

IV. Lesson 4: Angle of Elevation and Depression
A. Colorado Model Content Standards:
1. Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.
- a. Benchmark 3: Use number sense to estimate and justify the reasonableness of solutions to problems involving real numbers.
2. Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.
- a. Benchmark 4: Use trigonometric ratios in problem-solving situations.
3. Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.
- a. Benchmark 1: Use ratios, proportions, and percents in problem-solving situations.

B. Objectives:
1. To recognize how sine, cosine, and tangent are used in real life situations.
2. To be able to use word descriptions to form a picture and solve for missing pieces.

C. Assessment:
1. Informal Assessment:
- a. Key Point Questions:
  - i. How can you tell the difference between the angle of elevation and the angle of depression?
  - ii. Use what you know about trigonometric ratios to calculate the angles of elevation and depression.
2. Formal Assessment:
- a. In class/homework assignment:
  - i. Given a specific scenario, specify the angle of elevation and depression, and calculate the missing side lengths and angles as instructed.

Assessment Summary:
The vast majority of this unit will be based on student success on the in class worksheets and book problems. After the discussion of angle of elevation and depression, students will participate in a game of jeopardy for a review of everything learned over the past two weeks, and then they will take a quiz outlining everything in the past unit. The successes/failures on this quiz will determine the amount of time necessary to prepare the students for the unit/post test. Although this is not a very long unit, it is vital to take these concepts in strides and make sure the students have had enough practice to understand the purpose of the lessons and prepare for the struggles ahead.

Section IV: Lesson Plans with supporting materials

- Include all (a minimum of 5 well developed lesson plans) for a 2-3 week unit
- Highlight/make obvious your attempts to help diverse students achieve the unit goals and objectives
  - varied instructional strategies
  - varied learning styles
  - varied abilities
- Following each lesson plan, include the supporting materials (i.e. transparencies, worksheets, an example of the manipulatives that will be used, notes that you use to teacher the lesson, etc.

Section V:
Pre and Post Assessment

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████████████████████████████

February, 2010
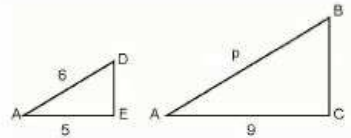
CMIC 2: Unit 6 Pre-test   Name: _____
                                           Date: _____

Find all missing measures (Show ALL of your work):

1.	Work:	Work:	Work:
(triangle with B, c, 55in, 29°, b)			
	B=	b=	c=

2.

Find the measure of side p.

(triangle ADE with sides 6, 5; triangle ABC with side p, side 9)

3. A tree casts a shadow of 20 feet. If a 5 foot tall person casts a 4 foot shadow, how tall is the tree?

4. The sides on a right triangle are 3, 4, and 5 cm. If a larger triangle is similar and has a hypotenuse of 37.5 cm, what is the length of the short side in the larger triangle?

5. Find the hypotenuse in a right triangle with legs of lengths 8 and 6 feet.

Pre-Test Rubric

Rubric for every question on pre-test:
- 4 points: Student shows work and completely understands concept
- 3 points: Students shows work, makes minimal errors
- 2 points: Student does not show work, shows little understanding
- 1 point: Student has no understanding of concept
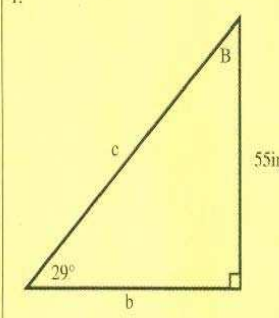- 0 points: Student leaves question blank

Each question (1 through 5) is worth 4 points.
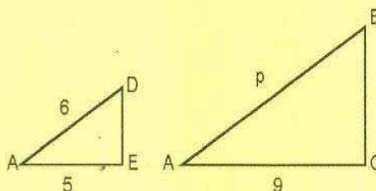
Pre-Test Key

CMIC 2: Unit 6 Pre-test   Name: ___key___
                                           Date: _____

Find all missing measures (Show ALL of your work):

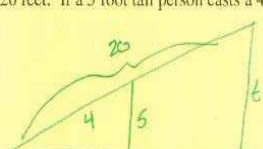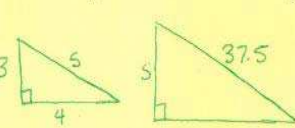| 1.	Work:	Work:	Work:
55in, 29°, c, b, B	$90+29$ $=119$ 180 -119 $\overline{61}$	$\tan = OA$ $\tan 61 = \frac{b}{55}$ $55\tan 61 = b$ $99in$	$55^2 + 99^2 = c^2$ $\sqrt{12826} = \sqrt{c^2}$ $C = 113$
	B= $61°$	b= $99in$	c= $113in$

2.

Find the measure of side p.

$SF = 1.8$
$P = 6 \times 1.8 = \boxed{10.8}$

3. A tree casts a shadow of 20 feet. If a 5 foot tall person casts a 4 foot shadow, how tall is the tree?
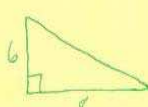

$SF = 5$ $t = 5 \times 5 = \boxed{25ft}$

4. The sides on a right triangle are 3, 4, and 5 cm. If a larger triangle is similar and has a hypotenuse of 37.5 cm, what is the length of the short side in the larger triangle?

$SF = \frac{37.5}{5} = 7.5$

$S = 3 \times 7.5 = \boxed{22.5}$

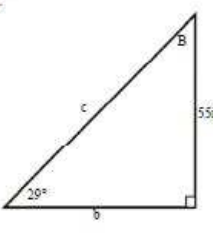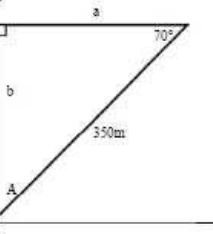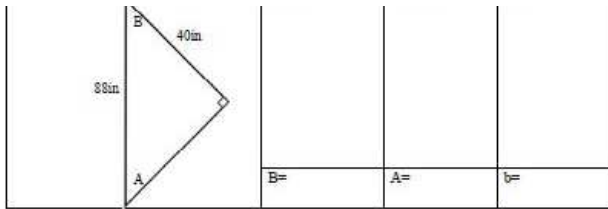5. Find the hypotenuse in a right triangle with legs of lengths 8 and 6 feet.

$6^2 + 8^2 = c^2$
$\sqrt{100} = \sqrt{c^2}$
$\boxed{c = 10}$

Post-Test

CMIC IIB
Unit 6A Test

Name:_____
Period:_____

1.	Work:	Work:	Work:
55in, 20°, c, b, B			
	B=	b=	c=
2. a, 70°, b, 350m, A	Work:	Work:	Work:
	A=	a=	b=
3.	Work:	Work:	Work:

| | B= | A= | b= |

Here is some key information about the scene you see above. (feel free to add this info to the picture)
- The Eiffel Tower is 300 meters tall.
- The Lighthouse is 30 meters tall.
- The horizontal distance between the tower and the lighthouse is 2000 meters.
- The Helicopter is flying directly above the lighthouse at an altitude of 1,000 meters.

Use the information to answer the following questions:

4. If someone at the top of the lighthouse wanted to look at the top of the Eiffel Tower, what would their angle of elevation be?

5. What is the direct (diagonal) distance from the top of the lighthouse to the top of the Eiffel Tower?

6. What is the helicopter pilot's angle of depression to look at the base of the Eiffel tower?

7. Find the measure of side X.

8. Find the measure of side Y.
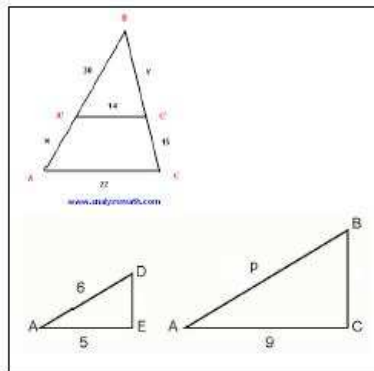
9. Find the measure of side p.

10. A tree casts a shadow of 20 feet. If a 5 foot tall person casts a 4 foot shadow, how tall is the tree?

11. The sides on a right triangle are 3, 4, and 5 cm. If a larger triangle is similar and has a hypotenuse of 37.5 cm, what is the length of the short side in the larger triangle?

12. A 16 foot ladder is leaning against a brick wall. If the top of the ladder is 9 feet up the wall, how far away from the wall is the ladder?

13. Find the leg in a right triangle if one leg is 12 cm and the hypotenuse is 13 cm.

14. Find the hypotenuse in a right triangle with legs of length 5 and 6 feet.

Post-Test Rubric

Rubric for every question on post-test:
- 4 points: Student shows work and completely understands concept
- 3 points: Students shows work, makes minimal errors
- 2 points: Student does not show work, shows little understanding
- 1 point: Student has no understanding of concept
- 0 points: Student leaves question blank

Each question (1 through 14) is worth 4 points.

Although there are 14 questions on the post test, only the red questions will be analyzed in the pre and post-test analysis. The key for these questions is the same as the key for the pre-test. Questions 1, 9, 10, 11, and 14 will be used for analysis.

Alignment to Objectives:

Unit Goals: Students will learn and understand…
- The properties which make up a pair of similar triangles.
- How to calculate the lengths of missing sides of a scaled triangle.
- The purpose of the Pythagorean Theorem in real life as well as the importance of the use of right triangles.
- The general purpose of sine, cosine, and tangent.
- The use of sine, cosine, and tangent in real world scenarios.

The questions within this pre and post test require the students to be able to calculate missing angles and sides of various triangles. There was not a question about angles of elevation and depression on the pre test because this concept was added to the unit plan after the pre test had been given to the students. Although the calculations of triangle sides and angles require the students to be able to use sine, cosine, and tangent, so the implications are in the pre test. This entire test (pre and post) assesses the use of trigonometric ratios, scale factors of similar triangles, and the Pythagorean Theorem to calculate the angles and sides of a variety of triangles.

Informal Assessments

Days 1 & 2:
1. Triangle similarity:
   All angles must be congruent (equal in measure) and sides must be in proportion.

Day 3:
1. Pythagorean Theorem:
   $a^2 + b^2 = c^2$

Days 4 & 5:
1. Sin θ = ?
   Opposite ÷ Hypotenuse
2. Cos θ = ?
   Adjacent ÷ Hypotenuse
3. Tan θ = ?
   Opposite ÷ Adjacent

Day 6:
1. Define the Angle of Elevation and the Angle of Depression
   Angle of Elevation: the angle between the horizontal and the line of sight to an object above the horizontal.
   Angle of Depression: the angle between the horizontal and the line of sight to an object beneath the horizontal.

<u>Overview of Informal Assessments</u>

      All of the informal assessments listed are directly aligned to the objectives of each lesson. Since I ask a lot of open-ended questions in class, I have a few written in my lesson plans; however, the majority of my informal questioning is dependent upon the class and how the students respond to each question. The questions I ask in class lead to conceptual understanding of the informal assessments listed above.

Section VI: Analysis of Pre and Post Assessment

The **pre-assessment analysis** serves as a baseline of current student performance in relation to the content of the work sample.
There are several ways to organize and describe data; however, the work sample requires that QUARTILES be used for both the pre and post assessment analysis.

- Describe and analyze (in descriptive writing) the data from the pre-assessment.
  - Describe and analyze on a student by student basis
  - Compare each students' performance to that of the whole class
  - If applicable, describe and analyze selected groups within the class population (see aforementioned description of student population)
  - Create a graph of table to represent the pre-assessment results
- Identify any adjustments to instructional strategies, content, etc. you plan to make as a result of the pre-assessment analysis.

Checklist for Writing the Pre Assessment Analysis

1. Describe and analyze the students' scores
2. Describe what the scores in the four quarters represent
3. Compare and contrast the students' scores in the four quarters
4. If applicable, explain what the students' sub scores represent
5. Prepare a graph or table that represents pre assessment results
6. If applicable, describe and analyze selected groups within the class population
7. Identify any adjustments that may need to be made to strategies, content, etc.

The **post assessment analysis** serves as evidence of a your effectiveness in implementing instruction that results in student academic achievement in relation to the content of the work sample in achievement of the expected model content standards.
Remember, the work sample requires that QUARTILES be used for both the pre and post assessment analysis.

- Describe and analyze (in descriptive writing) the data from the post-assessment.
  - Describe and analyze on a student by student basis
  - Compare each students' performance to that of the whole class
  - Describe and analyze selected groups within the class population (see previous description of the student population)
  - Create a graph of table to represent the post-assessment results
- Identify any adjustments to instructional strategies, content, etc. you would make (in hindsight) as a result of the post assessment analysis that could be integrated into the unit for future use.
- Describe how students' achievement is linked to the instructional strategies that were employed in this work sample.

Checklist for Writing the Post Assessment Analysis

1. Describe and analyze the students' achievement gains or losses
2. Describe what the scores in the four quarters represent
3. Compare and contrast the students' scores in the four quarters
4. If applicable, explain what the students' sub scores represent
5. Prepare a graph or table that represents post assessment results
6. Prepare a graph or table that represents post assessment results in comparison to pre assessment results
7. If applicable, describe and analyze selected groups within the class population
8. Identify any adjustments that may need to be made to strategies, content, etc. based on the results of the post assessment

Section VII: Reflective Essay

Write a reflective essay that includes what you, the teacher candidate have learned about teaching and learning, instructional planning and assessment, and your own professional effectiveness and development.

Section VIII: References

Include a complete list of the texts, workbooks, periodicals, websites, etc. that were utilized in the preparation of the work sample.

Diverse Field Experience Form

Please read about the UNC Diverse Field Experience Requirement. Scan and upload your signed Diverse Field Experience Form

Owner:	████████
Feedback on:	Initial Work Sample
Portfolio:	Secondary PTEP Work Sample Portfolio
Reviewer:	Blubaugh, Bill
Feedback Date:	Mar 25, 2010
Feedback Type:	
Rating:	

	Unsatisfactory 1.0	Developing 2.0	Proficient 3.0	Advanced 4.0	
Work Sample includes an acceptable topic map of the content of the work sample, a unit outline, and a brief description of the content & learning outcomes.					Advanced ⇕
8.3 Understands and responds to influences on educational practice...		The work sample contains one example of political and one example of community influence on the educational setting.	The work sample includes several examples of political and community influences on the educational setting.	The work sample demonstrates an impressive understanding of how the community and politics can influence the educational setting.	Advanced ⇕
9.1 Recognize and understand how students differ from one another.		The work sample includes some examples of student diversity.	The work sample includes specific examples of student diversity and reflections on the impact of diversity on the class.	The work sample includes specific examples of student diversity and reflections on the impact of diversity on the class; and how the teacher candidate will use their knowledge of the diversity to enhance instruction.	Advanced ⇕
4.2 Enhance content instruction through a		The work sample includes	The work sample shows clear alignment	The work sample shows integration of	Advanced ⇕

through a thorough understanding of all CM Standards.		evidence of knowledge Colorado Model Content Standards.	between the lesson objectives and the content standards.	unit goals, model content standards, lesson objectives, and assessments to enhance content instruction.	
1.1 (Literacy) Able to organize literacy instruction based on content needs.		The work sample includes an attempt to incorporate literacy instruction based on appropriate content.	The work sample includes examples of literacy based on appropriate content.	The work sample includes multiple uses of literacy instruction to enhance the existing curriculum.	Advanced
2.4 (Literacy) Able to support writing through relationships among reading, writing, and oral language.		The work sample includes an attempt to incorporate literacy instruction based on appropriate content.	The work sample includes examples of literacy based on appropriate content.	The work sample includes multiple uses of literacy instruction to enhance the existing curriculum.	Advanced
2.1 (Literacy) Able to plan and organize writing instruction based on ongoing assessments.		The work sample includes an attempt to incorporate writing instruction based on appropriate content and assessment.	The work sample includes examples of writing instruction based on appropriate content and assessment.	The work sample includes multiple uses of writing instruction to enhance and validate the existing curriculum.	Advanced
2.2 (Math) Utilize Colorado Model Content Standards in Mathematics for the improvement of instruction.		The work sample attempts to incorporate some mathematical function in instruction.	The work sample includes standards-based mathematical functions in instruction.	The work sample uses standards-based mathematical functions as a focus for class instruction.	Advanced
3.1 Design short and long range standards-		The work sample includes a 2-3	The work sample includes a well	The work sample includes a	Advanced

standards-based instructional plans.		week unit plan with a minimum of 5 lesson plans.	developed unit plan and 5 lesson plans that incorporate varied instructional strategies through-out the lessons.	comprehensive unit plan that encompasses lesson plans, objectives, content standards, unit goals, and assessments.	
4.3 Apply expert content knowledge to enrich and extend student learning.		The work sample demonstrates an attempt to enhance existing materials.	The work sample includes valid examples of enhancing existing materials.	The work sample shows expert content knowledge through the incorporation of enrichment activities & ancillary materials.	Advanced ⬍
5.5 Understand the cognitive processes associated with various kinds of learning		The work sample includes lesson plans that contain at least two different teaching strategies that ensure attention to various learning processes.	The work sample includes lesson plans that contain multiple teaching strategies that ensure attention to various learning processes.	The work sample includes lesson plans that contain multiple teaching strategies aligned with assessment that ensure attention to various learning processes.	Advanced ⬍
6.2 Design and/or modify standards-based instruction in response to diagnosed student needs		The work sample reflects an attempt to individualize instruction for exceptional students.	The work sample demonstrates individualized instruction for exceptional students.	The work sample reflects a profound sense of understanding of the need of the exceptional student and the ability to individualize instruction based on those needs.	Advanced ⬍
6.3 Utilize his/her understanding of educational		The work sample reflects an attempt to	The work sample demonstrates individualized	The work sample reflects a profound sense of	Advanced ⬍

disabilities and giftedness and their effects on student learning		individualize instruction for exceptional students.	instruction for exceptional students.	understanding of the need of the exceptional student and the ability to individualize instruction based on those needs.	
9.3 Selects materials that meet the needs of a variety of learners.		The work sample includes a few variations in the type of materials used in classroom instruction.	The work sample includes many types of materials used in the classroom instruction.	The work sample includes multiple types of materials that reflect the various learning styles of the students in the classroom.	Proficient ⇕
3.2 Develop valid and reliable assessment tools for the classroom.		The work sample includes the development of a pre & post assessment but lacks alignment with content standards and/or standards-based instruction.	The work sample includes a pre & post assessment which relates to the content standards and/or standards-based instruction.	The work sample includes pre & post assessments and data that is used to inform the design of standards-based instruction related to the content standards.	Advanced ⇕
3.3 Develop and utilize a variety of informal and formal assessments, including rubrics.		The work sample demonstrates one formal and one informal assessment strategy including at least one rubric.	The work sample demonstrates a variety of formal and informal assessment strategies including at least one rubric.	The work sample demonstrates a wide variety of formal and informal assessments including frequent use of rubrics.	Proficient ⇕
3.4 Assess, compare and contrast the effects of various teaching strategies on individual student		The written analysis of the pre & post assessment employed in the work sample	The written analysis of the pre & post assessment employed in the work sample	The written analysis of the pre & post assessment employed in the work sample	Advanced ⇕

student performance relative to content standards.		reflects the practice of pre & post assessment to analyze student learning and the use of quartile analysis as an assessment tool for analyzing student learning.	demonstrates the development of pre & post assessments and the use of quartile analysis as an assessment tool for analyzing student learning.	demonstrates adjustments to instruction based on pre & post assessment analysis.	
3.5 Use assessment data as a basis for standards-based instruction.		The written analysis of the pre & post assessment employed in the work sample reflects the practice of pre & post assessment to analyze student learning and the use of quartile analysis as an assessment tool for analyzing student learning.	The written analysis of the pre & post assessment employed in the work sample demonstrates the development of pre & post assessments and the use of quartile analysis as an assessment tool for analyzing student learning.	The written analysis of the pre & post assessment employed in the work sample demonstrates adjustments to instruction based on pre & post assessment analysis.	Advanced
5.4 Raise the academic performance level of a group of students, over time, to a higher level.		The work sample includes a collection of data for establishing a baseline of academic performance for the students in the class.	The work sample includes evidence of academic improvement for the students in the class.	The work sample includes various types of data analysis and reports of the evidence of academic improvement for the students in the class.	Proficient
5.7 Accurately document and report ongoing		The work sample includes a collection of	The work sample includes evidence of	The work sample includes various types	Advanced

ongoing student achievement.		data for establishing a baseline of academic performance for the students in the class.	academic improvement for the students in the class.	of data analysis and reports of the evidence of academic improvement for the students in the class.	
6.6 Collect data on individual student achievement and be accountable for each childâ��s learning.		The work sample includes a collection of data for establishing a baseline of academic performance for the students in the class.	The work sample includes evidence of academic improvement for the students in the class.	The work sample includes various types of data analysis and reports of the evidence of academic improvement for the students in the class.	Advanced ⬍
7.4 Apply technology to data-driven assessments of learning.		The work sample includes at least one type of computer generated graphic representation of collected data.	The work sample includes 2 or more types of computer generated graphic representations of collected data.	The work sample includes multiple types of computer generated representations of collected data.	Proficient ⬍
8.5 Evaluates his/her own performance and assess the professional developement options necessary to improve that performance.		Performance level does not exist; Acceptable performance level at proficient or advanced only.	The work sample contains a reflective essay which includes what the teacher candidate has learned and how he or she will use this new found knowledge.	The work sample contains an in-depth reflective essay analysis of the work sample results, as well as a specific plan for implementing new found knowledge.	Advanced ⬍

Total: 88.0

Feedback: