



K-12
TEXAS TECH

Mathematics, Grade 8 A v8.0 – Syllabus

Course Name

MATHG8-A

Mathematics, Grade 8 A v8.0 – Semester A

Course Information

MATHG8-A is the first semester of this two-semester course.

Read, set, go! Grade 8 Pre-Algebra is all about training to run the race of high school math. Students will strengthen their skills in topics like linear relationships, functions, and equations, and learn new skills that prepare them for Algebra 1. This course is designed with interactive learning and real-world activities to strengthen students' math muscles for the race ahead.

Instructional time for Grade 8 Mathematics: Pre-Algebra will emphasize six areas:

1. representing numbers in scientific notation and extending the set of numbers to the system of real numbers, which includes irrational numbers
2. generate equivalent numeric and algebraic expressions including using the Laws of Exponents
3. creating and reasoning about linear relationships including modeling an association in bivariate data with a linear equation
4. solving linear equations, inequalities, and systems of linear equations
5. developing an understanding of the concept of a function
6. analyzing two-dimensional figures, particularly triangles, using distance, angle, and applying the Pythagorean Theorem

Course Delivery Method

Online

Contacting Your Instructor

You may contact your instructor using your Canvas Inbox. Technical support is available 24/7 at [TTU K-12](#).

Course Topics

After completing this course, the students should have increased knowledge of

- Define irrational numbers within the real number system and locate an approximate value of a numerical expression involving irrational numbers on a number line
- Plot, order, and compare rational and irrational numbers, represented in various forms
- Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency
- Solve multi-step problems involving the order of operations with rational numbers including exponents and radicals
- Express numbers in scientific notation to represent and approximate very large or very small quantities
- Add, subtract, multiply, and divide numbers expressed in scientific notation with procedural fluency
- Solve problems involving operations with numbers expressed in scientific notation
- Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases
- Apply properties of operations to multiply two linear expressions with rational coefficients
- Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions
- Solve multi-step linear equations in one variable, with rational number coefficients, including equations with variables on both sides
- Determine the real solutions given an equation in the form of $x^2 = p$ and $x^3 = q$, where p is a whole number and q is an integer
- Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically
- Apply the Pythagorean Theorem to solve problems involving unknown side lengths in right triangles
- Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides
- Use the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides
- Apply the Pythagorean Theorem to solve problems involving the distance between two points in a coordinate plane

- Solve problems involving the relationships between supplementary, complementary, vertical, or adjacent angles
- Solve problems involving the relationships of interior and exterior angles of a triangle
- Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles

Textbook and Materials

No textbooks required. All content is within Canvas.

Materials

- Printer

Technical Requirements

- Internet access – preferably high speed (for accessing Canvas)
- browser (we recommend Chrome)
- supported browser plugins and settings
 - The following plugins and settings may be required to use our courses.
 - JavaScript enabled
 - Cookies enabled
 - Java installed
- Email
- Printing capabilities
- Adobe Reader (download from [Adobe](#))
- Audio and video capabilities (for watching/listening to course content)
- PDF app (free options available)

Technical Skill Requirements

Be comfortable with the following:

- accessing online learning materials via Canvas
- Internet search engines and browsers (we recommend Chrome)
- uploading assignments into Canvas (there will be instructions for uploading assignments)

Course Pacing

This course is designed to be completed in 18 weeks.

- Print this guide and use a calendar to fill in your goal dates for completing each Module.

- Note that you must have a grade of 70 or above on a Discussion-Based Assessment (DBA) in order to continue moving forward in the course. DBAs occur every other lesson.
- To achieve success, students are expected to submit work in each course weekly.
- Students can learn at their own pace; however, "any pace" still means that students must make progress in the course every week.
- Post the pace guide in a place where you and your Parent or Guardian will see it every day (on the refrigerator or next to the computer). Give yourself a check every time you complete a task, and celebrate your efforts!

Weeks	Lessons	Due Date (you write this in)
1	Checkpoint 1 (non-graded) 01.00 Numerical Expressions Introduction 01.01 Irrational Numbers 01.015 Classifying Real Numbers	
2	01.02 Laws of Exponents with Integer Exponents 01.03 Order of Operations with Radicals 01.04 Scientific Notation	
3	01.05 Adding and Subtracting with Scientific Notation 01.06 Multiplying and Dividing with Scientific Notation	
4	01.07 Scientific Notation in the Real World 01.08 Numerical Expressions Practice Exam	
5	01.09 Numerical Expressions Discussion-Based Assessment 01.10 Numerical Expressions Exam	
6	02.00 Algebraic Equations and Inequalities Introduction 02.01 Equivalent Algebraic Expressions	
7	02.02 Multiplying Linear Expressions 02.03 Factoring Algebraic Expressions	
8	02.04 Multi-Step Linear Equations 02.05 Solving Equations Using Square and Cube Roots	

Weeks	Lessons	Due Date (you write this in)
9	02.06 Two-Step Linear Inequalities 02.07 Algebraic Equations and Inequalities Practice Exam	
10	Checkpoint 2 (non-graded) 02.09 Algebraic Equations and Inequalities Exam	
11	03.00 Angles and Triangles Introduction 03.01 Pythagorean Theorem	
12	03.02 Pythagorean Theorem and the Coordinate Plane 03.03 Angle Relationships	
13	03.04 Interior and Exterior Angles 03.05 Polygon Angle Sums	
14	03.06 Angles and Triangles Practice Exam Semester A Practice Exam Checkpoint 3 (non-graded)	
15	03.07 Angles and Triangles Discussion-Based Assessment 03.08 Angles and Triangles Exam	
16	*Final Exam Part One and Part Two	
17	Floating Vacation Week	
18	Floating Vacation Week	

Course Credit

Your grade will be calculated as follows:

- formative assessments (50%)
- summative assessments (20%)
- summative final exam (30%)

Assignments are labeled as “summative” or “formative” under Grades in Canvas.

Course Completion and Extensions

- Students may not complete the course in less than 30 days.
- All courses expire 180 days 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.

Artificial Intelligence (AI) Use Policy

This policy covers any generative AI tool, such as ChatGTP, Elicit, Photo Math, etc. This includes text and artwork/graphics/video/audio, etc.

All work submitted in this course must be your own. You may not use artificial intelligence tools to complete your assignments in this course.

If an instructor suspects that an assignment is not the work of the student, it will receive a score of zero. The instructor will message the student or provide feedback on the assignment indicating the need to schedule a one-on-one video conference, during which the student will be required to demonstrate their skills or knowledge through an alternative or mutually agreed-upon assignment. The grade of the alternate or agreed upon assignment will be determined at the instructor’s discretion with the highest possible score being 70%.

If it is determined that a student has violated final exam directions on Final Exam A or CBE Set 1, the exam will be scored as zero. The student may take Final Exam B or CBE Set 2 with the highest possible score being 70%.

The incident will be reported to Texas Tech K-12 Administration and documented in the student’s file. Continued violations of Texas Tech University’s Academic Integrity Policy will result in the removal of the student from the program.

Student/Parent Expectations

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

The following are prohibited while using the Canvas interface:

- spamming;
- hacking; and
- using TTU or Canvas email for commercial purposes;

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 Canvas Inbox for sending messages to your instructor.

Submitting Assignments

You will submit all assignments through Canvas, rather than by mail or email.

Technical Difficulties

Getting Help

For student assistance with Canvas, 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 Canvas server needs to be taken down for maintenance, the Canvas 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., Canvas 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 Canvas, so communication with your instructor is critical in these circumstances.