Geometry (GEOM) 1B
Syllabus

Course Name

GEOM 1B

Geometry – Semester B

Course Information

GEOM 1B is the second semester of this two-semester course.

For you, geometry up to this point has contained many different and widely spread skills and concepts. You have learned how to write geometric statements, along with all the symbols. You have learned what constructions are, and how to perform them. You have now been exposed to a great deal of transformational geometry on the coordinate plane. You have also learned some very important properties of geometry in postulates and theorems. You have learned how to think logically, and to apply deductive and inductive reasoning. Finally, you have learned how to solve problems that involve all of these skills, including those that have required algebra.

Now, in the second part of this introductory course in geometry, you are going to learn even more about triangles, and especially the right triangle. This study of right triangles is known as trigonometry. A whole course is given on just trigonometry before you take calculus. You will also be dealing with measurement in this second part: area and volume of various types of two-dimensional figures like the ones you have learned about. You will also extend the geometric properties into three dimensions by calculating volume. You will learn how area and volume are affected when certain changes occur, and how there are actually different kinds of geometry besides the plane geometry that is now familiar to you. Finally, you will begin to learn more about how probability fits into geometry.

Throughout this course, you will be encouraged to use the four-step problem-solving plan that is part of the mathematics curriculum. The four-step problem-solving plan consists of the following steps:

1. Analyze Information,
2. Formulate a Plan,

3. Solve, and
4. Justify and Evaluate.

This will give you a simple, yet effective, framework for organizing your work in the process of solving a problem.

Keep in mind that you need to have a positive attitude and to study hard during your course. It is vital that you read all assignments in your textbook and course discussions, and never be afraid to ask for help or clarification. **Also, some of the lessons in the textbook have a reference for online help. The online tutorials are a very helpful tool that you may want to use.**

Course Delivery Method

Online

Contacting Your Instructor

You may contact your instructor through the Blackboard messaging system. Technical support is available 24/7 at www.k12.ttu.edu.

Course Objectives

After completing this course, you should be able to:

1. determine whether polygons are similar and use similarity statements;
2. find corresponding lengths, areas, and perimeters of similar polygons;
3. use the AA, SSS, and SAS similarity theorems;
4. prove statements about slopes in similar triangles;
5. use the triangle proportionality theorem and its converse, as well as other similarity theorems;
6. use the Pythagorean theorem and its converse;
7. classify triangles; use geometric means;
8. solve problems using similar right triangles;
9. use the sine, cosine, and tangent ratios and their inverses;
10. find the areas of triangles;
11. use the Law of Sines and the Law of Cosines to solve triangles;
12. identify special lines and segments of circles;
13. draw, identify, and use properties of tangents and common tangents;
14. use chords to find arc measures and identify congruent arcs;
15. use angles and polygons inscribed in and circumscribed around circles;
16. use segments of chords, tangents, and secants;
17. write and graph equations of circles;
18. write coordinate proofs involving circles;
19. use the formulas for circumference, area of a circle, and population density;

20. use arc lengths to find measures;
21. measure angles in radians;
22. find and use areas of sectors;
23. find areas of regular polygons, kites, and rhombuses;
24. find angle measures of regular polygons;
25. find areas of composite figures;
26. find the effects of proportional and non-proportional dimension changes;
27. classify solids;
28. describe and sketch solids of revolution and their cross-sections;
29. find and use lateral and total surface areas of right prisms, cones, cylinders, and regular pyramids;
30. find and use volumes of prisms, cylinders, pyramids, and cones;
31. find surface areas and volumes of spheres;
32. compare Euclidean and spherical geometries;
33. find distances on a sphere;
34. find areas of spherical triangles;
35. find sample spaces;
36. find theoretical and experimental probabilities;
37. determine the dependence or independence of events;
38. find independent and dependent probabilities;
39. use relative and conditional relative frequencies to find conditional probabilities;
40. find probabilities of compound events; and
41. find permutations and combinations.

GEOM addresses the required Texas Essential Knowledge and Skills (TEKS). These can be found at the Texas Education Agency website.

Textbook and Materials

Textbook(s)

The required digital textbook for this course is:

- Larson, Ron & Laurie Boswell. (2016). *Big Ideas Math: Geometry.* Erie, PA: Big Ideas Learning, LLC. ISBN 978-1-68033-245-2

This digital textbook can only be purchased through the TTU K-12 partner bookstore. You can find the link to the bookstore on the TTU K-12 website. Once you have purchased the digital textbook, you will receive a username and password via email. You will log in to Big Ideas Math to access your textbook. You should already have an account on the website from when you took GEOM 1A, but if not, follow these instructions:

1. On the Big Ideas website, click *New to Big Ideas Math?*
2. Enter your access code and click *Next*.

3. Fill out the required information and click *Next*.
4. Write down your username and click *Next*.

If you would like a printed book, you can purchase the optional printed text:

- Larson, Ron & Laurie Boswell. (2016). *Big Ideas Math: Geometry.* Erie, PA: Big Ideas Learning, LLC. ISBN 978-1-60840-815-3.

Please note that you will not be able to access any of the digital resources if you purchase only the printed textbook.

Before you begin your course, take a few minutes and review the *Help* section in the upper right-hand corner of your textbook dashboard. This section provides several resources that will teach you how to navigate your digital textbook.

Open the *Student Dynamic eBook*. This will provide you with all of the information that you will need for the course. This textbook was designed and chosen so that you can actively participate in your learning with your digital text, explore concepts, take notes, and answer practice questions in your digital textbook.

Scan and review the first part of the text for GEOM 1A, which included Chapters 1-7. The remainder, Chapters 8-13, will be covered in GEOM 1B.

Structure of the Textbook

Each section in this textbook was written with an introduction that contains "Explorations," an "Essential Question" and a follow-up, and one or more "Communicate Your Answer" problems. These are designed to help students get a hands-on feel for what the upcoming section will be about. The introductions often include an experiment or use of a previous skill that will be incorporated into the new lesson. Many of these will be used in your course work. Therefore, be aware of them with each lesson or assignment.

Each chapter is, of course, numbered. Within each chapter, each section is numbered with a decimal point between the chapter number and the section number. Within each section there are several topics.

For each topic, the textbook provides three sections to help you understand the skill or concept. The first section, usually labeled "Core Concept," contains a paragraph describing what you are learning. This section is a good place to make notes in your spiral notebook.

The second section is an example or two that takes you step-by-step through the process of working a problem based on the topic you have just learned.

The third section is called "Monitoring Progress," and will always follow the examples with a very similar problem to do on your own. The answers to these problems will be provided so you can check your work.

Materials

- lined notebook paper
- scientific or graphing calculator
- pencils and erasers
- graph paper
- ruler
- compass
- spiral notebook

VERY IMPORTANT NOTE ABOUT THE CALCULATOR

In this second part of geometry, a calculator that approximates square roots and the number **π** (pi), and that contains the trigonometric functions of sine (sin), cosine (cos), and tangent (tan) ratio keys, is required. A scientific calculator or a graphing calculator should have these features. Because there are so many calculators of this kind on the market, I will not be giving instructions on using them; check the manual that comes with yours to see how to solve problems.

Technical Requirements

- Internet access – preferably high speed (for accessing Blackboard)
- Email
- Word processing software such as Microsoft Word
- Adobe Reader (download from Adobe.com)
- Audio and video capabilities (for watching/listening to course content)
- PDF app (free options available)

Technical Skill Requirements

Be comfortable with the following:

- using a word processor
- Internet search engines and browsers
- creating PDFs (see **Requirements for Creating PDFs** in the Syllabus section of your course)

Course Organization

This course consists of six lessons and a final examination. Each lesson contains the following:

- Introduction and Instructions
- Learning Objectives
- Learning Activities
- Assignments

Each lesson includes several activities that present content knowledge. Each lesson also includes multiple graded assignments to ensure that you learn the content that has been presented in the activities. Be sure you read all instructions carefully and ask your instructor for help if something is not clear.

Your final exam will be online.

Discussions and Apply What You Learned problems will appear several times in each lesson. Make sure you grasp the concept or skill in the Discussion before going on. Answers are provided for each question in Apply What You Learned. A list of practice exercises will be available at the end of each section. These should be worked in your spiral notebook and answers checked with the key in the back of the book. These are not turned in, but you should do them all to be very familiar with the processes.

It is very important that you read the course material before proceeding to the assigned problems. This material is designed to help you understand thoroughly the geometric concepts and skills for the course. Do **not** skip any part of it if you expect to do well!

Finally, you must complete and submit the lesson assignments for grading. (See *Instructions for Submitting Assignments* below.) You must submit all of the lesson assignments before you can take the final examination.

Instructions for Submitting Assignments

Technology Requirements

You will submit all lessons for this course electronically. Your work for each lesson will need to be saved as a PDF in order to submit the lesson for grading. See **Requirements for Creating PDFs** in the Syllabus section of your course for information on PDF-creation options.

Formatting Instructions

Be sure to follow these instructions when preparing your lesson assignments for grading.

- All assignments for this course will be submitted online.

- Begin each section's assignment on a clean sheet of notebook paper or graph paper. Do not use frayed spiral notebook or graph paper. Do not use unlined paper.

- Complete your work in pencil. Make certain the marks are dark enough for a scanner or camera to pick up the text.

- Do not write on the back of your notebook or graph paper.

- Show your work down the paper, not across. However, you may make two columns.

- Skip a line after each problem and circle or box in the answers.

- Submit your completed work, following the instructions for uploading included with each lesson.

- Don't go too fast through a lesson or you will miss important information. Remember—math takes time and much practice, so don't give up.

Uploading Instructions

- You will submit your work every one or two lesson sections. When you have completed all of the problems for a designated section, save them as a ***single*** **PDF** file.

- Go to the assignment upload page for the section.

- To upload your file, click the *Upload a file* button, then follow the instructions on your screen.

- Make sure you are able to see the file link displayed in the textbox, then click the *Save changes* button to submit your file for grading.

A Sample to Follow

You will find a sample generic lesson assignment in the **Resources** section of the course. Look at this sample before you begin Lesson One. Refer to it each time you begin a lesson until you are familiar with the format.

Course Outline

Please note that some assignments will be hidden from you when you start the course. As you move through the lessons and complete assignments, more will unlock for you.

Lesson	Topic	Approximate Time for Completion
Lesson 1	Similarity	Two weeks
Lesson 2	Right Triangles and Trigonometry	Two weeks
Lesson 3	Circles	Three weeks
Lesson 4	Circumference and Area	Three weeks

Lesson	Topic	Approximate Time for Completion
Lesson 5	Surface Area and Volume	Three weeks
Lesson 6	Probability	Three weeks
Final Exam		

Assignment Schedule

Each of the following must be completed to complete the course. Items with an asterisk (*) indicate that these are summative assessments for the course.

Lesson	Weeks	Assignments
1	1-2	Checkpoint 1 (Non-graded) Section 8.1 Assignment Upload Section 8.2 Assignment Upload Section 8.3 & 8.4 Assignment Upload Section 8.5 Assignment Upload *Chapter 8 Exam
2	3-4	Section 9.1 Assignment Upload Section 9.2 & 9.3 Assignment Upload Section 9.4 & 9.5 Assignment Upload Section 9.6 & 9.7 Assignment Upload Section 9.8 Assignment Upload *Chapter 9 Exam
3	5-7	Section 10.1 Assignment Upload Section 10.2 & 10.3 Assignment Upload Section 10.4 & 10.5 Assignment Upload Section 10.6 & 10.7 Assignment Upload Section 10.8 Assignment Upload *Chapter 10 Exam Checkpoint 2 (Non-graded)
4	8-10	Section 11.1 Assignment Upload Section 11.2 Assignment Upload Section 11.3 Assignment Upload Section 11.4 Assignment Upload Section 11.5 Assignment Upload *Chapter 11 Exam

Lesson	Weeks	Assignments
5	11-13	Section 12.1 Assignment Upload Section 12.2 & 12.3 Assignment Upload Section 12.4 & 12.5 Assignment Upload Section 12.6 & 12.7 Assignment Upload Section 12.8 Assignment Upload *Chapter 12 Exam
7	14-16	Section 13.1 Assignment Upload Section 13.2 Assignment Upload *(There is no assignment for 13.3.)* Section 13.4 & 13.5 Assignment Upload *(There is no assignment for 13.6.)* Section 13.7 Assignment Upload *Chapter 13 Exam Checkpoint 3 (Non-graded)
		Final Exam

Course Credit

TTU K-12 uses a standardized grading scale that may be found in the Texas Tech University K-12 Handbook.

The course grade will be calculated as follows:

- 50% coursework average;
- 50% summative assessment average, including the final exam;
- A passing course grade is 70 or higher.

Students must attempt all assignments in the course. The final exam will not be available until all assignments have been accepted and graded by the teacher.

Students who score below 70% on the final exam will be eligible for one re-exam opportunity.

Coursework

The graded assignments within each lesson are formative in nature. This means that they are designed to assist you in applying and demonstrating the lesson concepts, as well as identifying areas in which you need additional review. You may use all the lesson's learning activities to assist you as you complete the graded assignments.

Summative Assessments

Summative assessments are those that allow you to demonstrate mastery of the course objectives. For summative assessments, you will NOT be allowed to use the learning materials. These are opportunities for you to show what you have learned by that point in the course. Summative assessments may be proctored using the online proctoring system Proctorio. Information about Proctorio is provided in **Remote Proctoring** in the Syllabus section of your course. The summative assessments for this course are as follows:

- Summative Assessments **(20% of Course Grade)**
  - Chapter 8 Exam (28 points)
  - Chapter 9 Exam (35 points)
  - Chapter 10 Exam (58 points)
  - Chapter 11 Exam (22 points)
  - Chapter 12 Exam (28 points)
  - Chapter 13 Exam (26 points)
- Summative Final Exam **(30% of Course Grade)**

Course Completion

- Students may not complete the course in less than 30 days.
- All courses expire six months after the enrollment date.

Academic Integrity

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

"Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Student Expectations

You will be expected to log into the Blackboard course regularly to be aware of possible announcements/reminders and to pace your progress in the course.

Students are expected to maintain an online environment conducive to learning, which includes "netiquette" (Internet etiquette). Please review the basic rules for Online Discussion Netiquette. Ensure that your email messages, discussion board postings, and other electronic communications are thoughtful and respectful. Diverse opinions are

welcome in this course, and you are expected to demonstrate an open mind and courtesy when responding to the thoughts and ideas of others.

The following are prohibited:

- making offensive remarks in email or the discussion board;
- using inappropriate language or discussing inappropriate topics online;
- spamming;
- hacking;
- using TTU or Blackboard email or discussion boards for commercial purposes;
- using all caps (considered shouting in online communications); and
- cyber-bullying or online harassment of any type.

Inappropriate behavior shall result in consequences ranging from a request to correct the problem, to removal from the course or even the university, depending on the severity of the behavior. Disciplinary actions will be taken according to the TTU K-12 Student Handbook.

Communication

- You can expect a reply from your instructor within 2 business days.
- Use the Blackboard Course Messages tool for sending messages to your instructor.

Submitting Assignments

You will submit all assignments through the Blackboard Assignment Tool, rather than by mail or email.

Technical Difficulties

Getting Help

For student assistance with Blackboard, visit TTU K-12 Support.

Computer Problems

A working computer is necessary for online coursework. Computer problems will not be accepted as a valid reason for failure to complete course activities within the allotted time frame. Identify a second computer, before the course begins, that you can use if you experience computer problems.

Server Problems

When the Blackboard server needs to be taken down for maintenance, the Blackboard administrator will post an announcement in your course informing you of the time and date. If the server experiences unforeseen problems, your course instructor will notify you.

Lost or Corrupted Files

You must keep/save a copy of every project/assignment on an external disk or personal computer. In the event of any kind of technology failure (e.g., Blackboard server crash or virus infection, students' own computer problems, loss of files in cyberspace, etc.) or any disputes, the instructor may request or require you to resubmit the files. In some instances, the instructor may need to open another attempt within Blackboard, so communication with your instructor is critical in these circumstances.