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Abstract

A student teaching experience in secondary mathematics amounting to 75 hours observation and 150 hours practice teaching is summarized. It reflects an understanding of the New Hampshire Curriculum Frameworks and Professional Standards as well as presenting several examples of their fulfillment in both lesson planning and classroom instruction.

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Thank you to Alan Halee, the Nashua High School math department chairperson and my senior year matrices teacher, for acting so quickly in the search for a mentor teacher. And also for stopping by several times after I started, to check-in on things.

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Chapter 1

The City of Nashua and Nashua High School

The school district that I completed my student teaching requirement is located in Nashua, New Hampshire. Part of understanding any school lies in understanding its community. How many people live there? What is the cultural make-up of the city? Is the city economically sound? What is the financial situation of its inhabitants? And how do children occupy themselves after school hours? The answers to questions like these can help a teacher to decide beforehand whether or not a school is a good match, and if it is, to assimilate to the new school. School districts even within one state can differ very much. Educating themselves about these differences should be a part of a first year teacher's preparations. And a good place to start is the city within which the school operates.

I have the distinct advantage of being a resident of Nashua for my entire life. However, this is not a replacement for educating myself about all the diversities of the city. Not every child grew up in my section of town, or took the same classes I did in the public high school. Nevertheless, here is a sweeping view of the city of Nashua. It is an upper-middle class suburb, the second largest city in New Hampshire. The census of 2000 recorded a population of 86,605 people. A quarter of those are under the age of 18. The table below illustrates the racial makeup of the city.

White	Asian	African American	Pacific Islander	From Two or More Races	From Other Races
89.25%	3.88%	2.01%	0.03%	1.46%	3.05%

There are poorer sections and richer sections. 6.8% of the population lives below the poverty line, but the median income for a household in Nashua is $51,969 [1]. It is a place that you can feel safe behind unlocked doors at night. Recreational activities can include visits to a handful of parks, a Boys and Girls Club, YMCA, our one large shopping mall, bowling alley, roller-skating rink, all within close proximity

to each other. A longer trip of an hour or so will bring you to the White Mountains, the Atlantic Ocean, Lake Winnapasauke, and Boston.

This information begins to provide a teacher with a broad understanding of the students lives outside of school and with it a good perspective about the student body. It is a way to learn as much as you can about the students before you get to meet them. And then form some constructive generalizations (subject to change, of course) to focus your beginning actions as a teacher.

Next, is the task of gathering some data about the school itself. A glimpse of the socioeconomic and racial status of the high school is below.

Socioeconomic Status
% of students receiving free or reduced-price lunch

Nashua High	NH average
16%	10%

Student Ethnicity
% of students in each ethnic group

	White	Hispanic	Asian	American Indian	African American
Nashua High	84%	10%	3%	<1%	3%
NH average	97%	<1%	<1%	<1%	<1%

[4]

Nashua has two public high schools that are Nashua High North and Nashua High South. Another thing to my advantage is that I was a 1999 graduate of Nashua High South, known then simply as Nashua High. Although the school has undergone major constructional and educational changes since my attendance, it is the same building, and has a few familiar faces. Nashua High North, on the other hand, did not exist in 1999. Nashua High as I knew it, was battling increasingly large class sizes, my graduating class was upwards of 800 students. In addition, Nashua High only housed grades 10-12 while students in grade 9 remained in their respective junior high schools. There was an immediate need for another high school.

Construction began shortly on a new building. The goal was to create two schools that although separate buildings were entirely equal in all their offerings. Part of this entailed over 369,000 square feet of renovations and the addition of a gymnasium to the original high school. This construction will be completed December 2004. The new high school is 430,000 square feet, featuring extensive vocational classrooms as well as a 1/4 mile track and other recreational fields. It will accommodate 2,000 students [2].

For the 2003-2004 school year, grade 9 is still in junior high and Nashua High South is only open for 10^{th} graders. The transition to a 4-year high school for both high schools will occur this September. The residency requirements are very strict in determining which school a student will attend. Although the schools are as comparable as possible, the separation is perhaps more apparent in some areas, like athletics. It would be impossible to completely equalize the talents of all participants for the Titans and Panthers sport teams. So, for each sport one school will naturally have a weaker team than the other. Strict residency standards are important to prevent the havoc of students choosing their school based on a perceived or real difference in either athletic or academic departments. In the situation where one school offers a unique class or vocational program there are buses to transport kids between schools during the daytime. That way, this helps ensure that the quality of education each child receives is independent of which school they attend.

In 2003, the public high schools in Nashua instituted a huge change in the mechanics of the traditional school day with the introduction of block scheduling. Both teachers and students had to adapt to this. The departure from seven periods of 47 minute classes, to 4 blocks of 86 minute classes was not an easy one. Lessons now have to entertain the already limited attention spans of teenagers for twice the amount of time. Conversely, the teenagers have to be attentive and on task for that extra time. Teachers have more flexibility with their lesson plans and activities but also more responsibility to keep the class engaged for the entire block. There are some disadvantages to block scheduling. However, the advantages more than compensate for them under the careful lesson planning of a creative teacher.

The Nashua Essential School Academy (NESA) is an alternative learning program that is open to Nashua High North and South students. Commonly referred to as 'school within a school' it is a small independent learning community. There is differentiated leveling that allows students to decide beforehand the extent of effort they are capable of, and establishing the maximum grade they can earn. However, higher achieving kids generally do not participate. In addition all students continue together through grades 9-12. There are four teachers involved in NESA for each grade. One teacher represents each primary subject, i.e. math, science, English, and social studies. The goal is to develop a safe and cooperative learning environment where students can find a sense of self within their community [3].

Nashua has a variety of services available to physical, mental or learning disabled school-aged children. Which services are received depends on the level of disability. Students who are coded for a learning disability but would benefit from an inclusion classroom are placed in a lower level class with their peers. These inclusion classrooms may have any one (or more) of the following: a paraprofessional who assists a single student, a paraprofessional who assists the entire class, or a special education certified co-teacher who shares duties with the classroom teacher. Students who are more severly disabled, like those with severe Down's Syndrome, are placed in a separate classroom where they can receive more specialized services.

All students in Nashua's public school system take standardized tests in 3rd, 6th and 10th grades using the New Hampshire Educational Improvement and Assessment Program (NHEIAP). These assessments are purely for the state as a standard to see how well students in each grade are mastering the skill set defined for that grade. The scores will not in any way reflect on the students themselves, as it does not appear on their transcripts. The table on pg.5 shows Nashua High School's 10th grade test results in 2001 and test results and statewide averages in 2002. The percents are how many students performed at a proficient level or above.

GRADE 10	2001	2002	NH average for 2002
Language Arts	22%	29%	37%
Math	23%	22%	26%

[4]

Apart from Nashua High North and South, there are a few other options for high school. One of those is catholic schools. There are two Catholic high schools available to Nashua students, Bishop Guertin and Notre Dame. The population of these schools is significantly smaller and cost of tuition significantly higher than their public school counterparts - seeing that the cost of public schools is absorbed by taxpayers. The course selection is more limited at these schools, especially in the Advanced Placement category, and it is a requirement to take one religion class each semester. Another option is the Adult Learning Center. This is a very laid back school for students who (after the compulsory age) dropped out of high school, or have issues in their lives that prevent their attendance. The main goal of the Adult Learning Center is to prepare its students to pass the GED, or high school equivalency test.

Chapter 2

Description of Courses and Their Relation to the NH Curriculum Frameworks

At Nashua High the standard math course progression for college-bound from 9th to 12th grade is as follows: algebra 1, geometry, algebra 2, and advanced math topics. This order is common for students who plan to attend college and need a solid mathematics background. All these courses are provided at any high school. Nashua High also offers many other math classes including advanced placement calculus , statistics and consumer math. The minimum mathematics requirement for graduation is two credits. One credit equals one course so it is the student's choice how many math classes they want to take, however they are obligated only to pass two math classes during grades 9-12 to receive a diploma.

Upon deciding the math class they want to enroll in, students have another choice, that is the intensity and depth with which the subject is studied. This is divided into three levels. Those levels beginning with the most demanding are classified as advanced placement (AP), honors, extension and foundations. Advanced placement classes are on par with first year college courses, and present the opportunity for students to earn college level credit. Among the other three levels, expectations are set the highest for honor students. They are expected to have excellent retention from previous math classes, explore the current subject in much depth, and regularly exhibit use of their conceptual reasoning skills. They also cover more information than the other two levels. The next level down is extension. Extension students usually struggle with conceptual ideas unless they are provided with some leading directions. Also, the need for remediation is addressed, as they are likely to have forgotten information from pre-requisite math courses. The last level is foundations. Although the breadth of material covered is the same as for extension, it is not covered with the same amount of detail. A very straightforward approach to instruction works best here. Frustration is high and motivation is low, so setting these students up to succeed will yield the best results.

Because of the differences between these four levels, they are all weighted differently in the grade point average (GPA) calculation. Since performances are much higher in an AP class than in an informal class, it needs to be reflected in the grade awarded. Four students all earning an A+ in the following four levels, AP, honors, extension and informal will receive GPA's of 5.33, 5.08, 4.83 and 4.33 respectively [5].

The recent transition to block scheduling has had some major implications for mathematics and the way it is taught at Nashua High. Under a seven period day, it would take one school year to finish a math course. Now it takes merely half a year. If the average student takes one math class a year, there can be up to an entire 365 days between classes. It is difficult to reign students in after a 3-month summer recess, imagine the hurdles for a student whose last math problem was solved a full year ago! Teachers have more flexibility with their lesson plans. In a 46 minute period about all there is time for is direct instruction, whereas within an 86 minute block, many more teaching tools can be utilized. Most importantly among these is perhaps, is the time allotted for independent or group practice. Students can attempt problems themselves and when they have difficulties, employ the expertise of their teacher or fellow classmates.

The standards that exist in New Hampshire for a public school's mathematics education are written in a document called the Curriculum Frameworks. This provides a teacher with eight fundamental strands that will be explored in increasing intensity from kindergarten all the way to 12^{th} grade. A sub-grouping that includes one to three broad goals for each of those eight strands, is more specific in terms of what is expected from every student at the end of grade 12 and the purpose of the goal. For example the first strand is Problem Solving and Reasoning. There are two broad goals for this category, one is found in section 1a and reads "K-12 Broad Goal: Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content." This statement is followed by a paragraph explaining the purpose of learning this. The other one is found in section 2a and reads "K-12 Broad Goal: Students will use mathematical reasoning." Again, succeeded by its purpose.

The Curriculum Frameworks efficiently break down a mathematics education that will span twelve years, into manageable pieces and attainable goals. In addition to the broad goals and purpose statements, and what comprises most of the frameworks, are the Curriculum Standards and Proficiency Standards. After each of the 17 broad goals, is detailed list of what skills will be learned by grades K-3, 4-6, and 7-12 to accomplish that particular goal. These are the Curriculum Standards. Since there are standardized tests administered after grades 3, 6 and 10, the Proficiency Standards list the expected capabilities of the students who have completed that grade. The cumulative and sequential nature of math is apparent in the Curriculum Frameworks. The skills acquired in grades 7-12 build upon those acquired in grades 4-6, and so forth. A weakness in a skill set that should have been learned in 3rd grade will impede learning for each subsequent grade until that skill is attained.

One of the classes I had experience with was Applied Algebra (sort of a remedial algebra). The textbook used for this class was AGS Algebra. The strands that run through this course can be viewed in the appendix, and is titled Algebra Course Outline. This is the actual order of concepts in which the class is taught, although it does not follow the order in the textbook. Note that the 'Integers and Fractions' segment is located in the first chapter in the textbook, the second segment, 'Order of Operations', pulls material from the first chapter as well as chapter five, and the third segment, 'The Rules of Arithmetic', continues on with the second chapter. This deviation from the textbook arrangement is not a large one, and is only intended to make the flow of learning more natural for students. Many Curriculum Standards are addressed in this course, here are a few taken from a range of varying broad goals (grades 7-12):

- Determine, collect and organize the relevant data needed to solve real world problems.
- Read and write rational numbers
- Demonstrate an understanding of the operations of addition, subtraction, multiplication, and division of rational numbers, and the effect of performing these operations (i.e. what can one say about the quotient when dividing by a fraction between 0 and 1?)
- Understand the standard order of algebraic operations.

These items represent a selection of standards covered and by no means represent all the standards

that are addressed throughout the entirety of the course.

The other class I had experience with was Geometry. I taught both foundations and extension leveled classes. There was a separate textbook for each, to cater to the varying abilities of the levels, so I used both Glencoe Geometry: Concepts and Applications and Prentice Hall Geometry: Tools for a Changing World. The strands that run through this course can be viewed in the appendix, and is titled Geometry Course Outline. The order of this outline also varies from the textbook, but to a much larger degree than that of the Algebra Course Outline. A brief explanation is needed to describe how it came about. A small group of teachers, including my mentor Tammy, agreed to meet once during the summer of 2003. Their objective was to develop a logical order to the geometry curriculum that would increase the connections students made from the material, along with their understanding and retention of the subject. They developed the idea to cluster all concepts related to a certain shape together and ended up with four main categories, triangles, quadrilaterals, polygons, circles. Lastly, there is a small section on transformations and composites that serves the purpose of summarizing the aforementioned categories, as well as preparing students for the final exam. Below are a few examples of the Curriculum Standards (grades 7-12) that are addressed in this course:

- Represent and solve problems using the properties of two and three dimensional geometric figures.
- Use manipulatives and computer graphics to enhance spatial sense and to increase understanding of geometry and to explore its connections to other parts of mathematics, science, and art.
- Explore linear and area measures of two-dimensional figures.
- Apply the Pythagorean theorem to real world situations.

Chapter 3

Sample Unit of Work Created

I planned and developed materials for several units while I was student teaching. These units were from the following classes: foundations geometry, extension geometry and foundations algebra. Tammy had already structured all the major Unit Plans before my arrival. This gave me two important pieces of information about each day that I was teaching; the objective and assigned homework. I knew when to expect an exam and when to devise a quiz depending on the length of the unit or continuity of the concepts. Instead of presenting the entire mass of work I have created, I thought it more appropriate to present my work and discuss my reasoning behind a single unit, from start to finish. There is enough variety to provide a good sampling representative of an average unit. All materials made reference to in this chapter can be found in the SampleUnit Plan section in the appendix.

I had observed extension geometry for a few units before I started practice teaching for Unit 5. That six-day unit had proceeded without much issue, it helped that I had about three weeks of experience with foundations algebra. Essential things like time management, direct instruction, and developing activities were becoming more natural. I chose to submit Unit 6 as my sample unit. Unit 6 was a seven-day unit on quadrilaterals. Each day is labeled with an abbreviation using the present unit number and day number. The fourth day of the sixth unit would be called, '6day4'. It is labeled this way in the appendix to keep things in order, but this abbreviation was also used in the classroom everyday. There were two white boards in the classroom, one directly in front of the classroom and one on a side wall. On this secondary board I would copy what was written on the unit plan for that day. Even though each student was given a Unit Plan the first day of every unit, in the event that it was misplaced (as often was the case), they had the white board as a reference. There was no excuse for not doing their homework or being unclear in any way about the daily schedule.

I will explain my thoughts behind the scenes each day in Unit 6, but first a description of the general daily procedures for each day. In preparing my instruction and materials, I would read the objective and make sure the goal of my lesson was geared towards that objective. I would also look ahead to the homework for that night, to make sure that the students would be prepared, at the end of class, to do the homework by themselves at home. These two things helped focus my planning and thus build the most effective lesson. The first 5-10 minutes of class was budgeted for practice problems and homework corrections. I would write these down ahead of time on an overhead slide so it could be projected before the first person stepped in class. The practice problems were called 'Do Now' problems and implied that the students needed to work on them immediately after the bell rang. These problems enforced the concepts of the previous day (or days in the event of a test or quiz), and prevented wasted class time while attendance was being taken and homework checked. The last several minutes of class is budgeted for the daily Concept Check (see Chapter 6), which I typed out and copied ahead of time. In planning for the bulk of class time, I attended to two major tasks, one was how much time was needed for direct instruction. It became hard to keep everyone's attention when these intervals were longer than 20-25 minutes, however sometimes a significant amount of time was necessary for a tough new concept. The other task was to decide which in-class practice would be the best implementation of the lesson. Having students participate in solving problems on the board would only involve a handful of students, but allowed me to thoroughly explain each problem to the entire class. This was useful for problems that required a lot of reinforcement. Conversely, a self-discovery activity was very effective in introducing straightforward concepts, sometimes even in place of a teacher-led discussion.

The beginning of the 6day1, each student received a copy of the Unit Plan. I quickly reviewed the major themes in it, the length, the content and expectations. The Essential Questions listed on the right of the page can help a student monitor his or her progress in the unit. They need to have a sufficient answer for each of these questions by the unit's end, in order to do well on the exam. After the Do Now and homework corrections, I began class with a short introduction to quadrilaterals. Figuring that most

students were probably familiar with at least the more common quadrilaterals like rectangles, squares, and rhombuses, I wrote 'Quadrilaterals' on the board and asked for volunteers to write underneath it, the various types of quadrilaterals they knew. When that was done, I asked again for volunteers to write the specific properties of each type of quadrilateral next to its name. This activity accomplished quite a bit. It was the class that had provided me with the new information, while earning participation points. It is a little more lively than when I am writing notes on the board for them to copy. Also, the information on the board was about 80% accurate. After making the corrections to their board work, I summarized the information in a schematic that illustrated the similarities and differences in properties of the seven types of quadrilaterals we had reviewed. The whole introduction took about 25 minutes. Then I explained directions for my activity on special quadrilaterals. I always explain all of the directions as concisely as I can beforehand. No matter how detailed the directions are written on the hand-out, students often don't bother to read them, or just scan through, missing half the idea. Also, I always announce the group assignments at the last moment. Otherwise, students are too preoccupied with who is in their group to pay attention to anything else. For this activity I asked them to work with one other person. Ahead of time, I had made ten sets of cards that were all placed in a small envelope. Each set included 18 special quadrilaterals that I had drawn, at least two of each different type, and students had to categorize them as specifically as they could based on the markings. The templates I used for the sets are included in the appendices. A coping machine and paper cutter made it easier to distribute all 180 cards among the 10 envelopes. For those pairs that finished quickly, I described to them how to play a 20 questions type game with their partners - using the same cards. Pretty soon they were off, taking turns using their critical thinking skills to discover the mystery quadrilaterals, and easily filling the extra time. When everyone was mostly done, they returned to their seats and I put a few perimeter problems on the overhead. Although this exact sort of problem was new, with the combination of their recent practice with properties of quadrilaterals and some simple algebra, they breezed right through them. I handed out the concept

check and that concluded my lesson. 6Day2 through 6day5 involved a deeper understanding of the individual properties of each special quadrilateral.

The objective for 6day2 was to learn more about the basic properties of parallelograms, and how to calculate their perimeter and area. I had made a discovery worksheet that the class was to work on in small groups. This was handed to them without a preliminary discussion. The goal here was for them to arrive at their own conclusions about the properties of parallelograms, based on the measurements of figures they had to draw. For a student to carry out an exercise like this, they need to enlist the use of several skills. Although the directions are very clear, all details must be accounted for if the correct figure is to be drawn. When they have a question, students are encouraged to ask their group members first, or else the purpose of them being in a group is defeated. This is especially true for lower level classes, I have seen groups work through their entire activity in silence! Having practice using protractors, rulers and their measuring skills cannot be underestimated. Despite how far along it is in the course, there will still be some confusion with using a protractor properly and resistance to using a ruler. Even when the mandatory use of a ruler seems obvious, students need to be reminded. Students will have to use higher level thinking to answer the observation questions, like "What do you notice about the opposite sides in your parallelograms?" When making a worksheet like this, I have to keep in mind my wording of questions. They need to be concise, because superfluous information will just lead to confusion. The language and markings on segments and angles must be absolutely correct. Depending on the extent of the mistake, if the class finds it before you do, it can be hard to redirect them. They seem to delight in finding a mistake that their *teac*her has made, as well as disrupting class to get off task. I devoted the last part of the block to summarizing the activity by asking students for their results, just to make sure they had all grasped the main points, and emphasize them for those who had. Lastly, I put a few problems on the overhead that required application of what they had learned about the properties of angles and diagonals in a parallelogram.

The aim of 6day3 was to identify the properties of rectangles, squares and rhombuses. Earlier, Tammy had given me copies of a homework check she had scheduled for this day, so I administered that right after the do now and homework corrections. With just under an hour left to class, that was plenty of time for the activity I had planned. In preparation for a lesson, sometimes the Internet has some good resources if you can find them. I had found a website that was running a user-friendly graphics program and decided to use it in class. The site had good directions and several thought-provoking questions that were right on target with what I wanted to teach that day. Not to mention the graphics themselves which were pretty neat. Although the site was pretty self-explanatory, I made a sheet with my own directions outlining *exactly* what I expected from each student. There are four desktop computers in the classroom and I borrowed another four laptops for the activity. I assigned groups for them, I wanted to minimize goofing off especially while using expensive technology, and every group had one computer. I made sure to include jobs, in the directions, for the students to do when it was not their turn at the computer. On the bottom of the sheet I cut and pasted a chart that I had also found online. By the end of the activity every student was able to fill in the first four rows about the properties of a parallelogram, rectangle, rhombus and square. By the end of the unit they would be able to complete the last three rows. This chart, once finished, would serve as a good summarization of special quadrilateral properties and come in handy for the exam. The concept check I gave had eight questions that required some reasoning, perhaps out of reach, considering the concept was so freshly acquired. After a brief survey of their answers I decided to award the grade out of five questions, instead of eight, meaning I started to deduct credit on the fourth wrong answer.

6Day4 was devoted to the properties of isosceles trapezoids and learning the area formula for a trapezoid. For this day, I made a double-sided discovery worksheet that focused on each idea separately. Both parts required careful attention to directions and drawing a regular trapezoid and isosceles trapezoid on another piece of paper, then affixing it to the appropriate side of the worksheet and answering the questions. Lastly, I added some problems to solve using the new concepts. I had them all start out on the

same side, and when most were finished, spent about 15 minutes summarized the concept and working through each problem. We did the same thing for the other side.

The objective for 6Day5 was to strengthen the concepts learned in the first four days of the unit, while adding the final one, relating to kites. I began class with a traditional review, mixing problems from the different types of special quadrilaterals we had studied and reiterating all their properties. Then I split the class up into small groups, giving each person a tangram template drawn on a standard sheet of paper. The point was to try and construct all seven special quadrilaterals using the tangram set. This would call for an abstract understanding of what shapes the quadrilaterals consisted of. The puzzle-like quality of the exercise appealed to most of the students. I ended the day with a short introduction on the properties of kites. Although we would delve further into kites 6day6, it's generally not a good idea to be introducing new material the day before an exam.

6Day6 commenced with another activity that involved a computer graphics program. This time I wanted the class to work in pairs so I could distribute more laptops and everyone would have more face time with a computer. A few minutes into the activity, we had an unfortunate discovery. The software that had run the program at home on my laptop was apparently not installed on the school laptops. To minimize the disruption this would cause, I had to immediately redirect the entire class with confidence. My adrenalin led me to an alternative plan, *very* fast! The figures in the activity were fluid, able to be manipulated with a few clicks of the mouse button. The students were supposed to observe the effect a shape change on a kite would have for that kite's diagonals, angles, diagonal bisectors, and angle bisectors. Left without this program, I adapted by giving the students directions to draw two kites, each of a different shape and size, and observe the changes in angle measurements, diagonal lengths, etc… In addition, I had them answer all the same questions that had supplemented the computer program. This glitch consumed an extra 10 minutes of class-time, but by quickly adapting the lesson plan, the activity was salvageable and the message was still conveyed. The last portion of class, we played the 'hot seat' game, as a review for the entire unit. Students can earn bonus points for the exam based on their team's

score in the game. Ahead of time, I write 30-40 questions that vary in difficulty onto overhead slides, and a corresponding answer key. The rules of the hot seat game are as follows: students arrange their desks into groups of four, with three chairs side-by-side positioned behind the fourth seat. The seat in front is called the hot seat. When the questions are placed on the overhead, they are revealed one at a time and only the student who are sitting in the hot seats are allowed to answer. If none of them answer correctly, all the other students are now given the opportunity to attempt the question. One point is awarded to the team with the right answer, and before the next question is displayed, all the team members rotate their seats so the next student is sitting in the hot seat. This is repeated until I run out of questions or it is the end of class.

6Day7 the unit exam was administered. I wrote the exam with a mixture of problems from the textbook, workbooks, other resources and my own. I copied a few pages directly from a workbook - one of the only times I do not create my own materials - to make a post-exam worksheet. The classroom never finishes testing all at once and for those who finish early, giving this worksheet prevents them from doing work from other classes or whispering to their classmates (which is never tolerated anyways during an assessment). The students are reminded that this is due at the beginning of the next day's class, so if it is not completed in class, they need to do it at home. I'll review their work and give a check plus, check or check minus.

That concludes my thoughts on lesson planning and classroom instruction for this unit. However, there is one last exercise that was not planned into this unit, but I frequently used, called the stations activity. I used this to review or reinforce concepts. The pre-class preparation involved making station cards and problems. The station cards were a normal sized sheet of paper folded in half to make a tent. Instructions are written on one side of the card, and on the other side, a number that is the minimum number of problems students are expected to complete. The problems - taken from worksheets - are glued onto small pieces of colored paper, there are about eight of these made for each station card. The station card and problems as described above, are created for six types of problems and the station cards

labeled 1-6. Once in class, the students are divided evenly by six, and assigned a station where they will begin. Set a timer to 5 or 6 minutes to keep track of the time spent at each station. When the timer beeps, announce for the groups to proceed to the next consecutive station number. This is continued until every group has visited every station. This is a good activity because the regular seat changes use up some of their physical energy, and they usually refocus their efforts at every station. In addition, the teacher is free to offer individual help.

Chapter 4

The Students

From the experience I had teaching four different classes, the type of student I taught was dependent on which level they were enrolled in, informal or extension. The basic motivations and goals that informal students hold are similar among most informal classes and the same goes for extension students. There are some broad generalizations that can be made about a student from each level. Keep in mind that these are not absolutes.

The motivation of an average informal student is low, and few don't have any. There have been a few students from each of my informal classes that informed me they would drop out once they turned sixteen, the logic behind schooling as well as its long-term benefits, are not readily apparent. They come from homes that don't place a high priority on school or teachers and are not planning to pursue higher education. There is high percentage of ESL and special education coded kids. Math is a very scary subject and their frustration threshold is set very low. Being absent only agitates matters, with the average student attending just 75% of the time (granted some students attend much more frequently than others). They need consistent instruction on how to perform skills like studying for an exam, interacting with their group members, and being respectful to their classmates and teacher. For the reasons above, classroom management is challenging to say the least.

The average extension student is a little more self-motivated. In fact, students who enroll in honors classes for their other subjects sometimes place themselves in extension math. The slower pace and forgiving curriculum is a good placement for any student who has a history of struggling with math. It is a good place to build their confidence with the subject and they can always advance to honors when they are ready. Extension students are more independent thinkers and will at least attempt more elaborate problems. Attendance is better, at about 80%. Their behaviors are manageable, but there still needs to be defined limits that are enforced.

For the greater portion of my first semester classes, Tammy stayed in class to observe me. This was a benefit because of the feedback she provided me with, and she also aided me in classroom management. She gave me complete control with decision making during class time, never disputing any of my choices in front of the students. After all, I was a beginner and it was natural to make some mistakes. So, Tammy saved her advice for after school when we could privately discuss the issues. While I was getting used to 'just teaching' Tammy would interject when behavior problems arose that I wasn't seeing, or wasn't addressing. It was nice to have the safety net of her presence in the classroom, but obviously this is not a realistic situation, and she reminded of this fact. I began practicing the fine art of classroom management, I would need all her input for as long as she was observing. Trying to prevent situations that caused behavior problems in the first place was the first priority. For example: an organized lecture that starts with something the students are familiar with and then extends that into the new subject prevents acting out as a result of frustration. Having a steady momentum from a lecture to an activity to an assessment, and communicating clear expectations for every minute in class prevents commotion resulting from boredom and off-task endeavors. I was fairly solid in preparing lessons that would minimize behaviors, but that certainly wasn't going to erase them *all*. Being a student teacher didn't help the students see me as an authority figure. They probably likened me to a substitute teacher, and students freely test the limits of a substitute, which can result in a wasted class.

Tammy instituted an organized system for make-up work. She had a crate of file folders on her desk containing one file for each of her students in each of her three classes. When students are absent, all the work that was assigned during class time along with a note designating any missed assessments, is filed into their folder. When they return to school, they are responsible for checking the folder, completing its contents, and staying after school to make up any assessments. They need to copy notes taken by their classmates from the day they were absent, and also seek help if they are lost. On account of block scheduling, not to mention the sequential ordering of mathematics, a student can quickly find themselves disoriented, and if not righted, the confusion just worsens. Students need to be encouraged to

take steps to correct their situation, which would typically involve a few after-school sessions. However, during class time is not the appropriate time for a student to ask for an explanation involving material that they missed. It is not fair to interrupt the education of the entire class who *was* present on that day.

Chapter 5

Assessments

Tammy used many forms of assessments. Her grading system was based on points and all work that her kids did had a pre-determined point value. This gave her freedom in which assignments were graded, how many, and what their point values were. It didn't matter at the end of the semester if there were two graded presentations or five graded presentations, every student was marked on what percentage of points they earned from the total number that were possible. Every day each student would be given an individual grade for at least one task, sometimes two or three. Since students were being assessed on an on-going basis, this gave her the liberty to assign small point values to many items, instead of large point values to few items. This gives students many opportunities to redeem themselves, being given chances every day to earn points, by allowing them to closely monitor their progress, and offsetting the worth of exams and quizzes, thereby reducing testing anxiety. When it came my turn to teach her classes I continued to use all the same types of assessment and point system, both because I wouldn't be teaching for an entire semester and to preserve continuity for the students. While still in the early learning stages with so many other things, now was not the time to experiment with alternative methods of assessment. However, the majority of assessments that I administered while practice teaching were my own creation.

I've narrowed the evaluations given by Tammy into seven categories as follows: homework check, concept check, quiz, exam, presentation, participation and graded activities. I will describe the purpose of all these in the classroom, and where it applies, include samples of the ones I created. Before I go into the explanations though, there are certain things that have to occur for just about any assessment, in order for it to be an authentic measure of a students capabilities. These things were present in all my evaluations. Students need to know what the rationale is behind their task, meaning what is the knowledge that are they expected to display. For an exam, the rationale would be to exhibit a basic understanding of the whole unit preceeding the exam. A few reminders leading up to the day of the exam as well as a good

review should answer this question for them. They need to know what the maximum time limit is in order to pace themselves on the questions, as well as the maximum number of points they can earn. Also, depending on the type of assessment, what materials they will be allowed to use or encouraged to use. On a quiz or exam these materials would be limited, but for a group activity, students would be encouraged to use all accessible resources (including their group members). It is important for the teacher to ask herself what the goal of a particular assessment is, while she is generating it. This can prevent ambiguous questions, along with standards that are set beyond or below the class's aptitude.

Participation is a five point grade given every day. If students are absent they get a zero. If a student wasn't there, they couldn't have possibly participated in the activities that day. Even though there isn't a substitute for a 1.5 hour class, students can recover those points by completing an extra credit assignment, or staying for the full duration of an after school help session. Students who are present are given five points walking in the door. Then deductions are taken for poor behavior (usually indicating a disengagement from the class activity) or additional points are given for good questions/answers and volunteering.

Homework is given daily in each level class Tammy teaches. Homework is checked and graded daily on five points in her informal classes. Extension and honors students are expected to take responsibility for doing their homework every day. All levels receive a weekly, unannounced, homework based assessment called a Homework Check. They are allowed 15 minutes to answer 5 questions taken directly from their most current homework assignments. This is worth 25 points. Students can use their notebooks, and since the page numbers and problem numbers are written next to each problem, if the student has been dutiful with their homework, they only need to flip to the corresponding problem in their notes and copy their notes. In addition, at the start of every class, homework corrections from the prior night are put on an overhead and disputes with any of the problems addressed before class begins. There is every chance to score well on these, if students keep up with their homework. Unfortunately the motivation of students is for the most part directly related to the level they are enrolled in, the lower the

level, the lower their motivation. So, the grades on Homework Check's are not usually as good as one would expect. Tammy had organized all the homework for the semester and simultaneously written all the Homework Checks. When there was a Homework Check planned for a day I was practice teaching I would administer it.

Near the end of class each day, the last thing students need to do is take a Concept Check. Concept Check's are given everyday, with the exception of days that a test or quiz is scheduled. They are worth five points. About seven minutes before the bell rings, students are asked to return to their seats (unless they are already there) and quiet down. Once the class is quiet, a half-sheet of paper with a few questions are passed around. These questions are based entirely on the focal concept of that day, and written with the intent that all students can finish within five minutes. The questions are simple and straightforward and are intended to determine basic comprehension. It is serves as a tool for teachers too. They are very short and easy to correct, and if your lesson was a success, most students should do well, there will be a lot of confused answers if the lesson didn't connect that well. Students are allowed to use their notes. Every day I practice taught, I wrote the daily Concept Check. Writing them assisted the lesson planning process, as it focused my goal of what I wanted the students to take from each class. And the results of the concept check corrections were an excellent indicator of whether or not the concept was grasped. If not, the next day's lesson plan was redirected accordingly.

Sometimes in-class activities are graded. These are usually between 5-10 points and completed by two or more students. In some classes, groups that work out the best are those chosen by the teacher. In other classes, students did well placing themselves, but even then it is a good idea to occasionally switch groups for them, so they have experience working with different people and group dynamics. A couple of examples of a graded activity are, the completion of a worksheet, a short presentation, or working through discovery problems (an introduction to a new idea). The grade is based on the quality of the work and how on-task the group members were throughout the activity. Although working together, grades are given individually, to be fair to the one person who is dutiful, working with three other partners who are

doing nothing. That said, everyone in the same group usually earns very similar grades. This is also a fairly easy grade to give. You can easily assign 5-10 points to each student while circulating the classroom answering questions. Also, students tend to treat a graded assignment with more care and effort, so taking the little bit of extra time during class evaluating their work, pays off.

Exams are 100 points and quizzes are 50 points. Quizzes are not necessarily scheduled every unit. If a unit is rather lengthy or has a clear separation of ideas, quizzes are good place markers. Students are allowed the use of a 'mini-book' for both exams and quizzes. A mini-book is a composition notebook about the size of an index card. In here can be written major concepts, theorems, formulas and definitions that were learned in the class. It is the student's choice what to write in their mini-books, and they are encouraged to use them, as it is a valuable tool come testing time. The easiest, most fair and thorough way to write an exam or a quiz, is to include one of each kind of problem that was taught. Formatting is an important thing to keep in mind too. The margins should be very small to make use of the entire page, room to show all work needs to be provided where necessary and the general layout needs to be well-organized.

Chapter 6

Summary of Experience

My student teaching experience began in mid-September. I contacted Alan Hallee who served as the department head of mathematics for both Nashua High schools, and he went about finding me a cooperating teacher. A few days later he gave me the contact information for Mrs. Tammy Leonard. It was Tammy's 3rd year teaching at Nashua High South, which was preceded by three years in a Mississippi school. I met with her to discuss my plans for observing and practice teaching in her classroom and how it would fit into to her pre-determined schedule. I was in the unique position of having a full school year for this project so I was pretty flexible which helped.

I commenced my observation hours soon after our first meeting. She was already a few weeks into the first semester of the year at that time. The order of her day was as follows, a 1.5 hour planning period (length equivalent to one block), informal geometry, informal algebra and extension geometry. For both informal classes there was a special education co-teacher assigned to the room because of the high percentage of coded children. Her name was Margaret Erskine and her role was to assist Mrs. Leonard in classroom management, administrative tasks and giving one-on-one instruction. I went to school for the start of her first class and stayed until the end of the day. During my observation I paid much attention to her approach to direct instruction, classroom management, class momentum, activity presentation and disciplining. When her lesson plan included a group activity I would wander between the groups offering help and answering any questions. On days of a lengthy assessment, during the quiet time I would add to my notes and read from The Skillful Teacher.

One of these days Tammy had arranged for me to observe an interesting lesson taking place in a different classroom. Mr. Torpey's honors geometry participated in hands-on activity involving the relationship between a triangle's midline and its base. It engaged the students and helped them learn the new idea in a different context. Mr. Torpey's lesson had been successful. Tammy's geometry classes

were approaching the same topic so she suggested that I recreate his lesson for her students. A week after my first observation, I was in charge of entertaining her extension geometry class for a whole block. My intent was to lead a 25-minute discussion on the slope formula and move on to the activity for which I budgeted an hour. My nerves and the need to occupy what seemed like a huge amount of time caused me to drastically misjudge the passing of time. So instead of finishing early, the 25-minute discussion turned into an hour and a half drone-a-thon leaving no time for the activity. I learned the importance of time management that day.

By the end of that week Tammy felt I should begin practice teaching in one of her classes. Tammy organizes the subject material of the course into Unit Plans. This is a syllabus which outlines what the students will be learning each day as well as what they are expected to know for the exam. A unit plan does not span more than 9-10 days making it manageable for students. So as Tammy was near the completion of Unit Plan 2 in informal algebra, she thought it would make the smoothest transition for everybody if I start teaching on day one of the third unit plan. I would still be observing in the other two classes; teaching just one class would help control my work load and stress levels as I embarked on the the new unit.

I put a lot of care into planning this unit. I wanted to prepare as much as possible ahead of time, I knew there would be enough unanticipated situations during class time. The first two days went smoothly, but my third, fourth and fifth day I was having difficulty connecting to the students and everyone was getting frustrated. Focusing my efforts on *what* I was going to teach had not helped me to prepare exactly *how* I was going to teach. My lectures, were providing new information, but were not organized in a way that optimized learning. I had yet to figure out how present things that would get the point across concisely, and give students a sense of accomplishment, even if the concept was brand new. It was discouraging for me that regardless of how great my pre-class preparations were, the lessons were tanking and I was losing the students attention. And I literally had no idea how to improve matters. However, Tammy had a good solution. She took the class back for two days until the upcoming weekend,

when we met to discuss how I would recover, including better approaches to lesson planning and direct instruction. I didn't recover immediately, there were still some setbacks, but those were accompanied by some definite advances. At least now I knew how to help myself.

After I had a couple weeks practice teaching informal algebra, it was time to add one more class, extension geometry. I had a good rhythm teaching one class and adding on one more, just seven minutes after algebra ended, was a bit more hectic than I had anticipated. Three hours of being responsible for everything that goes on in a classroom is a not an easy task. As my lesson presentation became more clear and natural, I started to perfect my skills in other areas. Tammy was the biggest facilitator here. She stayed in class, observing me, and taking down notes I could read through afterwards. From tips on how to handle individual students, to saving make-up work, to maintaining the classroom momentum, I was never short of things to improve on.

The biggest challenge by far first semester, was conquering classroom management and disciplining. Although I did have a realistic view on a teachers role in classroom management before I stepped foot in Nashua High, it still took me by surprise. During my observation hours I tried to pay special attention to Tammy's management technique, not having any of my own, I memorized her approach to all the scenarios she encountered. No doubt I'd encounter the same ones and then I'd have her examples to use as a resource when I'd be in front of the class. That worked out really well. Knowing what to say without standing before the whole class thinking about what to say was a lifesaver. Also, this aided in being able to correct behaviors while causing the least disruption to whatever the classroom activity might be, lecture or exam. Kids need to see that you can conduct class smoothly regardless of what interference they are causing. Here's one veteran teacher's take on this topic. He taught high school English and was among guest speakers at a college educational preparation course. I thought his words, though a tad exaggerated, described my sentiment at times:

> It's you against them. Make no mistake about it. It's war. When you walk into that classroom, they don't want to learn. They want to see you cry. They'll probe you like unforgiving aliens, find your weak spot, and slowly destroy you. Remember that always: It's you against them [6].

Ok, so maybe this is a lot exaggerated, but the central meaning behind the speech is true. In order to be an effective teacher, you need to establish control and then command respect. Equating discipline to war is maybe a little dramatic, but if you fail to establish an orderly class right away, every day is a battle where the teacher always loses. For me, some days felt like I had lost the battle, other days, I felt like I had won.

My classroom management strategy was not that effective first semester. Tammy would highlight a certain situation in her notes so we would discuss better tactics for handling future situations. One time while I was in front of class giving notes, I had asked 'Eric' to stop chatting, then returned to giving my notes. He continued to talk, but I did not follow up with my request and his behavior was ignored. Eric had learned that he could get away with talking as long as he was persistent. He also learned that my expectations for correct behaviors in the classroom were wavering, so now my other expectations were begging to be tested. I learned that once a teacher chooses to address a behavior, the desired result must be achieved or you are worse off than before you started. The broken-record technique works well here, or eye-contact, or eye-contact combined with a long pause, or walking over to the student's desk and maintaining close proximity. There are many things that can be done, and most of them take only a few seconds from class time (some, none at all). The time is well worth the effort based on the consequences. Another situation that I did not handle optimally, involved a student I'll call Annika, who was very mouthy and often a behavior problem. I had assigned an activity that the students were working on in pairs and I was in the process of assisting Annika's partner. As I was about to leave, Annika said something extremely disrespectful and inappropriate to me, although I can not recall her exact words. The extent of my reaction was to look at her in disbelief, say nothing, and walk away. She learned that I did not demand respect of the students and therefore myself. The purpose for her comment was to exert

power over me, the authority figure. When I backed down without issuing an appropriate admonishment, at that moment I had given her authority over myself, along with an invitation to repeat the incident. What I learned is that it is not always necessary for a teacher to enter a power struggle, but when one is presented to you in such a manner, it is absolutely necessary for the teacher to win. The whole class is witness to your reaction and even if the struggle is between you and one student (which is most often the case), if you lose, you will lose authority to the whole class. Students need to have a clear message that being disrespectful to a teacher or a fellow classmate will not be tolerated under any circumstances.

Probably the biggest flaw in my disciplining strategy was my hesitance to ever conclude a disruption with a detention or other real consequence. I made too many allowances where it was not deserved and the lack of any real demonstration of enforcement, over time, silenced my requests. Tammy kept assuring me that it was normal to give a detention and that it was, after all their choice to earn one as indicated by their behavior. The first day I gave my first detention was also the day I gave my second detention, in the same class. Both students were 100% deserved of this pleasant 15-minute after-school stay. However, the mistake I made was not preparing them for their consequence, both detentions would have been more effective given much, much earlier. I had let them get away with disrupting class several times before, why should they expect any different from this day? I had failed to establish a swift and predictable action/reaction approach to discipline early on, therefore diminishing the effect of the detention. The students perceived me as arbitrarily handing them out, and did not have to take any accountability for their behavior.

Three weeks before the end of first semester classes, Tammy resumed teaching in order to prepare the students for their final exam. This counted for 15% of their grade. Tammy had written the exam and already had a plan for review, so she was better qualified to lead them through test preparations. She continued teaching two units into the beginning of the second semester. Since this was Nashua High School's first year on block schedule, she wanted to make sure the transition for the students was a smooth one and that her routine could be established upon my arrival. I attended the first two days of

school for the second semester for observational purposes. Other than that, there was only one other time I was in school. Tammy was attending a professional conference in Texas that meant she would miss two days of school. She asked if I would substitute teach all three of her classes from her lesson plans, which I gladly did.

This free time worked out well. I had almost three months that I could reflect on my first semester experiences and make necessary modifications to my performance. Tammy had made an anonymous, five question evaluation sheet and handed them out to the students I taught. I read through every single comment from my students with an open mind. I didn't take all their opinions seriously, just looked for any general trends. There was one, but it did not come as a surprise. They felt, overall, that my disciplining had been too forgiving. Taking into account all knowledge I had so far about classroom management, I devised new strategy, one that was very simple, it would be simple for me to enforce and simple for the students to understand. I had the huge advantage of having a fresh start with two new classes.

I began teaching second semester when Tammy ended Unit 2. The two classes I was teaching this time were both foundations geometry. The students were all new faces but I learned names within two days and exerted myself immediately. Tammy was not in the classroom at all this semester. She worked at her desk in the teacher's lounge and I had her extension just in case. Needless to say, there was a marked improvement in my disciplining style. Probably the very first place I noticed it was the way that I felt. This time, I felt like I was in control of the class, and regardless of what issue arose I never let that conviction falter. I am sure that this air of confidence did not go unnoticed by the students. I gave fair warning before assigning a detention, but followed-through and gave one where it was due. Part of my follow-up included making a call home to their parents. I'll give two examples of my proudest accomplishments second semester.

The first was in my second block foundations geometry class. I began class with an activity that required students to draw a right triangle on their own paper, containing pre-determined acute angle

measurements, then record those results on a chart I had drawn on the whiteboard. The students were particularly unmotivated that day. Five minutes passed and there were only two results on the board. Many students had not even bothered to start drawing a triangle. After reiterating the directions and offering a few encouraging words, I waited two more minutes. The class was stalling and goofing off, they knew this event was wasting class time. My next words were insistent, "This is a disappointment, because I know that you can do better. There are only two results on the board. I expect eight more. There are 17 of you in class today, so that is a reasonable expectation. You understand how to draw the triangle, everyone at least needs to have it drawn on their own paper. I gave you almost 10 minutes to share ideas among yourselves, you have abused that privilege, so you will now work by yourselves without talking. We will not resume with class until this chart is completed." I was very serious in my little speech, exhibited by my tone of voice and facial expression. It worked. Not a few minutes later, there were six more results on the board, which was a sufficient number to work with, so I continued with class.

The second incident occurred in my first block foundations geometry class. In this class, there were about three different cliques of students who had a tendency to be very chatty. My reminders were not being heeded, but I did not feel their behaviors warranted a detention yet. Every class, I usually have a group activity and most of the time, allowed them to self-select their group members. At the beginning of class one day, I explained that the chatting was excessive and it was their responsibility to be quiet without constant reminders. As an incentive I drew a table with one column and three rows on the board. "It's simple. Three strikes you're out. I will allow you to choose your own groups today, but you need to show me you deserve to do this. The first two boxes are my way to communicate to you that the noise is getting excessive, and your chance to correct it without being penalized. Once the third box is marked, I will be choosing your groups today. Are there any questions?" That day, I only had to mark one box. I actually had students telling each other to be quiet, an example of good peer pressure. Another day I had

to mark all three and I chose their groups. So they had tested me, I enforced my words with the action I had promised, and the day after that… no marks.

I read somewhere that if all teachers had to do was teach, it would be an easy job. Add in the variable of classroom management and discipline; it is probably one of the hardest jobs in the world. In fact, discipline is listed as the number one reason teachers leave the profession. I absolutely found this to be true in my experience. The time spent organizing lectures, creating amazing activities and quality assessments is worthless if it cannot be implemented in the classroom, and the biggest hurdle to implementation is classroom management. If you do not first have the student's attention, nothing else can be accomplished. I feel now, more than ever, that teaching is an incredible art and I could not replace my time in the classroom with every single manual in the universe.

Inventory of Work Created

Lesson Plans	
Do now and homework corrections	*every day *
Other pre-prepared overheads	7
Visual aids	3
Activities	
Worksheet	13
Discovery	15
Station	23
Games	9
Computer-aided	2
Group presentation	2
Post - exam worksheet	10
Project	1
Assessments	
Concept check	35
Homework check	7
Quiz	3
Exam	10

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Tips and Expectations

. **Come to class every day.** Be eated by the time the bell rings. Do ot pack up before the bell rings. If ou are absent, you need to make up ne 5 participation points for that day.

a. Be on time. If you are tardy, ou will lose 1 participation point for nat day and you will serve a 15 inute detention with Mrs. Leonard. you are tardy again, you will lose 1 articipation point for that day and ou will be referred to your dministrator. Only passes from an dministrator or the nurse will be ccepted if you are late.

. **Be prepared for class.** Have our supplies with you every day. lways have your homework done. ring something to write with. Always ave your book in class and have it overed. Get enough sleep. *I do not an required supplies.*

. **Do your homework every night.** lomework is your chance to practice hat you learned in class. You can se your homework on the omework checks.

. **Correct your homework at the tart of class every day.** Some of ne problems will be done for you on ne overhead when you come in. ou can see whether or not you nderstand the concept and if you eed to ask a question or to come for xtra help.

. **Do the Do Now.** Immediately fter the bell you need to do the do ow from the board or overhead. he first few minutes of class are not ocial time.

. **Come to an extra help session s soon as you have a problem.** If ou don't understand what is taught n class, you need to put in extra time o keep up. Extra help sessions are eld every Thursday after school.

. **Make up your work right away if ou miss class.** If you are absent, ou must get caught up right away. ou are not allowed to make up ork, tests or quizzes during class. Your work must be made up by the end of the 2nd make-up session after the absence.

8. Create a good mini book. Mini books must be a mini composition notebook and be written by you. You may use it on any quiz or test. You can only use one. Blank ones can be purchased from me for $1.00. **What makes for a good mini book?** It is written neatly, is organized, and doesn't contain too much information. I have a sample mini book which you can look at and/or copy during a help session.

9. Study daily. Look over your class notes every night before you do your homework. If you review often, you won't have to cram the night before a quiz or test.

10. Keep a good notebook: class notes, homework, handouts. Keeping all class notes and homework, will give you sample problems that you can review.

11. Get help before you are out when it is a planned absence. If you know that you are going to miss class, you should come to a help session before you are out to learn what you will miss and to get your work.

12. Always *try* every problem. If you start to do a problem, you will often be surprised that you can do more than you expected. You will get some credit if you make an honest attempt at a problem.

13. Do test corrections after each test. Until 2 weeks before the end of each quarter, you can make corrections to any test given that quarter. You use your book and notes (and ask me for help) to re-do problems. You can earn back half the points you lost. *Test corrections must be done in the classroom during one of the help sessions.*

14. Don't lose "The Plan." This is a list of homework, quizzes and tests for each unit. You will be given one copy. The Plan is posted in the classroom. Even if you are absent the day before a quiz, test or homework check, you will take the quiz/test/homework check on time.

15. Keep your cell phone, beeper, CD-players and head phones out of sight and turned off. You may not use your cell phone as your calculator during class.

16. Be in class for the full period. If you miss an activity you will need to make it up at a help session.

17. Pay attention and participate fully. You need to take an active role in class. Activities are not optional.

18. Eating and drinking are not allowed in the classroom.

19. All detentions are served on the next make up day. Detentions are doubled if they are not served as assigned. When a detention has been skipped twice, it is referred to a headmaster.

20. Bathroom Passes. You will be given 4 bathroom passes each quarter. In order to leave class to go to the bathroom, you must turn in a pass. If you remain in class and save your passes, they can be turned in at the end of the quarter and are worth 3 bonus points each.

21. Grooming. The classroom is not the place to put on lotion or make up or to brush your hair.

Required Supplies
Foundations Geometry
covered textbook, notebook
ruler, protractor

Recommended Supplies
Foundations Geometry
mini book
scientific/graphing calculator

Consequences
conference with student
phone call or letter home
detention
referral to the headmaster
conference with parent

How Grades Work

omework

Homework is assigned every day. A complete mework list is provided at the start of every unit.
At the start of each class, students have the opportunity correct their work.
Students have the opportunity to get extra help on their mework at all extra help sessions.
Homework checks are given once every week.
omework checks consist of 5 problems that are taken ectly from the homework assignments. Students can e their homework during the homework check.

articipation

ily Participation Each day students will receive a grade 0-5 based on their overall participation in class. Being time, awake, on task and respectful of others as well as ving all necessary materials will be factors in this grade.
-Class Activities Students will participate in a variety of tivities such as group work, worksheets and skill checks. ch of these will be scored out of either 10 or 5 points.

uizzes

metimes quizzes are given part way through a unit. uizzes cover a relatively small amount of information. metimes I will choose to assign a project in place of a iz. Students may use their mini books during any quiz. ote: using another student's mini book, or a mini book at violates the rules, is considered cheating and will sult in a zero for that quiz. Note: talking to another udent during any quiz period is considered cheating and ll result in a zero for that quiz.

ests

ne exam is given at the end of each unit. It covers all of e concepts taught in that unit. Sometimes I will choose assign a project in place of an exam. Students may use eir mini books during any exam. Note: using another udent's mini book, or a mini book that violates the rules, considered cheating and will result in a zero for that am. Note: talking to another student during any testing riod is considered cheating and will result in a zero for at exam.

xtra Credit

bonus assignment will be posted each week. This signment can be done for extra credit, but it is not quired work. Each assignment is worth up to 5 points. o earn the full 5 points, the assignment must be complete, ork must be shown, and it must be at least mostly rrect. Additional extra credit assignments will NOT be ven.

Make Up Work

1. If students are absent, they will miss their participation grade for that day. One way to make up those points is to complete an extra credit assignment. The other way to make up participation points is to come to a help session – the student must attend the full time of the help session to earn the full points and must let me know that they are there to make up participation points.
2. Missed quizzes, homework checks, tests or in class activities can only be made up during the extra help sessions. These sessions are every Thursday and sometimes 1 other day after school.
3. Students are allowed 2 Make-Up sessions (and any extra help sessions between the designated make-up sessions) to complete work after an absence. It is the student's responsibility to adjust work/practice schedules to make attendance at extra help sessions possible.
4. Students who are truant (or skip class) can not make up their work.

Points for Each Assignment

Daily Participation	=	5
Daily Homework	=	5
In Class Activity	=	10
Homework Check	=	25
Quiz	=	50
Test	=	100

Grades are calculated with this formula:

The number of points a student earns (E), divided by the number of points a student had the opportunity to earn (P), multiplied by 100 equals the grade.

$$\frac{E}{P} \times 100 = \text{Grade}$$

For example: With the following grades, the student's average for that quarter would be a B-

Daily Participation: 5, 4, 5, 5, 3, 5, 0, 2, 5, 4, 4, 4, 5, 3, 4, 5, 4, 5, 5, 3, 5, 0, 2, 5, 4, 4, 4, 5, 3, 4, 5, 4, 5, 5, 3, 5, 0, 2, 5, 4, 4, 4, 5, 3, 4
In Class Activities: 8, 7, 10, 9, 8, 6, 3, 10, 9
Homework Checks: 20, 25, 23, 24, 15
Quizzes: 45, 40, 48, 36, 46, 42, 37
Tests: 96, 80, 98, 88

$$\frac{505}{595} \times 100 = 85 \text{ or a B-}$$

Informal Algebra
Unit 4 Day 1
You will graph points in the xy-plane. You will graph lines through 2 points on the xy-plane. You will graph points using xy-charts.
5m Do Now
Have students identify the x,y coordinates of 4 points (labeled A,B,C, D) drawn on a graph sheet overhead. Tell students that these points are graphed on the coordinate system. Graphing points just means drawing a dot where the point is located.
Make sure they know which quadrants these points are in, remind them that quadrants are labeled with Roman numerals.
5m HW Review: Answers to p. 234-235: 2-22 even (I wasn't sure how to write all the answers on to one overhead so I was just going to ask if there were any #'s they wanted me to go over)
20m
Present students with the equation y = 2x. Explain that y = 2x is the equation for a line. Since an ordered pair has (x,y) an equation like this represents the pair and how they are related. Ask how many points are needed to make a line. Introduce finding the coordinates as a way to get at least two points on this line. Though it is a good idea to pick more points to make sure the ones you picked are correct. When you pick a number for x, the equation will tell them the number for the y that is true for this line. Then they have a coordinate pair, or one point. Give them -1,0,1,2 as values for x and have them find values for y. Combine the x and y values into a coordinate pair. Do the same thing for y = 2x-2 with (-4,-2,0,2). Tell them that any point for x they could possibly pick will have a matching y value that is true for the line.
10m
Give them the worksheet, Tell them to complete the first 4 tables. Here they are finding the x and y values for the given equation and coming up with a coordinate pair. Go over their answers.
10m
The equations above gave coordinates for points on their lines. You can plot these points, connect the dots and graph the line. Show the example that relates to y = 2x and y = 2x-2.
10m
Independently complete the last 3 problems. Here they have to find the x and y values for the equation, come up with coordinate pairs and graph those points. Tell them to use a ruler to connect all three points with the longest line they can draw. Go over answers
5m POD
(give them a small piece of graph paper, which can also be used for concept check)
Plot the following points on a graph: (4,4), (-4,4), (-4,-4), and (4,-4). Connect these 4 points with straight lines. What figure do you get?
15m
Odd problems in the book.
5m Concept Check
Give students a small piece of graph paper. They must draw and label the line y = 3x using the given coordinates.

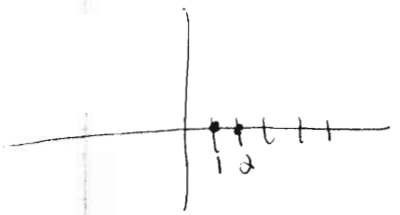
Homework: p.234-235: 2-22 even; p.237: 4-8 even

If someone is not paying attention + you call their name, make sure they stop doing what they're doing + pay attention to you before you turn your attention somewhere else.

~~[illegible]~~

When you are writing your lesson plan, you should always think through what you're going to say to explain everything... almost practice the whole lesson (everything you're going to say) as you're writing the plan. That way you'll know how you're going to explain everything + not just what you're going to explain.

Make sure that they know that they're counting clock-corners + not block spaces.



sometimes they put points in the middle of blocks.

Quadrants are always labelled w/ Roman numerals.

10.28.03

Algebra

- Always have something for them to do at the start of class.
- Always have the goal, HW and day on the board at the start of class.

It's helpful for clearing substitution if they have in their minds what "substitute" means (substitute teach, God substitution, substituting players in a game), before they work with it.

When you do multiple problems on the overhead draw a line to separate them so that kids can see where problems begin + end.

General thing... they need a concept check everyday that they don't have a quiz or test ...otherwise the percents of types of grades a kid is in my grading scheme.

Good job today :)

Don't introduce something new in the last 2 minutes of class... then they ~~feel~~ leave feeling confused instead of confident.

Make sure you've pulled CC's and make-up work for all absent kids

- each day you need to put make-up work for each absent kid in their make-up folder (along with notes for any missed quizzes, test, homework checks, concepts)
- each day you need to write the names of all absent kids and Concept checks I set them aside for me to put into the make-up binder.

You need to tell Chantal to sit correctly in her seat... she was sideways for most of class, which defeats the purpose of the seating chart.

Make sure that when they ask a question, you answer it.

You need to deal w/ discipline throughout the class. You were working with Rosa and lots of stuff was happening that you didn't notice or address... you've got to be able to help 1 student while managing a whole class.

Algebra 1 10/29/03

Good: You gave them a list of steps for substitution

Don't Forget You need to tell them what day their on on the PLAN (on the board)

Good: Waking up Adam ... it got giggles but it absorbed the right message.

Don't chew gum while you teach

Good You consistently followed the same steps w/ each example + kept referring to them.

Good You did some discipline today w/ a firmer voice.

Geometry

Looks like things went fine.

Wendy said she heard you keeping kids on task.

- If you have each group do a different property, it's a good idea to have some sort of assessment on all properties so that they have to pay attention to each other's presentations.
- $RT = 7$ means "the length of $\overline{RT}$ is 7"
  $\overline{RT} = 7$ is incorrect notation.
- TJ's algebra skills are weak, so you need to show all steps in algebra problems.

↓ did the concept check kind of serve the purpose.

Algebra

List 3 things that Ms. Varhegi did well.

answered questions to best ability
made accurate tests,
knew what she was talking about

List 3 things that Ms. Varhegi could learn to do better.

I liked the way she taught it

Write 3 adjectives to describe Ms. Varhegi.

Nice, funny, Smart

How did Ms. Varhegi help you to be interested in this class?

she interacted with us.

How would you describe Ms. Varhegi's teaching style?

Personal

How would you describe Ms. Varhegi's style of dealing with students who caused disruptions in class?

mellow but strict, She didn't get to upset but when it was time to be serious, she told you.

What 1 piece of advice would you give Ms. Varhegi for when she teaches next semester?

keep up the good work :)

am D. [redacted]

Algebra

List 3 things that Ms. Varhegi did well.

- taught well
- kept me awake
- Skillful teaching for her age.

List 3 things that Ms. Varhegi could learn to do better.

- organize her thoughts before saying stuff
- unorganized homework & tests.

Write 3 adjectives to describe Ms. Varhegi.

Cool. Happy. Skillful

How did Ms. Varhegi help you to be interested in this class?

She made it fun.

How would you describe Ms. Varhegi's teaching style?

Mostly fun constructed teaching.

How would you describe Ms. Varhegi's style of dealing with students who caused disruptions in class?

She needs to be stricter and she started doing that at the end of her term.

What 1 piece of advice would you give Ms. Varhegi for when she teaches next semester?

Keep it fun + they will all enjoy it!

Geometry

List 3 things that Ms. Varhegi did well.

she knew what she was doing.

List 3 things that Ms. Varhegi could learn to do better.

* she got off task a little too much.

Write 3 adjectives to describe Ms. Varhegi.

I can forgot what an adjective is.

How did Ms. Varhegi help you to be interested in this class?

?

How would you describe Ms. Varhegi's teaching style?

she put us in allot of group assignments (not a bad thing.)

How would you describe Ms. Varhegi's style of dealing with students who caused disruptions in class?

She was very easy going. when kids would disrupt her she wouldn't really try to stop them seriously.

What 1 piece of advice would you give Ms. Varhegi for when she teaches next semester?

Be more firm on the kids disrupting class.

Michael Bullock !!

Geometry

List 3 things that Ms. Varhegi did well.

Taught easily enough, answered questions, paying attention most the time

List 3 things that Ms. Varhegi could learn to do better.

Use time better, Don't be afraid to hand out detentions, nothing else

Write 3 adjectives to describe Ms. Varhegi.

I can't think of any.

How did Ms. Varhegi help you to be interested in this class?

for me, nothing changed from when Mrs. Leonard was teaching.

How would you describe Ms. Varhegi's teaching style?

Seemed like She was trying to copy Mrs. Leonard.

How would you describe Ms. Varhegi's style of dealing with students who caused disruptions in class?

Seem like she wanted to give detentions but she couldn't pull herself to do it.

What 1 piece of advice would you give Ms. Varhegi for when she teaches next semester?

Have more control over the students.

omework Corrections

213: 12-16

$\triangle ABC \cong \triangle DEF$; SSS

$\triangle BCA \cong \triangle DFE$; SAS

$\triangle BCA \cong \triangle BCD$; SSS

$\triangle DBA \cong \triangle DBC$; SAS

254: 8, 9

HL

HL

p. 218-219: 17-20

17. $\angle C \cong \angle E$

18. $\overline{CB} \cong \overline{DE}$

19. AAS

20. SAS

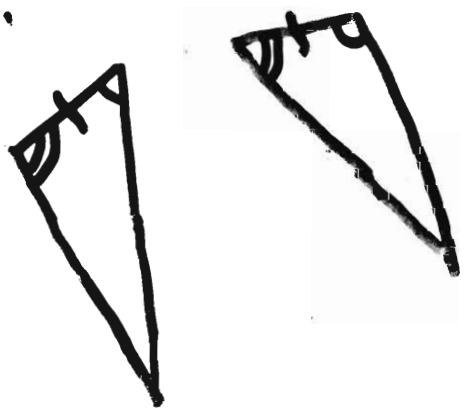
Now !!

etermine which postulate can be used to
ove that each pair of triangles is congruent.

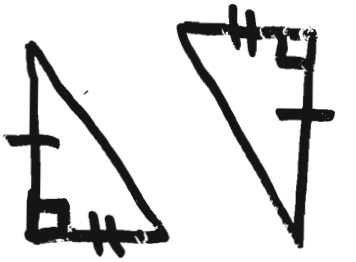
2.

3.

5.



6.



HW Corrections

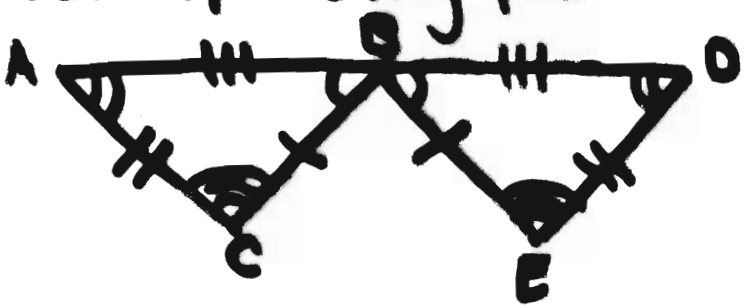
p. 206: 17, 18

17. CAB

18. BCD

Do Now

1) For this pair of triangles complete a congruency statement and list ALL corresponding parts.



2) Is it possible to draw two triangles with the exact same angle measurements that are not congruent?

3) Is it possible to draw two triangles with the exact same side measurements that are not congruent?

Name _____ Date _____

Homework Check

1. p. 117: 12 **Rewrite using a negative exponent.** $\frac{1}{m^3}$

2. p. 137: 10 **Write 4,000,000,000 in scientific notation.**

3. p. 119: 14 **Rewrite 2.71×10^{-8} so that it is no longer in scientific notation.**

4. p. 47: 8 **Estimate.** $\sqrt{105}$

5. p. 49: 14 **Find the value of $\sqrt[5]{c}$ if c = 64.**

Concept Check

Name _____ Date _____

1. On your graph paper, draw and label your x and y axis.
2. Label the origin.
3. Graph and label the line $\mathbf{y = 3x}$ using the coordinates in the table below:

$\mathbf{y = 3x}$	
x	**y**
-1	-3
0	0
2	6

Finding Linear Equations

always need these two things make a linear equation:

1. **m** (slope)
2. **b** (y – intercept)

en you have both of these numbers, replace the **m** and **b** in this equation, $y = mx + b$ with the numbers found.

Sometimes the problem will *give* you both the **m** and the **b.** For these problems you just need to put the nbers into the right place in the y = m x +b equation. The question will look like this:

Write the linear equation for a line that has this slope and y-intercept

m = 3 b = -1/2

2. m = 0 b = -3

m = 4 b = -3

4. m = 1 b = 23

Sometimes the problem will give you a **point** that is on the line and the **m.** For these problems you need to d **b.** Remember that you need to use the y = m x +b equation to get **b.** Plug in x and y (from the point) and m solve for **b**. Now you will have both **m** and **b.** The question will look like this:

Write the linear equation for a line that has this slope and point

m = 3 (4, 5)

6. m = -1/2 (6, -3)

m = -1 (-1, 4)

8. m = 3/4 (1, 0)

Sometimes the problem will give you two **points** that are on the line. For these problems you need to find **m** and **b.** Label your points, and plug the numbers into the slope formula. Now you have **m.** Use the y = +b equation to get **b.** Plug in x and y (from a point) and m to solve for **b.** Now you will have both **m** and **b.** question will look like this:

Write the linear equation for a line that has these two points

5, 2) (2, -1)

10. (5, 8) (3, 2)

(6, -3) (-2, -3)

12. (5, 2) (2, -1)

Sometimes the problem will give you a linear equation that is **not** in y = m x + b form. First, use addition /or subtraction to put all the terms on the correct side of the equals sign. Second, make sure the terms are in correct order. Lastly, make sure the y is by itself and simplify.

Simplify this linear equation into y = mx + b form.

x + 2y = 4

14. 4x – 2y = -2

2x – y = 5

16. x + 5y + 11 = 0

Quiz

Informal Algebra 10-01-03

Name (s)_____ **Date**_____

Simplify these expressions

1. $7y + 3y - 4$

2. $14x - (-14x)$

3. $10 + (-4g) + 10 - 13x - 2g + 5x$

4. $3x + (-17) + 21f + 3x - (-21f)$

Write an equation for each statement. Use x as the variable.

5. Two subtracted from some number equals two _____

6. Five added to four times some number equals twenty-five _____

7. Three times some number plus twenty equals fifty _____

8. Three times some number plus one equals seven _____

Solve the following equations for the variable.
(for full credit you must draw the line and box and also show every step!)

9. $x-2.5 = 5$

11. $20v-(-5v)+8v = 66$

10. $3n+1 = 28$

12. $5j-1j-1j+5j+1j = 99$

13. $y+7 = 13$

17. $7x-2 = 5$

14. $12 = (1/5)n$

18. $(2/3)r-2 = 20$

15. $4x = 44$

19. $4b+1 = 20$

16. $5x+3x+2x = 10$

20. $4k-1 = 15$

Bonus:

Mary worked for 6 hours, which was a third of the time her sister worked. How many hours did her sister work? Write an equation and solve.

Exam : Substitution and Functions

Informal Algebra

ne_____ Date_____

When solving any system of equations using substitution, what does the answer tell you? _____

_____

ve each system of equations using substitution:

a) $y = 3x + 1$
$x = 2$

b) $y = x + 2$
$6 + 2x = y$

c) $3x - y = -7$
$5y + 5 = -5x$

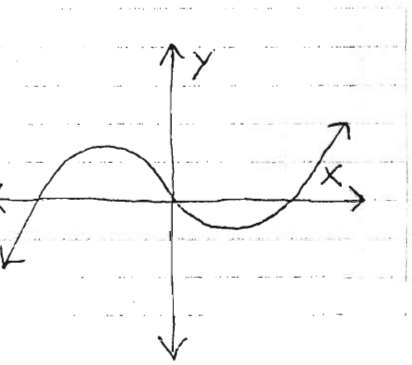
d) $3y - 6 = x$
$2y + x = 4$

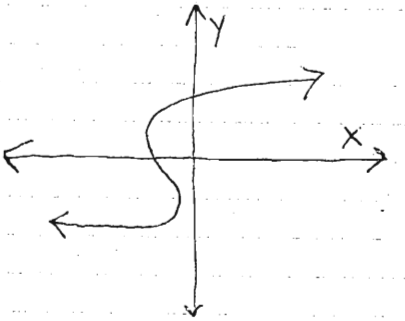
Anique says, "I am thinking of two mystery numbers. When I add these numbers together, the sum is 38. en I subtract the smaller number from the larger number, the difference is 24." What are both of Anique's stery numbers?

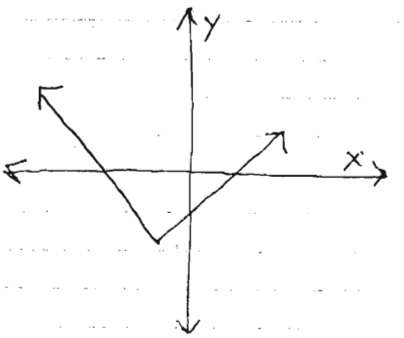
ave has a box of black and white buttons. When he empties the box and counts the buttons, he finds a of 124. He also counts that there are 4 more than 3 times as many white buttons as black ones. How buttons of each color does Scott have?

each graph an example of a function? Write *yes* or *no* and explain why.

_____ **b)** _____ **c)** _____







valuate each function *two* times. Use **x = 3** and **x = -2.**

x) = $-x^2 + x$

b) $f(x) = 2x^2 + x$

c) $f(x) = x^2 - 4x + 9$

iven a regular
nagon, find the
llowing

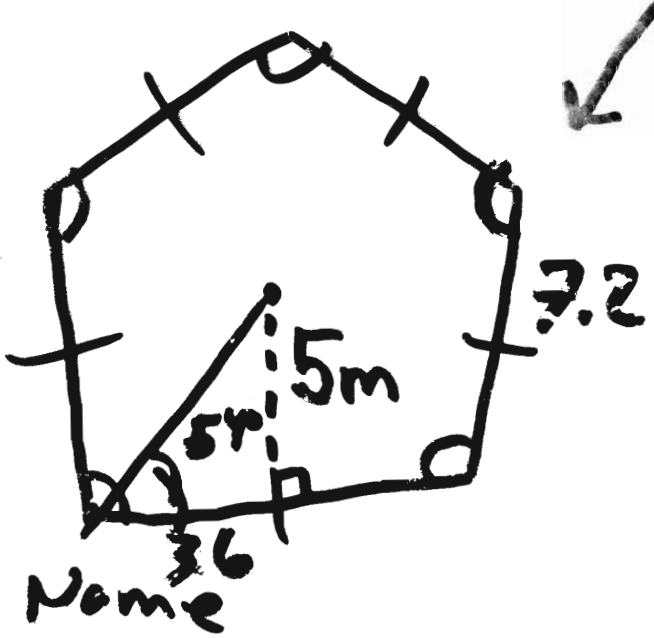
the measure of one
interior angle.

the measure of one
er terior angle.

Name these polygons with the following number of sides.

1). 3
2). 4
3). 5
4). 6
5). 7
6). 8
7). 9
8). 10
9). 11
10). 77

ss is a reguler polygon.
me it and find its
ea.



Name

) Area

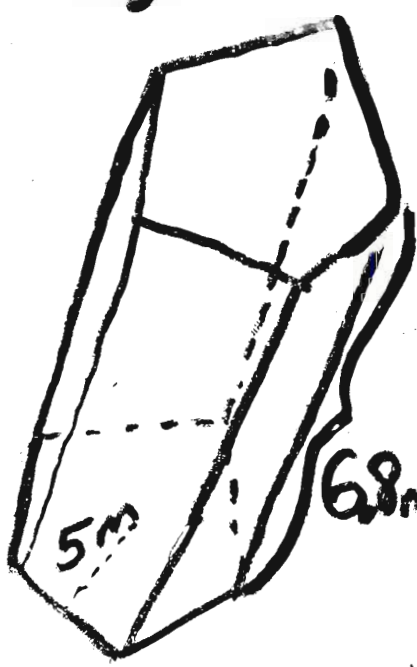
This polygonal prism has bases with the same measurements as

Find the following:

1) L.A.

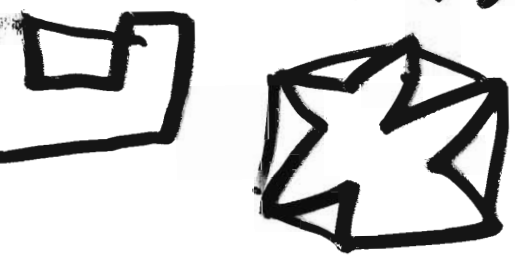
2) S.A.

3) Volume



Define Concave Polygon

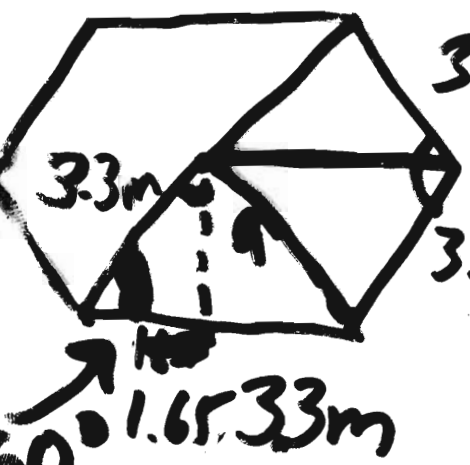
Draw an example of a concave polygon



1) Define Convex Polygon

2) Draw an example of a convex polygon

...is is a regular polygon



Name

Perimeter

Area

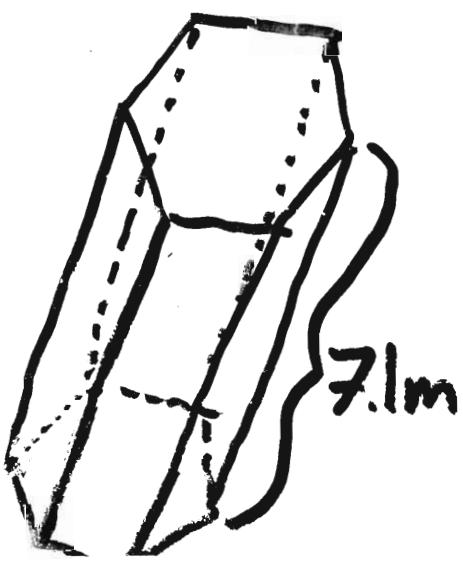
This polygonal prism has bases with the same measurements as

Find the following

1) L.A.

2). S.A.

3). Volume

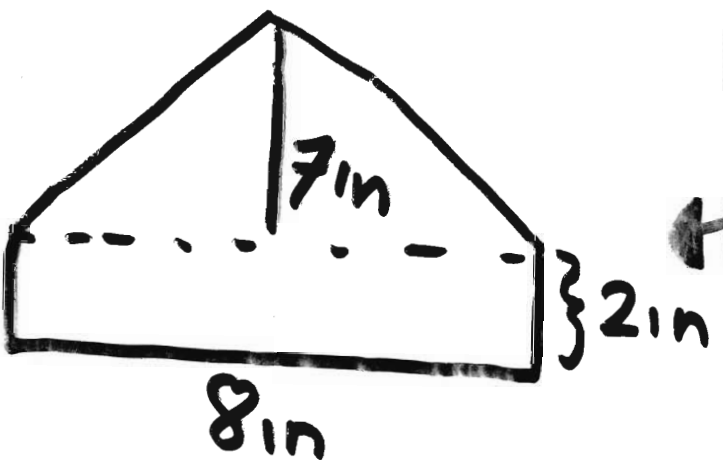


Define POLYGON,
ow an example

Draw a figure that
S NOT a polygon

1). Define REGULAR POLYGON. Draw an example.

2). Define IRREGULAR POLYGON. Draw an example.



ind the following:
Area
Perimeter

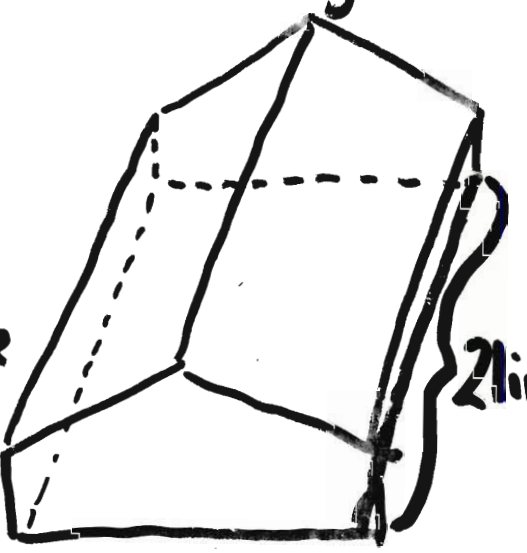
This polygonal prism has bases with the same measurements as

Find the following:

1). L.A.

2). S.A.

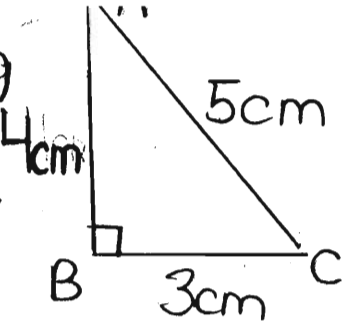
3). Volume

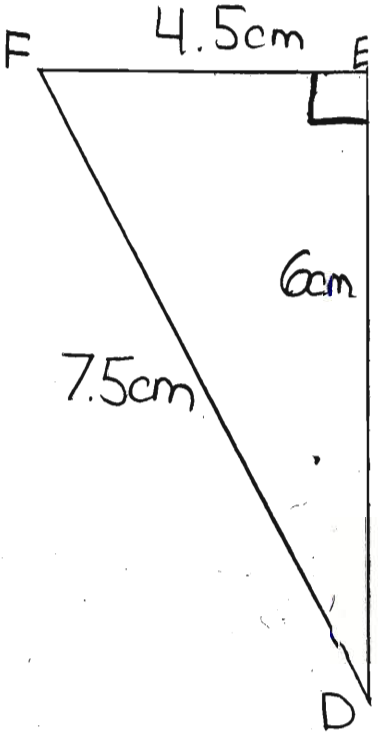


Identify ALL corresponding angles.

Identify the ratios of ALL corresponding sides.

Name a similarity statement that is different from the one given.



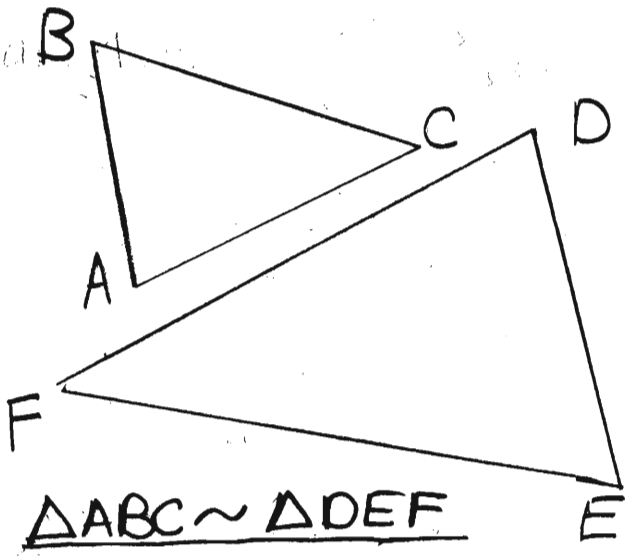


$\Delta ABC \sim \Delta DEF$

Solve the proportion: $\frac{16}{36} = \frac{4}{d}$

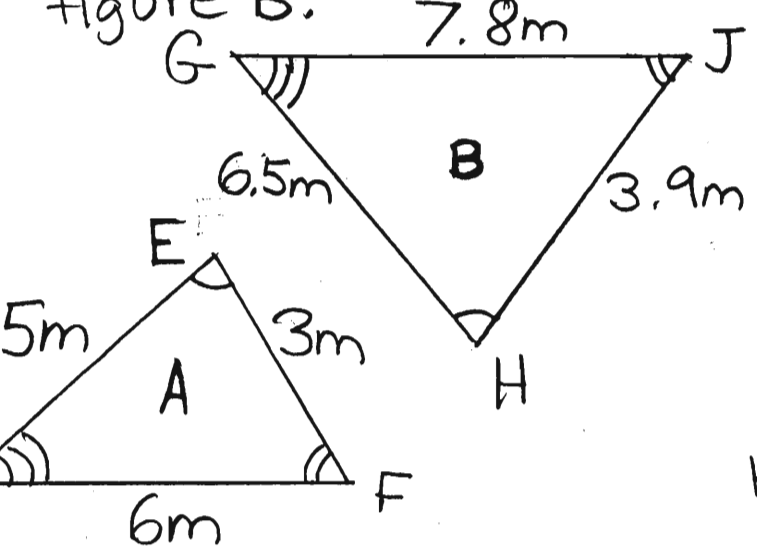
Name the corresponding angles for this pair of similar triangles.

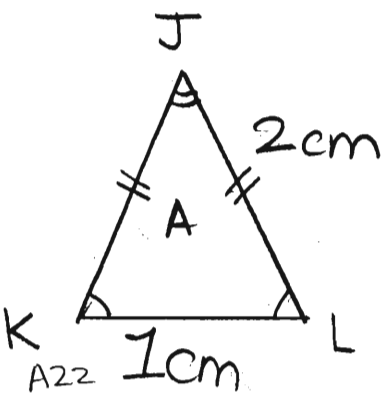
List the ratios of all corresponding sides.

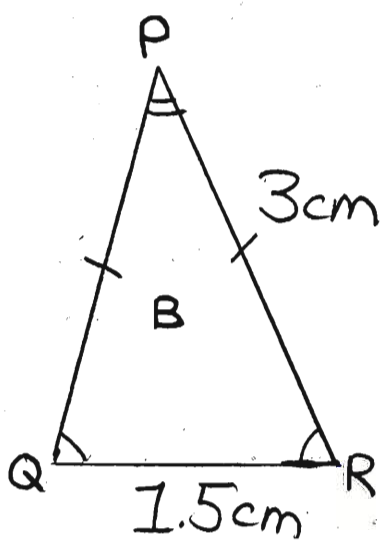


$\Delta ABC \sim \Delta DEF$

7. The figures are similar. Find the ratios of the lengths of corresponding sides of figure A to figure B.



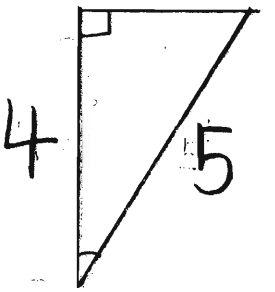


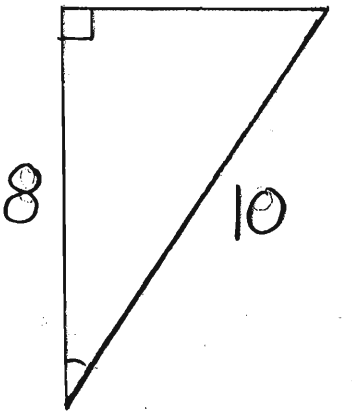


Define similar triangles.

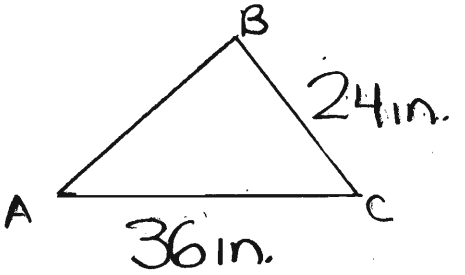
These two triangles are similar. Which similarity postulate could you use to prove that?

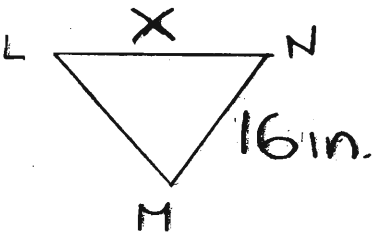
. What are the ratios of their corresponding sides?





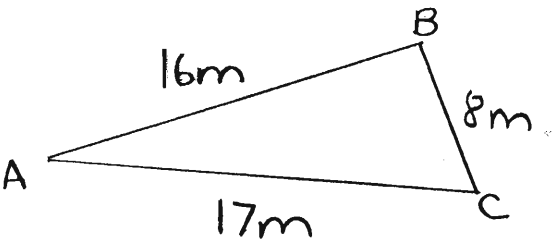
. Given $\triangle ABC \sim \triangle LMN$, find LN.

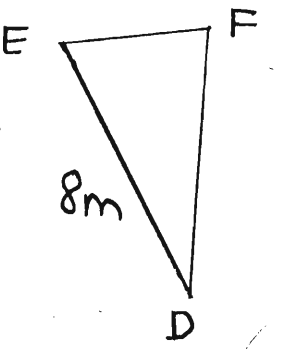




1. Given $\triangle ABC \sim \triangle DEF$, find EF.

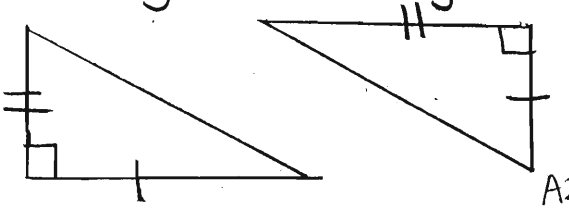
5. Find $\overline{FD}$.





6. Solve the proportion: $\frac{3}{4} = \frac{x}{24}$

7. Which postulate could be used to prove that this pair of triangles are congruent?



$\angle B \cong \angle E$
$\angle D \cong \angle A$
$\angle C \cong \angle F$

$\frac{3}{4.5} = \frac{4}{6} = \frac{5}{7.5}$

$\triangle EFD \sim \triangle BCA$
$\triangle FDE \sim \triangle CAB$

$d = 9$

$\angle A \cong \angle D$
$\angle E \cong \angle B$
$\angle C \cong \angle F$

$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

$\frac{3}{3.9} = \frac{5}{6.5} = \frac{6}{7.8}$

$\frac{1}{1.5} = \frac{2}{3}$

. different size, same shape

. AA~, SAS~

2. $\frac{1}{2}$

3. $x = 24$

4. 4

5. 8.5

6.

7. SAS

18. ASA

19.

20.

21.

22. AAS

23.

24.

25.

26. $16 \cdot 11.25 = 20x$

27. SSS

35. $x = 24$

36. 10.5

39. $\frac{4}{5}$

41. $y = 175$

43. $x = 36$

44 $y = 5$

Extension Geometry Plan for Unit 6

Day 1 You will review naming segments and angles. You will name quadrilaterals. You will discover the basic properties of quadrilaterals. You will calculate the perimeter of quadrilaterals.
Homework: worksheet

Day 2 You will discover the basic properties of parallelograms. You will calculate the perimeter and area of parallelograms.
Homework: p. 451-452: 2-10 even, 18-22 even; p. 458: 16-20 even

Day 3 You will discover the unique properties of rectangles, rhombuses and squares. You will calculate the perimeter and area of rectangles, rhombuses and squares.
Homework: p. 465-466: 2-14 even; p. 467: 22-28 even

Day 4 You will discover the basic properties of trapezoids and isosceles trapezoids. You will calculate the perimeter and area of trapezoids.
Homework: p. 473-474: 1,4,6,13,16; p. 271: 2,4,9,10,11; p. 493: 4

Day 5 You will review quadrilaterals that have 1 or 2 pairs of parallel lines. You will discover the properties of kites.
Homework: p. 460: 1-6; p. 473: 2,3,5,14,15

Day 6 You will review quadrilaterals.
Homework: p. 492: 1-14 (not 12)

Day 7 You will take an **EXAM** on quadrilaterals. You will review corresponding parts in congruent triangles and work with congruent quadrilaterals.
Homework: p. 105: 25-27; p. 108: 47

Textbook Reference Section

9-1,2,3,4
5-2,5
2-4

Essential Questions

What is a quadrilateral?
What properties are common to all quadrilaterals?
How do you find the perimeter of any quadrilateral?
What is a parallelogram?
What properties are common to all parallelograms?
What is the formula for the area of a parallelogram and how is it used?
What is a rectangle?
What are the properties of all rectangles?
What is a rhombus?
What are the properties of all rhombi?
What is the formula for the area of a rhombus and how is it used?
What is a square?
What are the properties of all squares?
What is a trapezoid?
What are the properties of all trapezoids?
What is the formula for the area of a trapezoid and how is it used?
What is an isosceles trapezoid?
What are the properties of an isosceles trapezoid?
What is a kite, what are its properties?
What is the formula for the area of a kite and how is it used?

~~USOE~~ 4 6 days

ecial properties

QUADRILATERALS

4 sides as long as they all are connected to each other

2 pairs // sides

no parallel sides

allelogram: both pairs of opposite sides are parallel

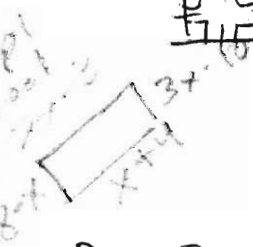
is a parallelogram

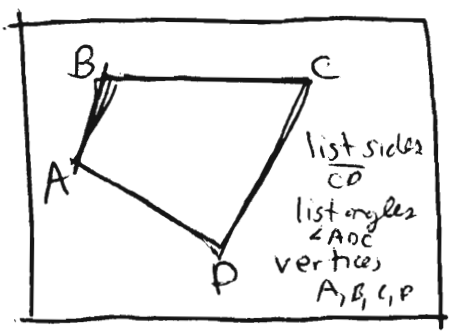
rhombus: 4 ≈ sides

two pairs of adjacent sides are congruent but no opposite sides

tangle: is a parallelogram
ght angles

4 congruent sides and 4 right angles

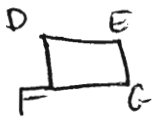




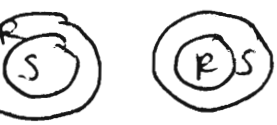
trapezoid: exactly one pair of parallel sides

isosceles trapezoid: non-parallel sides are congruent

x.



name in as many ways as possible
- QUAD
- parallelogram
- rectangle



squares but not all rectangles are squares
rectangles but some are

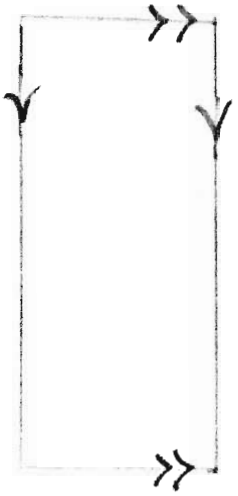
draw a rectangle that could be a square
draw a square that could be a rectangle

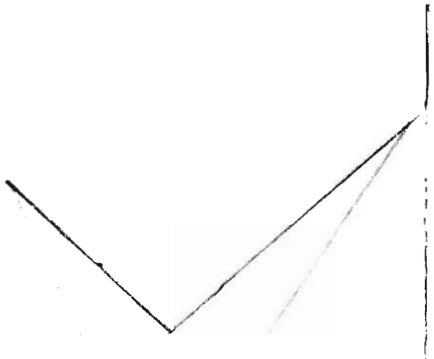
can you draw a rectangle that is not a square?
can you draw a square that is not a rectangle?

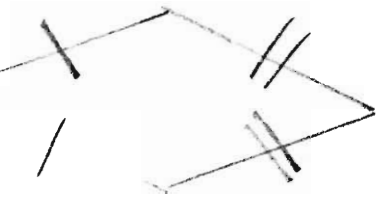
Special Quadrilaterals

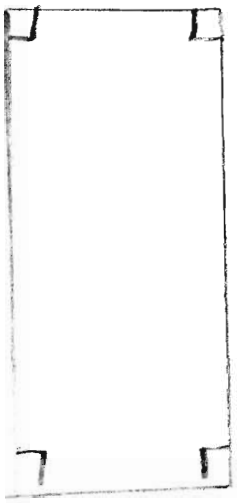
e are 18 cards all together. On each card is drawn a picture of a type of quadrilateral. You have to identify this rilateral as specifically as you can, given the symbols on the sketch. Do not decide based on their appearance e, ("it looks like a rectangle"), because this method will not consistently get you to the correct answer. After you uss your ideas with your partner and you **both** agree on a reasonable definition, turn the card over to see if you right. Record the special properties of each quadrilateral. The properties should include as much information as ssary, so that the quadrilateral can be identified without looking at its picture. A sketch will be a helpful reference n you look over this worksheet for review.

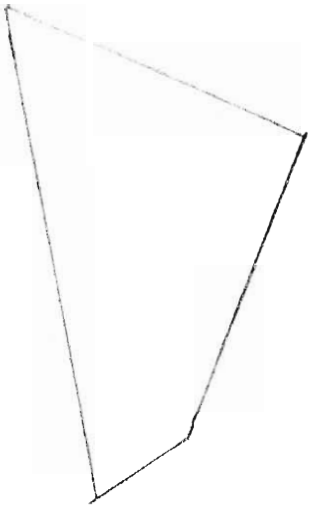
Sketch	Type of Quadrilateral	Properties

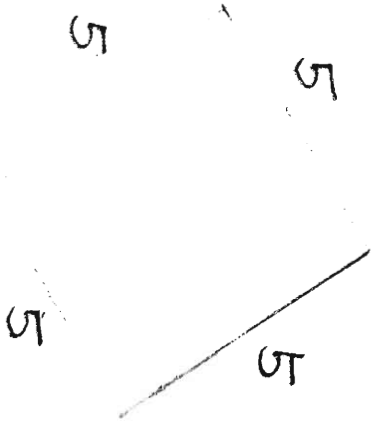


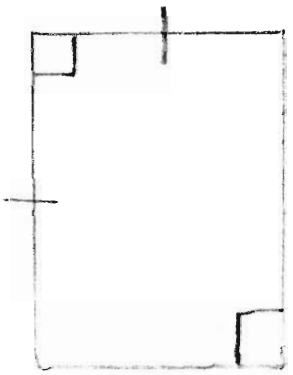












IRREGULAR QUADRILATERAL

IRREGULAR QUADRILATERALS

IRREGULAR QUADRILATERAL

SQUARE

RECTANGLE

PARALLELOGRAM

A29

RHOMBUS

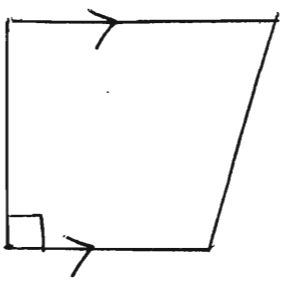
KITE

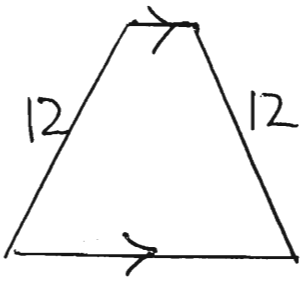
RHOMBUS

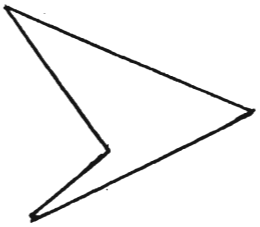
Concept Check

Name: Date:

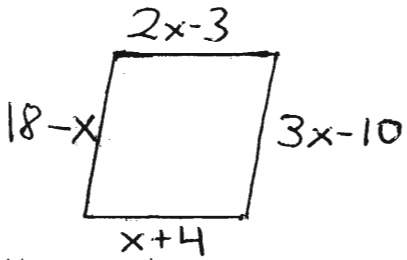
1. Identify these special quadrilaterals:

a. 

b. 

c. 

2. Find the perimeter of this rhombus:



3. How many degrees are in an isosceles trapezoid?_____A square?_____

Discovering the Properties of Parallelograms

Name_____ Date_____

1. Draw three noncollinear points to make three vertices of a *large* parallelogram. Label them A, B, and C. Draw segments $\overline{AB}$ and $\overline{BC}$.

2. Construct a line parallel to $\overline{BC}$ through A, and a line parallel to $\overline{AB}$ through C. Label their point of intersection D.

3. Have one of your group members cut out $\square$ ABCD. Everyone will use a protractor and ruler to compare the opposite sides and opposite angles of ABCD.

	1st pair of opposite sides Length of $\overline{AB}$	Length of $\overline{CD}$	2nd pair of opposite sides Length of $\overline{BC}$	Length of $\overline{AD}$
1.				
2.				
3.				
4.				

4. What do you notice about the opposite sides in your parallelograms?

_____

5. What is Theorem 9-1 (p.448) in your textbook? Is your data consistent with this theorem? Why?

_____

_____

	1st pair of opposite angles Measure of $\angle ABC$	Measure of $\angle ADC$	2nd pair of opposite angles Measure of $\angle BAD$	Measure of $\angle BCD$
1.				
2.				
3.				
4.				

6. What do you notice about the opposite angles in your parallelogram?

_____

7. What is Theorem 9-2 (p.449) in your textbook? Is your data consistent with this theorem? Why?

8. What do you notice about the consecutive angles in your parallelogram (two angles that share a common side, i.e. $\angle ABC$ and $\angle BCD$)?

9. Draw $\overline{AC}$ and $\overline{BD}$. Label their point of intersection E. Use a ruler to compare $\overline{AE}$ to $\overline{CE}$ and $\overline{BE}$ to $\overline{DE}$.

	Diagonal $\overline{AC}$		Diagonal $\overline{BD}$	
	Length of $\overline{AE}$	Length of $\overline{CE}$	Length of $\overline{BE}$	Length of $\overline{DE}$
1.				
2.				
3.				
4.				

10. What do you notice about the diagonals of a parallelogram?

11. What is Theorem 9-3 (p.450) in your textbook? Is your data consistent with this theorem? Why?

12. The diagonals that you drew divides your parallelogram into 4 parts. What shape is each one of these parts? Do these parts have anything in common with each other? Have one of your group members cut along diagonal AC and diagonal BD, compare the cut-outs.

Concept Check

Name_____ Date_____

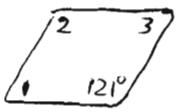
1. List any **three** out of the five Properties of Parallelograms that you learned today.

a.

b.

c.

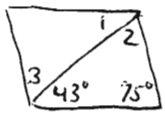
2. Find the measures of the numbered angles.

a. 

$\angle 1 =$

$\angle 2 =$

$\angle 3 =$

b. 

$\angle 1 =$

$\angle 2 =$

$\angle 3 =$

Manipulating a quadrilateral to discover the properties of rectangles, rhombuses and squares.

. How to get to the website we will be using: Enter the web address www.google.com. Type "properties ectangles rhombuses squares" into the search engine. The fourth hit you get should read **Tipos y Caracteristicas**. Click on this. Now you are on the correct page. Scroll down past "Explanation and Different Types of Quadrilaterals", until you see the heading "Parallelogram". The graphics may take a minute or so to download.

. The activity described here is what you are doing. *Carefully* read the first few lines of definition and description. Read it a few times if you need to, or copy onto your paper. Your group will be answering the problems a-f, i and j. Skip g and h. Ignore whatever is said about rhomboids.

. Each group member will have the opportunity to make a figure using this program. The first time each person sits down at the computer allow 1-2 minutes for them to get oriented with how it works. Make sure that you know how to move the points and how to read the data that results.

. How to move a point: Click on the point you want to move. Drag it to the place you want it to go. Release he mouse button. If your point did not end up close enough to its destination you can epeat. It does not have to be 100% precise. **Point A does not move.**

. Make sure you are familiar with the data that the program gives you, i.e. angle measurements, coordinate points, diagonals. Also note what you will be responsible for finding yourselves.

. Each person will sit at the computer and make a figure to the specifications in the directions. Starting with figure **a)**, switch person at the computer…then **b)**, switch person at the computer…then **c)** until all the problems are done.

. The people who are not sitting at the computer are responsible for copying down the figure their group member just made. They must also compute calculations (pythagorean theorem) for that figure.

. The activity is finished when **all** group members have sketch's of **all** 6 figures on their paper, and **all** questions asked in the activity are answered. (Including the one in the green box directly below j)

. Complete the first 4 rows of this chart.

Quadrilateral Chart

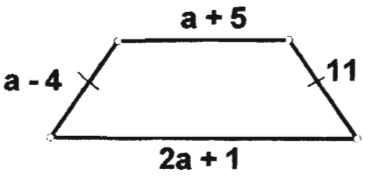
Place check marks in the appropriate spaces to identify which quadrilaterals have which properties.

Quadrilateral	Opposite sides ||	Opposite sides $\cong$	Opposite angles $\cong$	Diagonal forms $\cong$ $\triangle$s	Diagonals bisect each other	Diagonals are $\perp$	Diagonals are $\cong$	A diagonal bisects 2 angles	All angles are right	All sides $\cong$
Parallelogram										
Rectangle										
Rhombus										
Square										
Trapezoid										
Isosceles Trap.										
Kite										

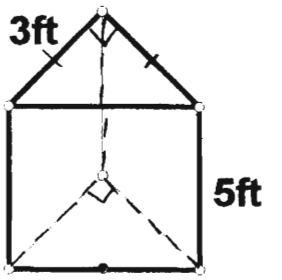
Name _____ Date _____ Block _____

EXTENSION GEOMETRY
HOMEWORK CHECK

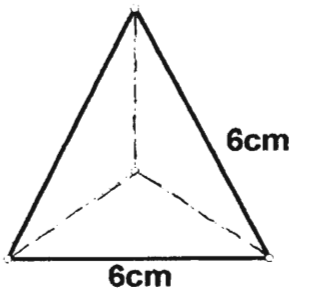
1. p. 93-94: 26 Find the values of the variables and the lengths of the sides in isosceles trapezoid DEFG.



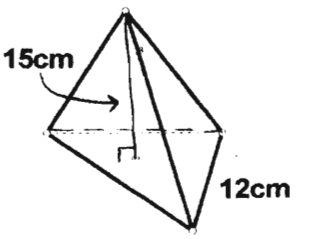
2. p. 343: 1: Find the surface area and volume to the nearest tenth.



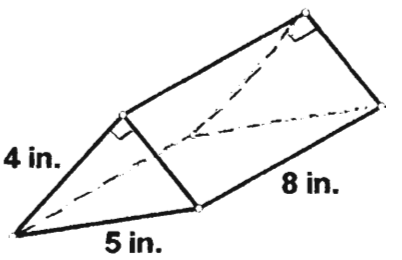
3. p. 320: 23 Find the surface area to the nearest tenth.



4. p. 334: 10 Find the volume.



5. p. 312: 12 Find the lateral area to the nearest tenth.



Concept Check

Name: Date:

Fill in the blanks with either ALWAYS, or SOMETIMES.

1. A square is _____ a rhombus.

2. The diagonals of a parallelogram _____ bisect the angles of the parallelogram.

3. A quadrilateral with one pair of sides congruent and one pair parallel is _____ a parallelogram.

4. The diagonals of a rhombus are _____ congruent.

5. A rectangle _____ has consecutive sides congruent.

6. A rectangle _____ has perpendicular diagonals.

7. The diagonals of a rhombus _____ bisect each other.

8. The diagonals of a parallelogram are _____ perpendicular bisectors of each other.

NAME DATE

Area of a Trapezoid

Each group member will fold a piece of lined paper in half. On two lines of the paper, draw parallel segments of different lengths. Connect the endpoints of the segments to form a trapezoid. You don't have to measure anything, but you DO have to use a ruler! Cut through both layers of the folded paper, so that you will have *two* congruent trapezoids. Label both bases ($\mathbf{b_1}$ and $\mathbf{b_2}$) in each trapezoid. Also label the height ($\mathbf{h_1}$) of each trapezoid.

1. Arrange the congruent trapezoids in the space below, so that together they form a parallelogram. Tape or paste the two trapezoids in this position.

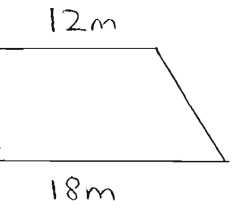
2. Write an expression for the length of the base of the parallelogram.

3. Write an expression for the area of the parallelogram using b_1 b_2 and h_1.

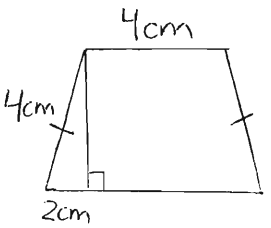
4. Judging by appearance, how the does the area of each trapezoid compare to the area of the parallelogram?

5. Use your answers above to write a formula for the area of one trapezoid. (Hint : p.269)

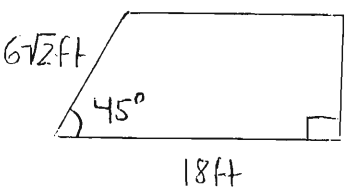
6. Solve for the area of these trapezoids.



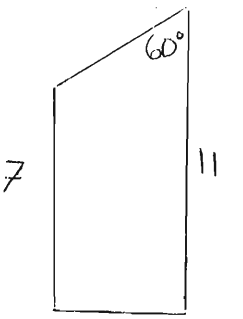
A.



B.



C.



D.

Properties of Isosceles Trapezoids

Choose two lines on *one* piece of lined paper that are about 2 inches apart. Cut along these lines. Fold this smaller piece of paper that you just cut out, in half. Use a ruler to draw a nonperpendicular segment from one parallel line to the other. Cut through the folded paper along that segment. Unfold the paper. Attach it below :

1. What kind of special quadrilateral is this figure?

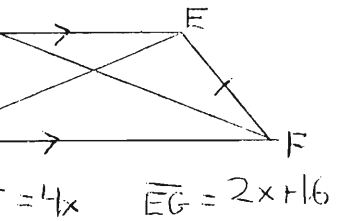
2. Describe the relationship between the nonparallel sides of this figure.

3. Describe the relationship between the acute angles and the relationship between the obtuse angles.

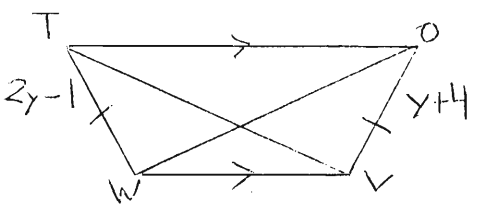
Label the vertices in your figure, A, B, C, and D (in correct order). Draw segment AC and segment BD. What are these segments?

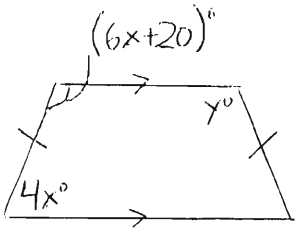
4. Measure the length of AC and BD. What do you notice?

5. Find the value of the variables in these isosceles trapezoids.



B.



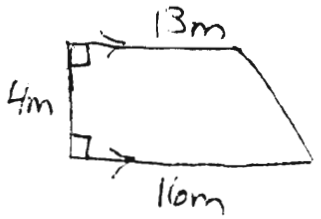


C.

CONCEPT CHECK

Name: Date:

1. Find the area of this trapezoid.

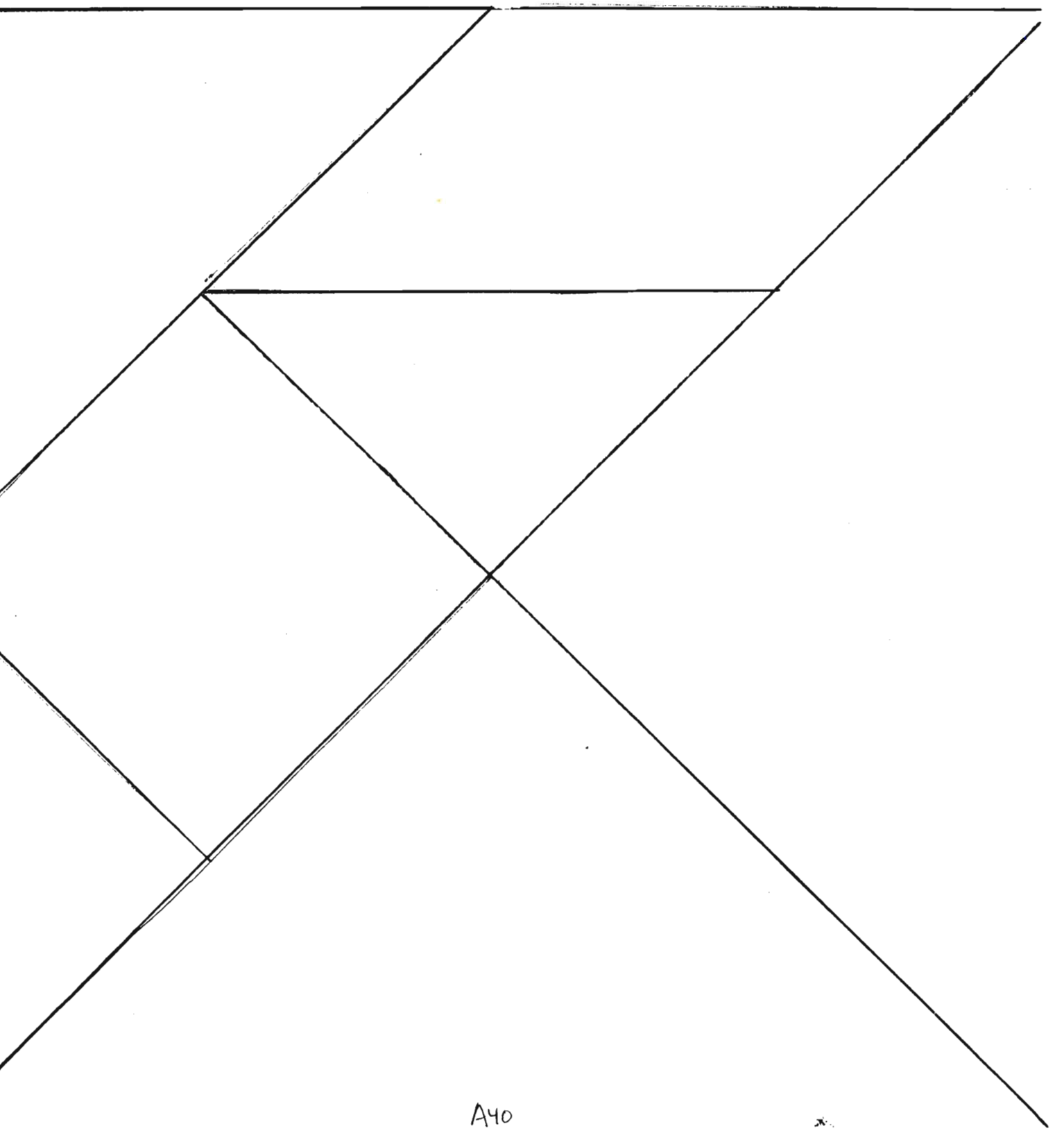


2. Name the quadrilateral that has four congruent sides.

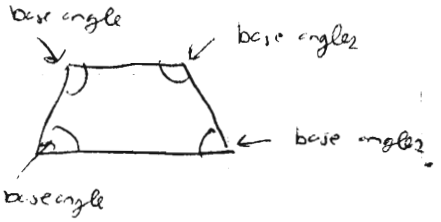
3. List two of its special properties.

Rules

How does this tangram puzzle fit together to make a parallelogram? A trapezoid? A kite? You must use all seven tans, they must lay flat, they must touch and none may overlap. After you have created a quad, sketch an outline of your tangram. When you have found all seven special quadrilaterals this way, you can try different combinations of the tans that result in the same quadrilaterals, or experiment with other shapes and designs.



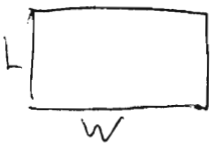
A40

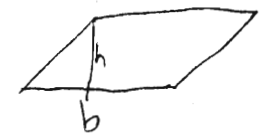


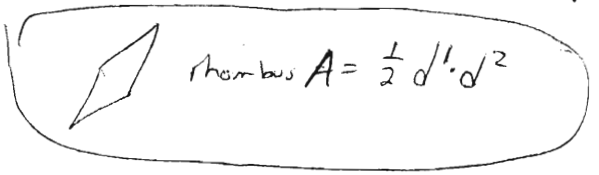
height is ⊥ distance between the bases

discovering properties of kites

Area of Parallelogram is b·h



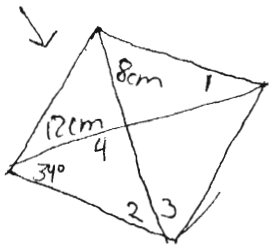




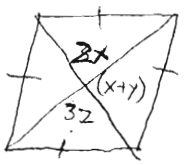
Area of trapezoid $\frac{1}{2}h(b_1 + b_2)$

P. 492: 1-14 not 12

mbus: find measure of these angles and area



parallelogram: diagonals ⊥

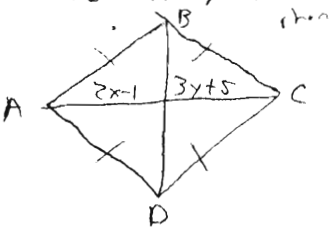


x = 45
y = 45
z = 30

rhombus

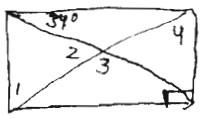
diagonals ≅
BD = 4x − y + 1

rhombus

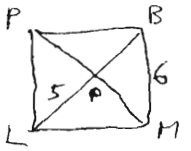


~~x = 7~~ x = 7.5
y = 3

rectangle

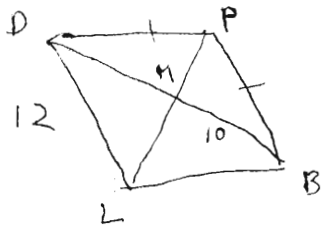


rectangle



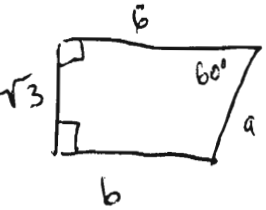
Find LB, BP, LM
10 5 8

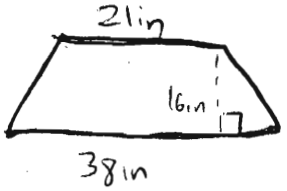
rhombus

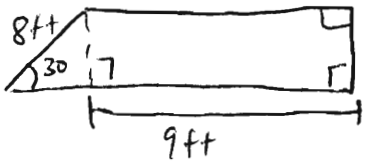


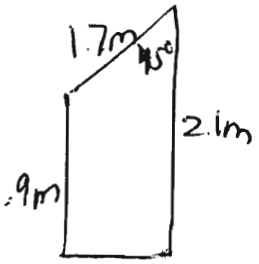
LB = 12
BP = 12
LM = 2√11

trapezoids









Dynamic Geometry Exploration

Properties of Kites

A kite is a quadrilateral with exactly two distinct pairs of congruent consecutive sides. The angles between two congruent sides are called vertex angles and the other two angles are called nonvertex angles. Using this web page, you can investigate the properties of kites and make judgments about the following:

Kite Angles

Kite Diagonals

Kite Diagonal Bisectors

Kite Angle Bisectors

Investigate

1. Click "Kite Angles" to see the measurements of the four angles of the kite. What do you notice about each pair of opposite angles? Are vertex angles congruent? Are nonvertex angles congruent? Change the shape and size of the kite. Does this property still hold?
2. Formulate the Kite Angles Theorem: The _____ angles of a kite are _____.
3. Click "Diagonal Angle" to see the diagonals of the kite and the measure of the angle between them. What do you notice about this angle? Change the shape and size of the kite. Does this property still hold?
4. Formulate the Kite Diagonals Theorem: The diagonals of a kite are _____.
5. Click "Diagonal Lengths" to see the diagonals of the kite and the lengths of the segments on the diagonals. What do you notice about the segments? Does either diagonal bisect the other? Does this property stay the same when the shape of the kite is changed?
6. Formulate the Kite Diagonal Bisector Theorem: The diagonal connecting the vertex angles of kite is the _____ of the other diagonal.
7. Click "Side/Diagonal Angles" to see the measures of the angles formed by the diagonals and the sides of the kite. Does either diagonal bisect any angles? Does this property stay the same when the shape of the kite is changed?
8. Formulate the Kite Angle Bisector Theorem: The _____ angles of a kite are _____ by a _____.

1 isosceles trapezoid
2 isosceles trapezoid
3 isosceles trapezoid
4 irregular quadrilateral
5 parallelogram
6 trapezoid
7 trapezoid
8 Kite
9 Kite
10 rectangle
11 rectangle
12 Kite
13 parallelogram
14 irregular quadrilateral
15 square
16 rhombus
17 irregular quadrilateral
18 rhombus
19 rectangle
20 Kite
21 $\angle DAB$ and $\angle ABC$; $\angle AOC$ and $\angle DCB$
22 Kite
23 1200ft²
24 30
25 rhombus, square
26 rhombus, square
27 112°
28 $\angle 2 = 90°$ $\angle 3 = 58°$
29 $\angle 1 = 32°$
30 $\angle 1 = 144°$ $\angle 2 = 144°$
31 $\angle 1 = 90°$, $\angle 2 = 53°$
32 true
33 true
34 false
35 false
36 true
37 false
38 $\angle 1 = 63°$
39 $4 = 54°$
40 $x = 1.5$
41 $x = 6$
42 $x = 5$
43 $AB = 8.25$
44 $AB = 80.5$
45 140cm²
46 $x = 8$
47 33
48 16cm
49 35.28cm²
50 $\frac{1}{2}h(b_1 + b_2)$
51 $A = b \cdot h$
52 $x = 11.3$
53 $x = 8$
54 1200ft²
55 perpendicular
56 four
57 all 90° all sides same
58 17.32 cm²
59 3 + 9 / 1 + 2
60 648cm²
61 312cm²
62 85cm²
63 12cm²
64 $A = b \cdot h$
65
66
67
68
69

(3) Heather
Mic
Lauren
Lauren
Katie Lee
Keith
Mike

(2) Dan
Kenny
Christin
Brian
Mike C
Steve
Robbie

(1) trisha
Lisa
Brad
Marco
T.J.
Chris

Concept Check

Name: **Date:**

Write what you learned today regarding the following aspects of kites:

1. **Kite Angles** _____

_____

2. **Kite Diagonals** _____

_____

3. **Kite Diagonal Bisectors** _____

_____

4. **Kite Angle Bisectors** _____

_____

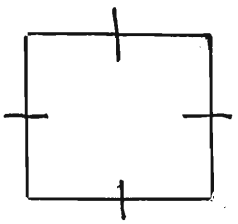
Exam : Quadrilaterals

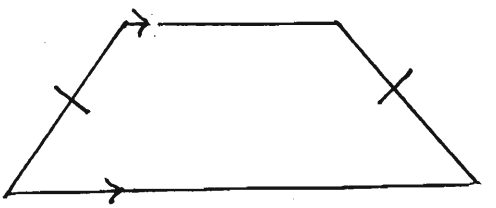
Extension Geometry

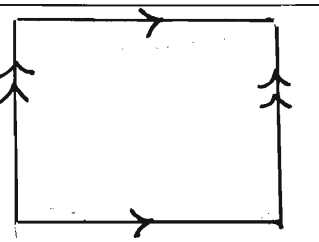
me _____ Date _____

Name these special quadrilaterals

_____ b) _____ c) _____







Draw and label as completely as possible, the following special quadrilaterals.

kite **b) rhombus** **c) square**

There are _____ degrees in a isosceles trapezoid.

There are _____ degrees in an irregular quadrilateral.

Draw the altitude $\overline{BE}$ to $\overline{AD}$, with point E on $\overline{AD}$. Complete.

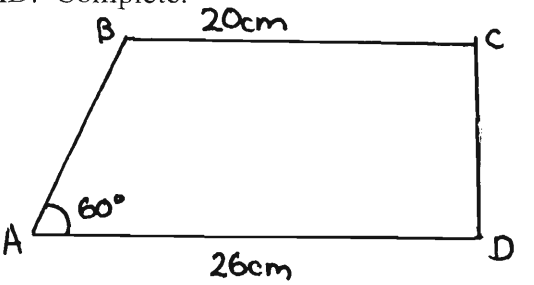
a) m∠ABE = _____

b) m∠BEA = _____

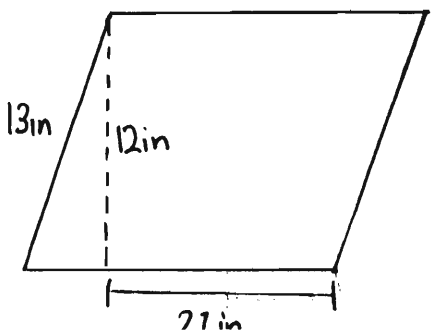
c) BE = _____

d) CD = _____

e) The area of ABCD is _____



Find the area of this parallelogram



A45

w a picture(s) to illustrate your answer for each of the following questions:

kite, which angles does the diagonal bisect?

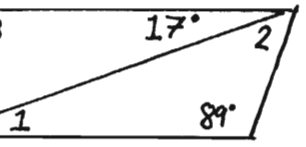
b) The diagonals in a square are perpendicular to each other. What are the other two quadrilaterals whose diagonals are perpendicular?

e three different examples of special quadrilaterals, whose diagonals form congruent triangles. For full credit : the quadrilateral that you choose, draw it, and indicate what kind of triangles are formed (i.e. scalene, right, les) and how many.

b)

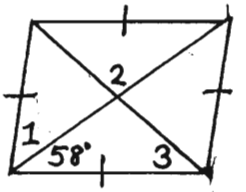
c)

d the measures of the numbered angles for each quadrilateral.



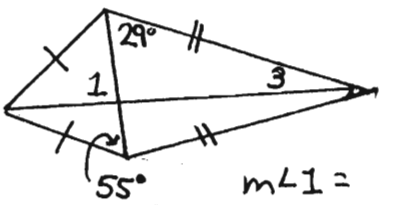
m∠1 =
m∠2 =
m∠3 =

b)



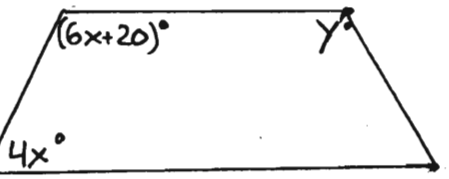
m∠1 =
m∠2 =
m∠3 =

c)

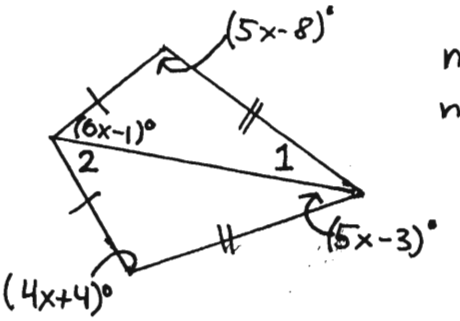


m∠1 =
m∠2 =
m∠3 =

ind the value of the variables in each problem.



b)



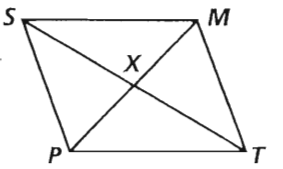
m∠1 =
m∠2 =

Name _____ Class _____ Date _____

Practice 6-3

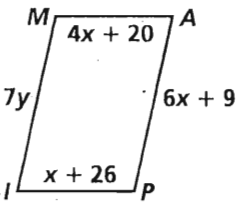
Proving That a Quadrilateral Is a Parallelogram

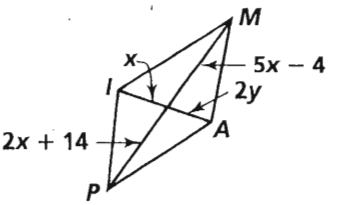
State whether the information given about quadrilateral *SMTP* is sufficient to determine that it is a parallelogram.

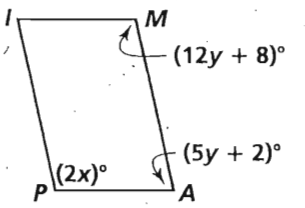


1. $\angle SPT \cong \angle SMT$
2. $\angle SPX \cong \angle TMX, \angle TPX \cong \angle SMX$
3. $\overline{SM} \cong \overline{PT}, \overline{SP} \cong \overline{MT}$
4. $\overline{SX} \cong \overline{XT}, \overline{SM} \cong \overline{PT}$
5. $\overline{PX} \cong \overline{MX}, \overline{SX} \cong \overline{TX}$
6. $\overline{SP} \cong \overline{MT}, \overline{SP} \parallel \overline{MT}$

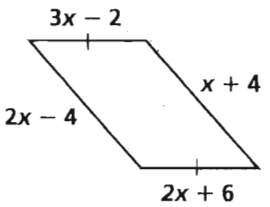
Algebra **Find the values of *x* and *y* for which the figure must be a parallelogram.**

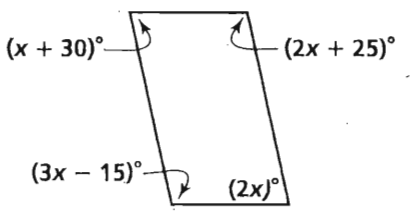
7. 

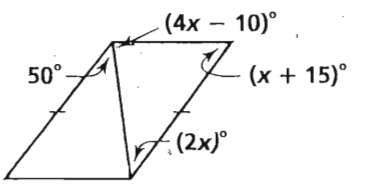
8. 

9. 

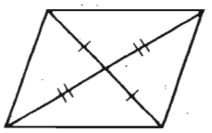
Algebra **Find the value of *x*. Then tell whether the figure must be a parallelogram. Explain your answer.**

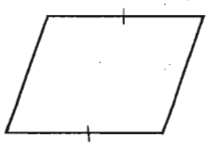
10. 

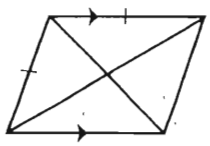
11. 

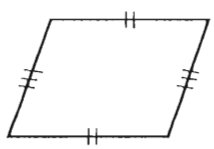
12. 

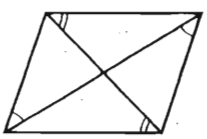
Decide whether the quadrilateral is a parallelogram. Explain your answer.

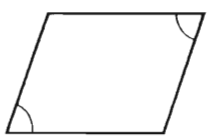
13. 

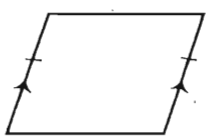
14. 

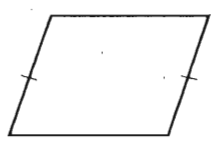
15. 

16. 

17. 

18. 

19. 

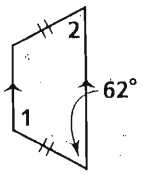
20. 

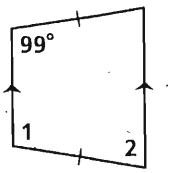
Name _____ Class _____ Date _____

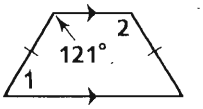
Practice 6-5

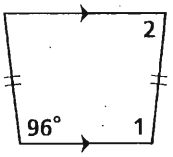
Trapezoids and Kites

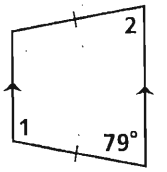
Find the measures of the numbered angles in each isosceles trapezoid.

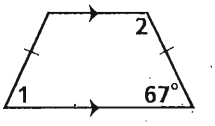
1. 

2. 

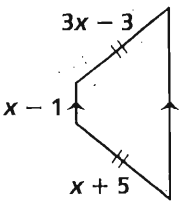
3. 

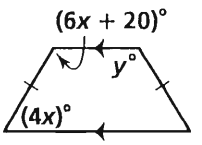
4. 

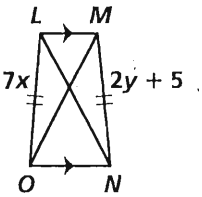
5. 

6. 

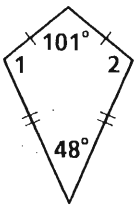
Algebra **Find the value(s) of the variable(s) in each isosceles trapezoid.**

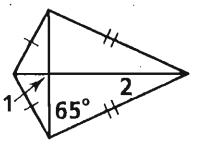
7. 

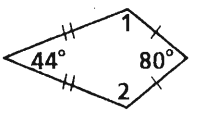
8. 

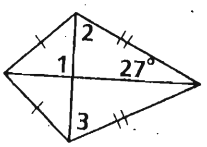
9. 

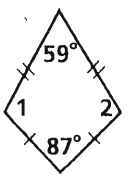
Find the measures of the numbered angles in each kite.

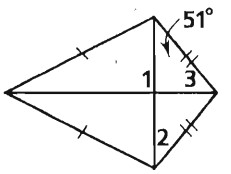
10. 

11. 

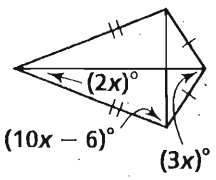
12. 

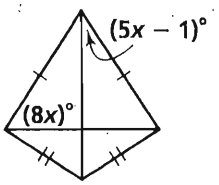
13. 

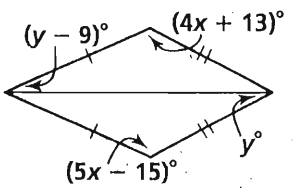
14. 

15. 

Algebra **Find the value(s) of the variable(s) in each kite.**

16. 

17. 

18. 

A48

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 9/15/03

	Activity	Subject Area	Hours	Signature
Monday	observe	fund geometry	1	
	observe	fund algebra	1.5	Leonard
	observe	extension geom	1.5	
Tuesday	observe	fund geometry	1.5	
	observe	fund algebra	1.5	Leonard
	observe	extension geometry	1.5	
Wednesday	observe	honors geometry	1.5	
	observe	fund algebra	1.5	Leonard
	observe	extension geometry	1.5	
Thursday	observe	fund geometry	1.5	
	observe	fund algebra	1.5	Leonard
	observe	extension geometry	1.5	
Friday	observe	fund geometry	1.5	
	observe	fund algebra	1.5	Leonard
	observe	extension geometry	1.5	
Totals		Direct Hours	0.0	
		Observation Hours	22.0	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Vorhegyi

Week Of: 9/22/03

	Activity	Subject Area	Hours	Signature
Monday	observe	fund geometry	1.5	
	observe	fund algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Tuesday	observe	fund geometry	1	
	practice teach	fund geometry	.5	
	observe	fund algebra	1.5	T Leonard
	observe	extension geometry	1.5	
Wednesday	observe	fund algebra	.75	
	observe	extension geom	1.5	T Leonard
	(early release)			
Thursday	OFF		∅	
	OFF		∅	
	OFF		∅	
Friday	observe	fund geometry	1.5	
	practice teach	fund algebra	1.5	
	observe	extension geometry	1.5	T Leonard
Totals		Direct Hours	3.5	
		Observation Hours	12.25	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 9/29/03

	Activity	Subject Area	Hours	Signature
Monday	observe	fund geometry	1.0	
	practice teach	fund algebra	1.5	Kvarhegyi
	observe	extension geometry	1.5	
Tuesday	NO CLASS	—		
	practice teach	fund. algebra	1.5	Kvarhegyi
	observe	extension geometry	1.5	
Wednesday	observe	fund geometry	1.5	
	practice teach	fund algebra	1.5	Kvarhegyi
	observe	extension geometry	1.5	
Thursday	NO CLASS	—	ø	
	practice teach	fund algebra	1.5	Kvarhegyi
	observe	extension geometry	1.5	
Friday	observe	fund geometry	1.5	
	observe	fund algebra	1.5	Kvarhegyi
	observe	extension geometry	1.5	
Totals		Direct Hours	6.ø	
		Observation Hours	13.ø	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varkegyi

Week Of: 10-6-03

	Activity	Subject Area	Hours	Signature
Monday	observe	fund geometry	1.5	
	observe	fund algebra	1.5	T Leonard
	observe	ext. geometry	1.5	
Tuesday	practice teach	fund geometry	1.0	
	observe	fund algebra	0.5	T Leonard
	practice teach	fund algebra	1.0	
Wednesday	observe	fund geometry	1.0	
	practice teach	fund algebra	1.5	T Leonard
	observe	ext. geometry	1.5	
Thursday	OFF		ø	
	OFF		ø	
	OFF		ø	
Friday	observe	fund geometry	1.5	
	practice teach	fund algebra	1.5	T Leonard
	observe	ext. geometry	1.5	
Totals		Direct Hours	5.0	
		Observation Hours	10.5	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 10-13-03

	Activity	Subject Area	Hours	Signature
Monday	OFF		0	
	OFF		0	
	OFF		0	
Tuesday	observe	informal geometry	1.0	
	practice teach	informal algebra	1.5	
	observe	ext. geometry	1.5	T Learned
Wednesday	observe	informal geometry	.5	
	practice teach	informal algebra	1.5	T Learned
	observe	ext. geometry	1.5	
Thursday	observe	informal geometry	1.0	
	practice teach	informal algebra	1.5	T Learned
	observe	ext. geometry	1.5	
Friday	observe	informal geometry	0	
	practice teach	informal algebra	1.5	
	observe	ext. geometry	1.5	T Learned
Totals		Direct Hours	6.0	
		Observation Hours	8.5	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 10-20-03

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal algebra	1.5	TLeonard
	observe	extension geometry	1.5	
Tuesday	practice teach	informal algebra	1.5	TLeonard
	practice teach	extension geometry	1.5	
Wednesday	practice teach	informal algebra	.75	TLeonard
	practice teach	extension geometry	1.5	
Thursday	practice teach	informal algebra	1.5	TLeonard
	practice teach	extension geometry	2.5	
Friday	practice teach	informal algebra	1.5	TLeonard
	practice teach	extension geometry	2.5	
Totals		Direct Hours	14.25	
		Observation Hours		

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Vorhegyi

Week Of: 10-27-03

	Activity	Subject Area	Hours	Signature
Monday	practice teaching	informal algebra	1.5	TLeonard
	practice teaching	extension geometry	1.5	
Tuesday	practice teaching	informal algebra	1.5	TLeonard
	practice teaching	extension geometry	1.5	
Wednesday	practice teaching	informal algebra	1.5	TLeonard
	practice teaching	extension geometry	1.5	
Thursday	practice teaching	informal algebra	1.5	TLeonard
	practice teaching	extension geometry	1.5	
Friday	practice teaching	informal algebra	1.5	TLeonard
	practice teaching	extension geometry	1.5	
Totals		Direct Hours	15.0	
		Observation Hours	0.0	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Verhegyi

Week Of: 11/3/03

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal algebra	1.0	Kverhegyi
	practice teach	extension geometry	1.5	
Tuesday	OFF		∅	
	OFF		∅	
Wednesday	practice teach	informal algebra	1.5	Kverhegyi
	practice teach	extension geometry	1.5	
Thursday	practice teach	informal algebra	1.5	Kverhegyi
	practice teach	extension geometry	1.5	
Friday	practice teach	informal algebra	1.5	Kverhegyi
	practice teach	extension geometry	1.5	
Totals		Direct Hours	11.5	
		Observation Hours	∅	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Verhegyi

Week Of: 11/10/03

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal algebra	1.5	Viewed
	practice teach	extension geometry	1.5	
Tuesday	OFF		ø	
	OFF		ø	
Wednesday	practice teach	informal algebra	1.5	Viewed
	practice teach	extension geometry	1.5	
Thursday	practice teach	informal algebra	1.5	Viewed
	practice teach	extension geometry	1.5	
Friday	practice teach	informal algebra	1.5	Viewed
	practice teach	extension geometry	1.5	
Totals		Direct Hours	12.0	
		Observation Hours	ø	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 11/17/03

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Tuesday	practice teach	informal algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Wednesday	practice teach	informal algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Thursday	practice teach	informal algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Friday	practice teach	informal algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Totals		Direct Hours	15.0	
		Observation Hours	ø	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 11/24/03

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Tuesday	practice teach	informal algebra	1.5	T Leonard
	practice teach	extension geometry	1.5	
Wednesday	practice teach	informal algebra	1.5	T Leonard
Thursday	practice teach	informal algebra	1.5	T Leonard
Friday	practice teach	informal algebra	1.5	T Leonard
Totals		Direct Hours	10.5	
		Observation Hours	∅	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 12/1/03

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal algebra	1.5	Leonard
Tuesday				
Wednesday				
Thursday				
Friday				
Totals		Direct Hours	1.5	
		Observation Hours	Ø	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 1/26/04

	Activity	Subject Area	Hours	Signature
Monday				
Tuesday				
Wednesday				
		GEOMETRY		
Thursday	observe	honors	.75	T Leonard
	observe	foundations	.75	
	observe	foundations	.75	
Friday	observe	honors	1.5	T Leonard
	observe	foundations	1.5	
Totals		Direct Hours	Ø	
		Observation Hours	5.25	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 2/2/04

	Activity	Subject Area	Hours	Signature
Monday				
Tuesday				
Wednesday				
		GEOMETRY		
Thursday	practice teach	honors	1.5	Leonard
	practice teach	foundations	1.5	
	practice teach	foundations	1.5	
Friday	practice teach	honors	1.5	Leonard
	practice teach	foundations	1.5	
	practice teach	foundations	1.5	
Totals		Direct Hours	9.0	
		Observation Hours	0	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 3/1/04

	Activity	Subject Area	Hours	Signature
Monday				
Tuesday				
Wednesday				
		GEOMETRY		
Thursday	practice teach	foundations	1.5	Leonard
	practice teach	foundations	1.5	
Friday	practice teach	foundations	1.5	Leonard
	practice teach	foundations	1.5	
Totals		Direct Hours	6.0	
		Observation Hours	0	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 3-15-04

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal geometry	1.5	+Leonard
	practice teach	informal geometry	1.5	
Tuesday	practice teach	informal geometry	1.5	+Leonard
	practice teach	informal geometry	1.5	
Wednesday	SNOW DAY	———	———	
Thursday	practice teach	informal geometry	1.5	+Leonard
	practice teach	informal geometry	1.5	
Friday	practice teach	informal geometry	1.5	+Leonard
	practice teach	informal geometry	1.5	
Totals		Direct Hours	12.0	
		Observation Hours	0.0	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 3 - 8 - 04

	Activity	Subject Area	Hours	Signature
Monday	practice teach	foundations geom.	1.5	T Leonard
	practice teach	informal geometry	1.5	
Tuesday	practice teach	informal geometry	1.5	T Leonard
	practice teach	informal geometry	1.5	
Wednesday	practice teach	informal geometry	.75	T Leonard
	practice teach	informal geometry	.75	
Thursday	practice teach	informal geometry	1.5	T Leonard
	practice teach	informal geometry	1.5	
Friday	practice teach	informal geometry	1.5	T Leonard
	practice teach	informal geometry	1.5	
Totals		Direct Hours	13.50	
		Observation Hours	0.0	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 3-22-04

	Activity	Subject Area	Hours	Signature
Monday	practice teach	informal geometry	1.5	T Conard
	practice teach	informal geometry	1.5	
Tuesday	practice teach	informal geometry	1.5	T Conard
	practice teach	informal geometry	1.5	
Wednesday	practice teach	informal geometry	1.5	T Conard
	practice teach	informal geometry	1.5	
Thursday	practice teach	informal geometry	1.5	T Conard
	practice teach	informal geometry	1.5	
Friday				
Totals		Direct Hours	12.0	
		Observation Hours	0.0	

Worcester Polytechnic Institute
Teacher Certification Program
Practicum Log

Name: Kyra Varhegyi

Week Of: 4-19-04

	Activity	Subject Area	Hours	Signature
Monday				
Tuesday				
Wednesday	observation	honors geometry	1.5	KVarhegyi
	observation	informal geometry	1.5	
	observation	informal geometry	1.5	
Thursday				
Friday				
Totals		Direct Hours		
		Observation Hours	4.5	