

NOTE: Sign up for the computer lab for Lessons 10, 14, 15, 20, 24, 25, 30, 34, 35, and 40-42.

TITLE OF LESSON

Geometry Unit 1 Lesson 1 – Welcome/Introduction: Part 1 of Assessment
Prove it! What's on the outside? What's on the inside? Of Geometry

TIME ESTIMATE FOR THIS LESSON

One class period

ALIGNMENT WITH STANDARDS

California – Geometry

1.0 - Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.

MATERIALS

Course Syllabus – Teacher creates (please see *Appendix of Additional Materials* for **Sample Syllabus**)
Geometry Unit 1 Calendar
Index cards to use as information cards
Toothpick, Popsicle sticks or something similar – a box or so (You can use small strips of paper instead.)
Pens and paper

LESSON OBJECTIVES

The objectives – for you, not the students – for this lesson are:

- To establish a classroom atmosphere that makes students feel comfortable about learning Geometry
 - To let the students know that there are many ways of learning and that each style of learning is valid
 - To give students an understanding that they already use geometry in every day life
 - To promote group learning
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EXPLANATION OF LESSON

The first days should be used to get students to think about how they already encounter geometry in their lives. As a class, you'll talk about this in terms of things familiar to them, such as art, music, and the spatial qualities of mathematics.

There is often a lot of apprehension related to math and in particular there is apprehension related to Geometry. The focus of the first week is to create an atmosphere where all students have an opportunity to thrive. You want to create a classroom that is known to be a math classroom and also known to be fun and exciting. There should be posters, books, instruments, sheet music, slide rules, calculators, abacuses, and games as well as equations and numbers prominently displayed throughout the classroom. These tools will aid you in identifying and encouraging those of each learning style. Since this is a Geometry class, you want to be sure that there are a number of objects in the classroom that will promote thinking about geometry, in particular, geometric figures, posters or paintings of objects and buildings and so on.

Using the **Geometry Unit 1 Calendar** and the **Sample Syllabus** (found in the *Appendix of Additional Materials* section of our site), create the syllabus for this course.

FOCUS AND MOTIVATE STUDENTS

- 1) General Classroom Procedures, Policies, and Expectations – Begin this first session by taking care of first day housekeeping (roll, syllabus, grading policy, expectations...) Review your syllabus, grading and

attendance policies, and class expectations with the students. Make sure you hand out a copy of each for all students. When you have finished, have all students print their names and sign the syllabus. Have students take them home and get them signed by a parent or guardian and return them to you tomorrow along with the parent's phone number. Tell them the phone number must be a working number where you can reach a parent/guardian live. No pager numbers! Tell them that the reason for this is that they will be taking field trips and you will be contacting parents throughout the year. No parent contact means no field trip.

- 2) **Binders** – Tell students they must keep a binder with all their work for your class in it. This should be a three-ring binder so that students can easily pull papers out and put papers in. They are responsible for all of their work. They should never throw any assignment away. They will turn in their binders at the end of every three weeks (Lessons 15, 30, and 44). Have them divide their binders into 6 sections. Sections should be titled in the following manner: *Project, Postulates and Theorems, Homework, Notes, Terms and Definitions, and Journal*. Tell the students that these are due tomorrow along with the signed syllabus and class set of expectations.
 - 3) **Agenda** – Post the agenda for today on the front board. Create this using the titles from each activity and the homework section. Tell students that every day they should write this down on a piece of paper to be kept in the front of their binders. They should write it down as soon as the bell rings. They will be responsible for making sure their agendas are accurate and up to date. This will help them to help each other remember what they have done. In addition, if a student is absent, it is up to them to make sure they make up the work and get the agenda from their peers. This sets the expectation for everything that needs to be accomplished during the period, too.
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ACTIVITIES – INDIVIDUAL AND GROUP

1. **Discussion: What is Geometry?** – (10 minutes) Have a discussion on Geometry. Ask the question “Who has ever heard of geometry,” (“It’s on my schedule.”) They may know nothing about Geometry. They may know it’s math, but what kind of math do they think it is? Ask if they talked about it in Algebra or earlier math classes. Ask if they can think of ways we use geometry. Explain that, basically, you’ll be looking at shapes, lines, angles, and solids this year.
2. **Discuss: Everyday Geometry** – Ask if any students can think of ways or places they see geometry in the world. You may want to lead the discussion into certain areas. Look around the room—anyone see anything that fits into geometry? Outside the window? How about coming to school—do they move in straight lines, diagonals, rectangles?

Do any of them know anyone who uses geometry at work? What types of professions might use geometry? What about football or basketball players or coaches, architects, bus drivers, astronauts, ballet dancers etc.

3. **Group Work: Stick Figures** – (12 minutes) Divide the class into small groups of 3 or 4. Handout toothpicks or Popsicle sticks. Start each group with 3 sticks. Have them build as many shapes or figures as possible with the 3 sticks. Have students assign roles (see *Group Roles* below). One person in the group should be the recorder and record each shape by drawing it and, if possible naming it. This section should be labeled *3 Sticks*. After two minutes, give each group 1 more stick. Again, have them create as many shapes or figures as they can. Again, have them record and draw each one in a new section labeled *4 Sticks*. If they know the name of the shape they’ve created, they should record that; if they don’t, they should come up with a group name for each. Continue this process by giving each group one more stick, up to 6 or 7 sticks. (Note: If students, even from the beginning, break their sticks to create more shapes, that’s creative. Just be sure to bring up why they did this as you discuss the activity.)
4. **Discussion: Stick Figures Purpose** – (8 minutes) Discuss this activity. What were they creating? Using what (and the answer here isn’t toothpicks!)? Each stick represented what? They may say a line, an edge, corners, angles, and so on. Can you create an angle with one stick? Or a corner? Did having more sticks mean they could create more shapes? How many sticks or lines would you need to make a circle? What about for those groups that broke their sticks? Did any group make shapes that were 3D? How did they do this? Can you use one stick to make something 3D? Challenge them—see if anyone says to break the stick. How many sticks do you need to make something 3D? How many lines do you need to have a 3D shape? Any answers or guesses, have the

students come to the board to draw their answers. Your role here is not to say *yes* or *no*, but to force them to think about it. If a student says he can make a 3D shape with one stick, ask him to show the class. This may lead to a discussion about what 3D means. For those who remember this from Algebra, this shouldn't be a problem. For others, you can talk about it a little, but you won't have much time today. Explain that they'll be working with dimensions all year, so now's the time to start wondering about that!

5. Info Cards – (5 minutes) Hand out information cards and write, on the board, that you'd like them to give you the following information:

Name
Address
Home phone
Parents'/Guardians' names
Birthday

Hobbies
Instruments they play
Sports they like
Favorite number
Any other information you'd like from them

When students have finished, collect the cards.

6. Homework Review – Go over the homework assignments. Field all questions.
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HOMEWORK

- 1) Purchase three ring binder. Divide into sections: *Project*, *Postulates and Theorems*, *Homework*, *Notes*, *Terms and Definitions*, and *Journal*. Bring to class tomorrow.
- 2) Get syllabus signed by parent/guardian.
- 3) Create a one-minute method of telling the class what your favorite shape or application of geometry is. This can be a photograph, a dance, a poem, a song, a drawing, a symbol, a treasured possession, etc.

Note: In class tomorrow, all students will share a small piece of themselves. You can let any extremely shy or anti-social students know that, because this is the first day of class, they can try to think of a creative way to express themselves without having to actually stand in front of the class and speak. If their creation isn't self-explanatory enough, though, they'd better be prepared to talk!

GROUP ROLES

Recorder – You are responsible for recording and drawing the shapes that the group agrees on.

Facilitator – You are responsible for keeping students focused on the activity and making sure you complete the task.

Manager – You are responsible for making sure the group has everything it needs.

Time Keeper – You are responsible for keeping track of the time and making sure the group completes the task in the time allotted.

DOCUMENTATION FOR PORTFOLIO

None

NOTE: Students will only be placing their formal pieces of writing in their portfolio (those are the pieces of writing they take through the whole writing process to turn in for a letter grade) their formal projects, and their final exams, all of which should be a demonstration of their mastery of the skills you have been teaching them. All first drafts and other pieces of work should be placed in their binders. If students have a portfolio from their freshman and sophomore years (they should if they have been working through ESubjects), they will simply add to it this year. Ask students to bring in their portfolios from previous years, as this will be an opportunity for you to assess their skill levels and get to know them. They should keep these portfolios in the classroom at all times. Portfolios should never leave the room. If your school already has a portfolio system in place, you

Prove It
How do we create truth?

2:1:1:Welcome/Introduction: Part 1 of Assessment

may want to adhere to that. Or you may want to check in with teachers from your department, as some may have had the students create portfolios last year and they may still have them.