

HTHNC 12<sup>th</sup> Grade Mathematics: Math 4 - Semester Two  
Tentative Syllabus and Course Details  
2017-2018 School Year

*The only way to learn mathematics is to do mathematics. ~ Paul Halmos*

**Teacher:**

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**Course Description:**

This course is designed to increase mathematical understanding and practice. Students will explore topics and build deeper understanding by connecting these topics to some real-world applications. The semester will consist of technology introductions and uses in the math class, critical thinking, and rigorous content work. The class will drive into some deep investigations of where mathematics is useful outside of the school setting and engage in a handful of projects that display these explorations. Overall, students will gain mathematical knowledge, explain real-world problems mathematically, and bond over the beauty of math!!

**Our Class Vision:**

This class is not a competition; students will create a learning environment where mistakes are celebrated because it is the best way to learn. Together, the class will explore new mathematics and exercise each student's brain in a new way!

**Essential Questions:**

- What is the true nature of mathematics and why do we learn it?
- What ways can we represent, describe, and display mathematics? How do we utilize these methods to explain our surroundings?
- How can we utilize higher-level mathematics in a meaningful way?
- How does an individual create/explore their mathematical/numerical identity?
- How do we prepare for mathematics beyond high school?

**Suggested Daily Materials**

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. Thanks.

**\*Additionally: The calculators on cell phones will not be allowed within this class, since cell phones are not to be used in school.\***

- A folder or binder to keep mathematical worksheets organized
- "BrainBook" – graph paper notebook

- Pencils with an eraser, Black or Blue pen
- **Optional: TI-84 Plus Graphing Calculator\***

\*There will be a class-set, but this is my recommendation for college use, which means if you have the finances to purchase, I would encourage it

## EVALUATION-BASED GRADING SYSTEM

**Grading System:** Grading for this class will be based on the philosophy of the school that emphasizes not just the product, but the process involved and the content learned. Students will have assignments that fall under one of these three categories. Additionally, research shows that students learn better and are more productive in math courses, when standard grading systems are altered to allow them to focus on their growth, as opposed to a score, to shape their mathematical identity.

<i>PROCESS</i>	<b>40%</b>
<ul style="list-style-type: none"> <li>• Timeliness/Presence (both in groups and individually)</li> <li>• Coursework (regular homework assignments)</li> <li>• Portfolio Work (unit representations of progress and growth)</li> </ul>	<ul style="list-style-type: none"> <li>• “BrainBook” Feedback, Organization and progress</li> <li>• Group Work</li> <li>• Technology Work</li> </ul>
<i>CONTENT</i>	35%
<ul style="list-style-type: none"> <li>• Quizzes (regular assessments to gauge progress)</li> </ul>	<ul style="list-style-type: none"> <li>• Exams (evaluations of connecting material, likely 2 a semester)</li> </ul>
<i>PRODUCT</i>	25%
<ul style="list-style-type: none"> <li>• Mini-projects that accompany each unit</li> </ul>	<ul style="list-style-type: none"> <li>• Final exhibition project</li> </ul>

### Grading Scale:

90-100	A-/A/A+	60-70	D-/D/D+
80-90	B-/B/B+	59% and below	F
70-80	C-/C/C+		

\*Please note that at all High Tech High schools a grade of 69% or lower is considered failing and will require the student to repeat the course in summer school.\*

### Checking “Grades”:

Seeing as parts of this “grading system” look a bit different than the traditional expectations of a grade book, here are some helpful ways to know what to look for to succeed (or support your student).

- PowerSchool will be updated within 2 weeks of each assignment submitted, with a score and some possible feedback
- Feedback will be attached directly to a clickable link in the grade-book, or within each student’s portfolio
- If there is a low score received on an assessment, you will have until 2 weeks after the unit to complete corrections
- All assessments have the opportunity to be improved to a passing score

Please contact with any clarifications on how to best understand the growth and progress represented in this way.

## MATHEMATTITUDE:

*Mathemattitude (origins from the Michigianian dialect) n: the core of your mathematical/numerical identity*

### **Guidelines:**

*Respect: **Treat others the way you want others to treat you.** Be respectful toward everyone and everything in the classroom. This includes you, your peers, the teacher, and the materials provided for learning. Give everything your best effort and be ready to learn.*

*Honesty: **If you want a safe environment to learn in, you must be honest with your peers, be honest with the teacher, and be honest with yourself.** You will not learn anything if you are not being honest. So be honest with yourself and take advantage of this opportunity to learn.*

*Responsibility: **Everyone is responsible for his or her own actions.** This means that you need to take ownership of your own learning. I will be a guide to show you the way and get you through sticky situations, but ultimately to reach the destination you need to do some work. Act in a manner that will make you proud of yourself.*

## MATHEMAGICS

*Mathemagics (origins from Hollenbeckism) n: the resources to support and improve your mathematical identity*

### **Mathematical Philosophy at HTHNC**

During the first week of school, each class will establish its own particular set of classroom norms, particularly for doing group work. Below are some elements that the Math Department here at HTHNC 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.***

## ADDITIONAL MATHEMAGICS

### **The Mathematical 4 C's:**

One of the goals of math here at HTHNC is to give you the mathematics and skills you need in order to succeed in this changing world both in college and work. Mathematics will be explored in a manner that reflects the different ways people work and learn together. The 21st Century skills that we will focus on throughout your time here at HTHNC are:

- Critical Thinking
- Communication
- Collaboration
- Creativity

### **Academic Honesty and Discipline:**

If a student is caught cheating the penalties entail receiving an automatic "incomplete" score followed by an additional loss of points in your citizenship grade. Your parents will be notified of the indiscretion. If there is a second incident, a committee will be called to assess the student's place at HTHNC.

## MISSING MATHEMAGICS

### **Late work policy:**

Weekly assignments are due at the beginning of the designated class in the turn in tray unless otherwise noted. Absence from school necessitates that the student contact the teacher/lifelines to acquire assignments missed so that they may be turned in upon the absent student's return. The lowest "Process" grade will be dropped at the end of the semester, but recognize that multiple missing assignments will drastically drop your grade.

If you miss submitting an assignment, or unit portfolio, you will only have until the end of the unit to submit the assignment for half credit, but other coursework will not be stopped. You will only be given a week after a project to submit the final product. You may not wait until the end of the semester and make up missing assignments from the beginning of the year!

In the event of a planned extended absence students must complete a *Contract for Independent Study* by contacting Emilio Torres.

### **Make Up Work:**

If you happen to miss a day of school and there was something due then it is due on the day you return. We will be using lifelines so there really is no reason why you shouldn't be able to access information and instructions from home. If you miss an exam or quiz, it is your responsibility to make it up on the day you return. You can schedule the make up for lunch or after school. If you do not make it up I will be forced to enter an "incomplete", and I strongly dislike doing that so do us both a favor and make it up! It is your responsibility to schedule the appointment for the make-up time through email.

### **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 friend 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.

### **Lifelines:**

Please get 2 people's phone numbers in class for the days you are absent. The whole class is responsible for catching people up, and getting caught up. YOU are the one who needs to take initiative.

### **Civil Discourse Grade:**

Students will be held responsible for participating in civil discourse throughout the semester, with an evaluation associated. This will be utilized as yet another strategy to help prepare students for college.

## MATHEMAGICS HELP

**Student Support:** For students who desire/require extra academic support there will be ample opportunity for academic aid. “Mathemagics Maintenance” (office hours) will take place on Wednesday from 3:30PM-5:00PM and Tuesday during lunch. If you do not show up within 15 min. of the start of office hours I may not wait around. However, you can always schedule additional time to meet with me during lunch or afterschool. Please give me at least a day notice. Students and parents should contact me if they ever feel that they need additional support or challenge. So there are no excuses for falling behind, only legitimate reasons.

**Parent Support:** Throughout this vital year in your student’s high school career, I will do my best to keep you up to date on student progress, important dates, and other important items related to success! This year students will be balancing college applications, SAT/AP test preparation and college preparation. There is a lot of planning and support and I hope that through working together we can help all students reach their potential. By reinforcing good study habits at home, encouraging student accountability, providing encouragement and support, and regularly checking PowerSchool (which I will update every two weeks).

## MATHEMAGICS MATERIAL

We will balance our time between:

- **Math Projects:** These will provide an opportunity to transform our mathematical knowledge in a rich and contextualized way.
- **Open-ended problems:** In these, we will pore over and work collaboratively to solve rich problems both in and out of real world contexts.
- **Procedural Fluency:** Mathematicians that went before us developed a lot of beautiful formulas and theorems. Though procedural practice with their formulas will not be our focus, it will be a part of our daily and weekly activities. (i.e. it will not be uncommon to see a set of “math problems” to practice with)

## MISCELLANEOUS MATHEMAGICS

**Honors Credit Option/Challenge Options:**

Every student, whom contacted over the break for the additional summer assignment, will have the opportunity to take this course for Honors credit. The Honors Credit Option will be significantly more challenging, however you will receive a weighted GPA as a reward for your hard work and dedication. There will be an Honors information meeting the first week of school where you will receive a separate Honors Agreement and Honors Syllabus.

*Please be sure to communicate with me if you wish to seek more challenges any time during the course.*

**Cell Phone Policy:** HTHNC has a no cell phone policy. Cell phones may not be used as calculators, unless permission is provided. The goal is to remove distractions. If your phone is found to be a distraction in class, either by making sounds that stops class or you are found distracted by your phone, there will be a few repercussions:

For the beginning of the semester, we will work under the premise of mutual respect. Though students leaving to use the restroom, will be asked to leave their cell phone behind.

If cell phones become a problem, the following process will be utilize:

Your phone will be put in “Phone Prison” (a small container in my room, for the class period) and will serve a sentence each day until one of the following occurs:

- a. Bring cookies for the whole class.
- b. Come in before school, at lunch, or after school to contribute something to the classroom. This can include cleaning up, or something else we discuss.

**Food In Class:** Students will be allowed to have water in class, but will be asked to not bring other foods or sugary drinks into the classroom. This policy is founded in a desire to avoid the potential spread of germs, help students to focus in class, and keep the classroom cleaner. Special circumstances of needing to eat during class will be

discussed on a case-by-case basis.

**Calculators:** This year we will be working with graphing calculators to prepare for rigorous college courses. I will be providing calculators for classroom use, but would encourage any students considering STEM fields to consider investing in their own for home use, or to bring to class to practice. My recommendation is the TI-84 Plus calculators, but I would be happy to discuss other options.

### RICH RESOURCES

**Khan Academy:** We will utilize this resource as a supplement when necessary. In addition, I encourage students to refer to this site for help when they seek additional practice or support, outside of my classroom and office hours. All of you will have the opportunity to practice and master a number of topics that are individualized to your needs.

**Suggested Readings for parents (or students?):** I love talking with parents about math teaching and learning. Some readings that have informed my thinking are below. Let me know if you're reading them and I would love to chat!

*Mindset* by Carol Dweck

*A Mathematician's Lament* by Paul Lockhart

*Letters to a Young Mathematician* by Ian Stewart

*Strength in Numbers* by Ilana Horn (NCTM)

Relevant Research by Jo Boaler

### MATHEMAGICS WRAP-UP

I'm very excited about this upcoming semester and for the opportunity to continue sharing my passion for mathematics with High Tech High North County. The students are the future and I am an advocate for the significance of the educational process offered at High Tech High. Throughout this year, I hope by immersing students in innovative studies of mathematics with an enthusiastic attitude they will learn to appreciate math a little more than when they entered my classroom. I appreciate your support at home and your agreement with the above parameters. Let's make this a great year of exploring the power of mathematics!

- Carlee Hollenbeck

*"The essence of mathematics is not to make simple things complicated, but to make complicated things simple." – Stan Gudder*

**Brief Course Outline:<sup>1</sup>**

*“Go down deep enough into anything and you will find mathematics.”  
– Dean Schlicter*

<b>Week</b>	<b>Semester Two</b>	<b>Important School Date</b>
<b>1: 1/22-1/26</b>	<b>Team building/Topic review Be-YOU-tiful Banners Mindset Math</b>	
<b>2: 1/29-2/2</b>	<b>Be-YOU-tiful Banners Algebra Refresher and Piecewise Function Launch</b>	
<b>3-5: 2/5-2/23</b>	<b>Piece(wise) or Propaganda Project</b>	<b>2/16 &amp; 2/19: No School (Presidents’ Day)</b>
<b>6-8: 2/26-3/16</b>	<b>“Pushing your Limits” Unit</b>	<b>3/2: Advisory Olympics 3/14-3/16: SLC’s (Half days)</b>
<b>3/19-3/23</b>	<b>INTERSESSION</b>	<b>3/23: Half Day</b>
<b>3/26-4/6</b>	<b>SPRING BREAK</b>	No School Two Weeks
<b>9-11: 4/9-4/27</b>	<b>“What Derives You” Unit</b>	<b>4/9: No School (Staff Day)</b>
<b>12-13: 4/30-5/11</b>	<b>Integral Knowledge Work</b>	5/4: No School (Health Day) 5/5: Prom 5/7: No School (Staff Day)
<b>14: 5/14-5/18</b>	<b>Exam Week and Exhibition Work</b>	
<b>15-16: 5/21-6/1</b>	<b>Exhibition Work</b>	5/28: No School (Memorial Day)
<b>6/4-6/8</b>	<b>Transition Week</b>	<b>6/5: Grad Nite</b>
<b>6/11-6/15</b>	<b>Senior Week</b>	6/16: GRADUATION!
<b>6/18-6/20</b>	<b>No Seniors: Last Week of School</b>	6/20: Last Day of School (½ Day)

**Early Release Wednesdays: Every 1<sup>st</sup> and 3<sup>rd</sup> of the month**

<sup>1</sup> Due to the nature of project based learning, the outline for this course is subject to change and will likely vary.