



10th Grade Math (Math 2):

2017-2018 Course Syllabus

Go down deep enough into anything and you will find mathematics.
~ Dean Schlicter

Pure mathematics is, in its way, the poetry of logical ideas.
~ Albert Einstein (1879 – 1955)

Instructor:

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Digital Portfolio: <http://ajv.me/hth>

Scheduled Office Hours:

Mondays: 3:30-4:00
Wednesdays: 11:45-12:15
Fridays: 7:45-8:15

Course Overview:

Mathematics is the language of physics and many other disciplines, such as finance, economics, computer science and engineering (which has sometimes been referred to as applied physics). But mathematics is much more than that. For many mathematicians, mathematics is purely a human endeavor, similar to that of music for musicians and paintings and sculptures for artists: it is pursued for the joy of gaining insight and making new discoveries.

In this course, we will be exploring the world of mathematics from both perspectives. Much of what we will cover will be learning the language of mathematics and using those skills to solve problems, but we will also explore the more abstract nature of mathematics and (hopefully) develop an appreciation of its inherent elegance and how that elegance can manifest in abstract concepts.

This exploration will be undertaken using four main types of activities: projects, open-ended problems, SAT/ACT Practice Problems and a (not-quite) weekly “Problem of the Week” (POW). Projects are typically focused on one or two essential questions and can vary from three to six weeks in length; they normally culminate with some form of public presentation or demonstration of understanding. The nature of projects can vary from hands-on construction to a series of directed investigations. Open-ended problems are the primary class activity (individual or group) that is targeted at making sense of a problem and persevering in solving it, reasoning abstractly and quantitatively, constructing arguments, critiquing the reasoning of others, attending to precision, and looking for patterns, structures, and shortcuts. SAT/ACT Practice Problems give students the opportunity to try actual (grade-level) test problems and share approaches and solutions to these problems. The “Problem of the Week” (POW) has objectives similar to open-ended problems, but is mainly done as homework (though significant class time will also be devoted to these problems), and there is a strong emphasis on presentation of work.

Essential Questions for Enduring Understanding:

1. What are the skills and practices that help ensure success in math?
2. How can our understanding of math be applied to other disciplines?
3. How can our mathematical ideas and discoveries be effectively communicated to others?

Course Objectives:

1. Students will gain and apply the skills of mathematicians to various types of problem solving.
2. Students will be able to communicate their ideas and understanding of mathematics.
3. Students will grow in their use of the Habits of a Mathematician to solve challenging problems and make relevant connections to their world.

Scope and Curriculum Standards

At High Tech High North County, the scope for Grade 10 Math is based on the *Common Core State Standards for Mathematics* and includes:

- Probability
- Quadratic Functions; Quadratic Equations and Roots
- Irrational and Complex Numbers
- Similarity and Dilation
- Right-Triangle Trigonometry

Additional information, including details and specifics of the *Common Core Standards* can be found on my Digital Portfolio.

In addition to the above Common Core Standards, incorporating programming into projects and class activities will also emphasize *computational thinking*. This will be done primarily with the StarLogo Nova on-line platform.

Class Grading

Assigning a “grade” to student work is an unfortunate consequence of the college admission process: your Math 2 grade must be factored into your GPA for consideration to be accepted. Ideally, your math work would not be graded on a numerical (100%, 90%, 80%, ...) or letter (A, B, C, ...) scale; rather, verbal or diagnostic written feedback on your progress in this course would be given on a recurring basis (from both your teacher and your peers).

To work around these constraints, the following over-arching rubric is used to assign your final semester-grade for the class:

*If you come to class every day, and
If you do all the assignments and revisions, and
If you participate in sharing your work/ideas and discussing with the rest of us, and
If you post your work to your DP as required... you are guaranteed a B for the course.*

*If you come to class every day, and
If you do all the assignments with a clear effort at exploring and improving, and
If you participate in sharing your work/ideas and show real attention to the work/ideas of others and
If your DP exemplifies beautiful work... you are guaranteed an A for the course.*

If you do all of the above, but with less effort or less reliability, you will receive a C, or a D, or ... F

To give you a sense of how you are doing with this rubric, approximately every two to three weeks a grade in PowerSchool will be entered that reflects your performance on this rubric. Remember: participation (individual, group and class) is key to getting an A: the extent to which you share your ideas and pay real attention to the ideas of others is critical (both during class discussions and during group work).

Grades for project benchmarks and other activities and assignments will use a 4-point scale, regardless of the “weight” of the assignment. This ensures that the grade is seen more as a reflection on that particular assignment

and not so much its contribution to your final grade. Here is the 4-point scale:

Grade	Points	Critique
A	4	Your work meets expectations and qualifies as “beautiful work”. It is very likely your work could still be improved, and you are definitely encouraged to think about such improvements for future assignments.
B	3	Your work exhibits authentic effort and mostly meets expectations. You are highly encouraged to use the feedback given to revise your work and resubmit it for a higher grade.
C	2	Your work reflects a good effort and has the potential to be “beautiful work”. You are expected to make all the suggested revisions and do a check-in with me to ensure your work meets expectations.
D	1	While your effort to turn in work is appreciated, your work does not reflect your potential. You are definitely expected to meet me to discuss how your work can be transformed into work that meets most—if not all—of the expectations.
F	0	Your work is missing or lacks any originality.

Assignments and benchmarks will be graded multi-dimensionally; that is, you are not graded solely on your ability to solve a problem or “get the right answer”, but you are also graded on your group work, collaboration, participation, sharing your mathematical reasoning (both written and verbal), willingness to give help, willingness to get help, and so on.

Your actual final grade will be based on the rubric described above. Your PowerSchool grade will give you a sense of your progress: if your grades tend towards A’s, you can expect an A; if most of your work is a B, you can expect a B, and so forth. The trends in your grades are important when a final grade is assigned: if you struggled at the beginning of the semester but persevered and improved your work, your final grade will reflect that growth. Likewise, if you start strong but then start to pay less attention to your work, your grade will reflect that reduction in your effort.

While PowerSchool does give a snapshot of your progress in the class, understanding of your growth and your challenges will come from three forms of feedback: i) the written and verbal feedback I provide, ii) the feedback you receive from your peers, and iii) the feedback you give yourself when you reflect on your work. If at any point in the school year you are unsure of your progress, you are definitely encouraged to come and talk to me!

All grades will appear online in PowerSchool and will be updated at least every two weeks, usually much more frequently.

Group participation is a crucial element of learning in this class (and in the “real-world”); however, while students will often be working as a member of a group, group grades will not be given. Students will always be assessed on their individual effort and work.

Note: High Tech High policy is that a grade of a C– or higher is required in both semesters to pass the course. A D+ or lower in any one semester implies a mandatory summer school session.

Revising Work for More Credit

Critique and revising work are essential for producing beautiful work. In some cases, the critique and revision process are done formally, in a very structured way; in other cases, you are expected to self-critique or have friends and parents critique your work and do revisions. In some sense, a grade is form of critique from the teacher and it’s possible that you may not be satisfied with the grade you received. You are always encouraged to ask if you may revise your work to receive additional credit.

Challenge Options

With all assignments and projects, I expect the necessary components that show me you understand the concepts, but this is only the minimum. Every project and most assignments will be accompanied by a challenge option (or be structured as open-ended) allowing for a more in-depth exploration of course content and an enhanced development of skills—the opportunity to go beyond the minimum level of demonstrating that you understand the concepts. If your imagination and curiosity drive you beyond the benchmarks of a project, please act on it by accepting the challenge options. Or, if you have other ideas that go above and beyond, request that challenge: I want you to push yourself as far as you can go (and then a little bit further). Even if you pursue a challenge option and it doesn't quite turn out, it will reflect positively on your project and you will have gained invaluable experience.

Late Work and Absences

Work that is late cannot receive an A, unless you communicate with me **before the deadline** as to why you will not be able to submit the work on time (and I accept your excuse). Work can be submitted up to one week late and receive a 1-point deduction (A quality work becomes a B, B quality work becomes a C, and so on).

Projects

Pay close attention to assignment project due dates: Due dates and times for all project benchmarks will be established or communicated well in advance (normally at the beginning of the project). Remember: it is better to hand in unfinished work for partial credit (and potentially more credit for subsequent revision) than no work for zero credit.

Problem of the Week (POW)

Generally, you will have one week to complete a POW. They will usually be assigned the first or second day of the week and due on the same day of the following week. Each week a few students will present their work on a POW.

Class Activities

While every attempt will be made to give students ample class time to finish class-based activities, please note that some activities will result in homework (or work for Academic Coaching) if the student did not finish in class. It is in the student's best interest to finish this work as homework since it will only be assigned so that the activity can continue in class (usually the following day).

Some assignments will require submission on Edmodo or handed in to the class inbox. These assignments will have deadlines, after which the work is late.

Absences

For a scheduled absence (including an early release from class), it is your responsibility to ensure that you leave prepared to complete all assignments that come due during your absence.

If you unexpectedly miss class time, it is your responsibility to stay caught up! Do whatever works best for you to find out what you missed and submit it on time:

- Contact a friend
- Follow the class on Edmodo
- Contact me

Remember: **ABSENCES DO NOT EXCUSE MISSING WORK.** If you miss an assignment or a project benchmark due date because you were absent, it is *your responsibility* to either complete the work during your absence and submit it when you return, or come see me as soon as you return to discuss an alternative due date.

Norms for a Supportive and Productive Learning Environment

During the first week of school, each class will establish its own particular set of classroom norms, particularly

for doing group work. The following is a list the covers items I feel are particularly important for classroom discussion and group work (adapted from “Mathematical Mindsets”, by Jo Boaler):

- **Everyone Can Learn Math to the Highest Levels:** There is no such thing as a “math person”—everyone can reach the highest levels they want, with hard work.
- **Mistakes are Valuable:** Mistakes make your brain grow. It is important to struggle and make mistakes.
- **Questions are Really Important:** Always ask questions, always answer questions. Ask yourself: why does that make sense?
- **Math is about Creativity and Making Sense:** Math is a very creative subject that is, at its core, about visualizing patterns and creating solution paths that others can see, discuss, and critique.
- **Math is about Connections and Communicating.** Math is a connected subject, and a form of communication. Represent math in different forms—such as words, a picture, a graph, an equation—and link them.
- **Depth is Much More Important than Speed.** The world’s top mathematicians think slowly and deeply; you should too!
- **Math Class is about Learning, Not Performing:** Math is a growth subject, and it takes time to learn. It’s not about what you already know; it’s all about effort to understand something new.

Student Support

Teacher-student communication is extremely important and encouraged in this class. I will have daily check-ins, but I encourage you to email me with additional questions/concerns. I am here to see you succeed, and I am willing to provide as much assistance as needed! If you should need additional academic support, there are two primary options:

1. My office hours: Mondays 3:30 – 4:00 Wednesdays 11:45-12:15 and Fridays 7:45 – 8:15 (or by appointment). Occasionally I will have to reschedule the Friday office hours to accommodate other meetings.
2. Academic Coaching (please inquire for details)

Edmodo

Edmodo is an online Learning Management System. This tool has many features that facilitate organization and communicate, including the ability to submit assignments, ask/answer questions about assignments that everyone can see and use, maintain a calendar with all upcoming assignments and so on. As much as this tool has been designed to facilitate student/student and student/teacher interaction, it has also been designed as a tool that parents can use to monitor classes and calendars and also communicate with teachers and their own (and only their own) child.

All students are required to use Edmodo: All projects and assignments will be posted on Edmodo and most (if not all) assignments (or parts thereof) must be submitted via Edmodo.

Student Digital Portfolios (DPs)

All students will be required to maintain and post selected work and projects to their Digital Portfolios. Students new to High Tech High should seek help very early in the semester to ensure that their DPs are up and they know how to edit them. Posting work to a DP as an example of beautiful work is often a project benchmark.

Dr. Drew’s Digital Portfolio (DP)

My Digital Portfolio is home to a lot of course information, including, this syllabus (in PDF form) state standards, project descriptions, POWs, and supplementary resources. Please become familiar with my DP and bookmark the URL (<http://ajv.me/hth>) so you can access it easily.

Materials and Supplies

The Constitution of the State of California requires that we provide a public education to you free of charge.

Subject to certain exceptions, your right to a free public education means that we cannot require you or your family to purchase materials, supplies, equipment or uniforms for any school activity.

Many families have been asking what supplies their child may need during this school year. Below, I have a recommended list of supplies that your child may bring to school. **Please note that if your child does not bring the recommended supplies, the school will provide the supplies for him/her.** If you have any questions/comments about this, please contact me, or Emilio Torres, the school director.

- Pens, Pencils, Markers, Highlighters
- Composition book or 3-ring binder with loose-leaf paper
- Ruler
- Calculator
- Flash Drive
- Laptop

Electronics

The nature of much of the work we will do in class requires the use of electronics, such as calculators and computers. As such, all students are encouraged to bring calculators and personal laptops to school, if possible. For students without their own calculators or personal computers, classroom calculators and computers are available. For some project work, students without home computers will have to make arrangements to use school computers outside of regular class time.

The following summarizes my “acceptable use” policy:

- No messaging/texting or any form of social media during class. If there’s an emergency I will need to know about anyways, so ask **before** you reply to any urgent message. Texting without permission may result in your phone being confiscated for the remainder of the day. For repeat offenders, your phone will be handed to Mr. Gooch.
- No headphones (or earbuds, Air Pods, and so forth) to listen to music accept during directed work time.
- Yes, you may use your phone as a calculator but I don’t recommend it: When you take the SAT, you must use an approved calculator; if you don’t know how to use such a calculator you can expect a lower score. Use a classroom calculator if you don’t have your own.

Students bringing their own computers to class are required to follow an “acceptable use” policy:

- The computer is being used solely for current classwork
- No creation of personal hot-spots
- No games of any type
- No use of external speakers

Misuse of personal computers can vary from temporary confiscation to a permanent revocation of the privilege to use them in the classroom.

Course Schedule

Due to the nature of Project-Based Learning, dates are subject to change. Be sure to check the official school calendar for important dates.

First Semester Course Schedule

Aug 28 – Sep 8 (9 days)

Introductory Unit: Introductions, Course Overview and Syllabus Review, Class Norms, Habits of Mathematicians, Edmodo Sign-Ups, Digital Portfolios, Introduction to POWs, POW Write-Ups, POW Presentations, and POW critiques, Open-Ended Problems, Mini-Unit: “Starting Small: Patterns and Functions”, Star Logo Nova Warm-Up

Important Dates:

- Sep 5 – Labor Day Holiday

Sep 11 – Oct 13 (23 days)

Similarity/Dilation, Area

Introduction to Computational Thinking

Important Dates:

- Oct 10-12 – Student-Led Conferences (“SLCs”)
- Oct 13 – Fall Holiday

Oct 17 – Jan 6 (36 days)

Probability and Programming; Unit Circle

Important Dates:

- Oct 11 – PSAT
- Oct 16 – Staff Day
- Oct 25 – College Day
- Nov 10 – Veteran’s Day
- Nov 21-25 – Thanksgiving Holiday
- Dec 14 – Exhibition
- Dec 15 – 1/2 Day
- Dec 18 - Jan 1 – Winter Break
- Jan 2 – Staff Day

Second Semester Course Schedule**Jan 3 – Mar 16: (47 days)**

Right-Triangle Trigonometry, Volume

Important Dates:

- Jan 15 – Martin Luther King Day
- Feb 16 – President’s Day Holiday (Fri)
- Feb 19 – President’s Day Holiday (Mon)
- Mar 14-16 – Student-Led Conferences (“SLCs”)

Mar 19-23 – Intersession**Mar 26-Apr 6 – Spring Break****Apr 9 – Jun 15: (50 days)**

Quadratics

Irrational and Complex Numbers

Important Dates:

- Apr 9 – Staff Day
- Apr 24-25 – CAASPP (Common Core Testing)
- May 4 – Snow Day
- May 7 – Staff Day
- May 28 – Memorial Day

Jun 18-20: Presentations of Learning (POLs)**Jun 20: Last Day of School (1/2 Day)**

2017-18 Grade 10 Math Syllabus

STUDENT / PARENT / GUARDIAN ACKNOWLEDGEMENT

Students/Parents/Guardians, please review the following summary of the syllabus and ensure you understand each point. Please be sure to obtain any necessary clarifications before signing.

- Official grades will appear in PowerSchool and will be updated at least biweekly.
- Grading is on a 4-point scale: 4 (A), 3 (B), 2 (C), 1 (D) and 0 (F).
- A grade of a C or above is required to pass a semester (and avoid a summer school session).
- Absences are not an excuse for missing work.
- Unexcused late work cannot receive full credit: late work will be accepted up to one week late (with a 1-point deduction).
- It is the student's responsibility to take advantage of my office hours, which are Mondays from 3:30 to 4:00 PM, Wednesdays from 11:45-12:15, and Fridays from 7:45 to 8:15 AM.
- Project work will require the use of computers. Students without home computers must make arrangements to ensure adequate access to school computers.
- All electronics are subject to an "Acceptable Use" policy. Texting, messaging, and social media apps are not permitted in the classroom. Policy violations can result in confiscations and permanent bans.

I, _____ and _____,
Student Name (**please print legibly**) Parent/Guardian Name (**please print legibly**)

have read this 2017-18 Grade 10 Math syllabus, understand the course guidelines and policies, and agree to follow these guidelines and policies.

Student Signature and Date

Parent/Guardian Signature and Date