***TMSA Math 2 Course Syllabus***

***Teacher Contact Information***

Alexander Murray

amurray@tmsacademy.org

amurraytmsa.weebly.com

***Course Outline***

Math 2 will build on algebra topics previously studied in math 1 and also build on or introduce geometry concepts. You can think of math 2 as the beginning of algebra 2 (a continuation of math 1) and the beginning of geometry. Math 3 will finish these two topics. Therefore, math 2 and math 3 lay the foundation for higher mathematics, such as precalculus.

***School Provided Materials***

We will be using components of the 2015 Pearson Geometry and 2015 Pearson Algebra 2 textbooks for instruction, as well as additional supplementary materials as needed. These books will be available to use during the day at school and students will have online access to the textbooks at home. Homework and other assignments may be assigned through the online textbook.

***Required Student Materials***

Students need a graphing calculator, such as a TI-83 or TI-84. There are specific components of the course and subsequent end of the year exam that require these calculators. Pencils are the only acceptable writing utensil. Students are expected to organize their class materials how they see fit, but we recommend a 1.5” binder with tabs for homework, classwork/notes, and study guides/reviews.

***Wish List***

I would love it if students or their families could contribute any of the following for class use:

Dry erase markers

Tissues

Pencils

***Expectations***

Students will arrive in class on time, with the materials they need for class, and ready to focus entirely on the lesson and activities of the day.

Students will maintain a positive attitude as well as positive behavior.

Work will always be shown clearly.

I will always announce tests in advance (approximately 1-2 weeks) but quizzes may or may not be announced. There will be at least one quiz or test every week.

***Classroom Rules***

Be respectful of your teacher.

 Listen when the teacher is talking

 Follow directions carefully

 Do not interrupt the teacher/class (wait to be called on)

Be respectful of your fellow students

 Always speak positively of, or to, your peers

 Be polite

 Be sensitive to individuals’ beliefs and values

Be respectful of your school

 Treat school property with care

 Follow school rules and policies

Be respectful of yourself.

 Always speak positively of yourself

 Be your own advocate

***TMSA Plagiarism and Cheating Policy (From Student Handbook)***

*Cheating and plagiarism are deceptive choices made by students to misrepresent the student’s true knowledge of the subject material (cheating) or misrepresenting information as their own ideas/concepts/words by not giving proper credit to the original source (plagiarism). All papers or projects submitted at TMSA are required to be in the student’s own words unless stated in writing by the teacher otherwise.  Therefore, any copying of information from the Internet or any other source (i.e. “cutting & pasting”, etc.) is considered plagiarism. However, quotations, drawings and/or pictures may be taken from the Internet or other source as long as they are properly cited in the document.*

Please note that students may suffer additional consequences from their clubs/organizations for instances of cheating and plagiarism. Below are the classroom consequences for cheating/plagiarism:

* First offense: assignment is given automatic, permanent zero. The teacher will create a discipline write up for the student and contact the parents.
* Subsequent offenses:  assignment is given automatic, permanent zero. The teacher will create a discipline write up for the student and the Discipline Coordinator will determine further consequences.

***Grading Policy***

* Major 60%

Example: Tests

* Meduim 30%

Example: Quizzes

* Minor 10%

Example: Home work

- Homework will be assigned very frequently (almost every day of class). Homework grades will be posted weekly. If the homework is not completed on the due date it will be accepted (for half credit) on the next class meeting day. If the homework is not completed then it will remain a 0.

- Test grades are final and retakes are not allowed. Test corrections may be completed (and are highly encouraged!) for homework credit.

- Quiz grades are final and retakes are not allowed. Quiz corrections are also encouraged, but homework credit will not be given for those.

***STEM Integration***

Triangle Math and Science Academy is now integrating STEM instruction into all courses. For math 2, this means that for the majority of our class time, students will be investigating material in a collaborative manner through problem-solving, rather than receive total direct instruction.

***Units and Essential Questions***

* *Math I Review* - touching on topics essential for math 2
* *Unit 1: Quadratic Functions*
	+ We will build on students’ understanding of quadratics in standard form and investigating why multiple forms of the same function can be helpful in solving problems
	+ What are the advantages of a quadratic function in vertex form? In standard form?
	+ How is any quadratic function related to the parent quadratic function y=x2?
	+ How are the real solutions of a quadratic equation related to the graph of the related quadratic function?
	+ Quadratic functions are helpful in representing projectile motion, income and profit, etc.
* *Unit 2: Radical Functions*
	+ Students have previously studied square roots and perfect squares, but we will be looking into square root functions as well as solving square root and a few other radical equations, looking for structure in expressions and determining when we arrive at extraneous solutions.
	+ To simplify the *n*th root of an expression, what must be true about the expression?
	+ When you square each side of an equation, is the resulting equation equivalent to the original?
* *Unit 3: Inverse Variation*
	+ Direct variation has been a topic of study, directly or indirectly, for students for many years in math class. However, inverse variation is also important to discuss, especially pertaining to real world situations, such as gas left in your tank vs. how many miles you’ve drive. As one variable increases, the other decreases!
	+ What are the key features of an inverse variation function? How can the key features be identified using different representations?
	+ How can I create and solve inverse variation equations in order to solve problems?
* *Unit 4: Transformations*
	+ Translations, reflections, rotations, and dilations are actually *functions*. Students have studied these in 8th grade but will dive deeper into what it means for transformations to be functions, as well as how to represent them in function notation.
	+ How can you change a figure’s position without changing its size and shape? How can you change a figure’s size without changing its shape?
	+ How can you represent a transformation in the coordinate plane?
	+ How do you recognize congruence and similarity in figures?
	+ Applications of transformations can be seen artwork, architecture, and even video game design!
* *Unit 5: Patterns with Lines and Angles*
	+ This unit is all about mathematical *thinking*. Students will learn many methods of proof and what it means to truly prove that a conjecture is true. Students will be proving geometric relationships, such as proving that two angles in a diagram are congruent.
	+ How can you make a conjecture and prove that it is true?
	+ How do you prove that two lines are parallel?
	+ What is the sum of the measures of the angles of a triangle?
	+ Our goal with this unit for students to grasp the concept of proof and logical reasoning as well as discover geometric relationships, helping students develop their abilities to critique reasoning of others and form viable arguments.
* *Unit 6: Triangle Congruence*
	+ Students will extend their understanding of angles and triangles to proving that triangles are congruent and proving if a triangle is isoceles or equilateral.
	+ How do you identify corresponding parts of congruent triangles?
	+ How do you show that two triangles are congruent?
	+ How can you tell whether a triangle is isosceles or equilateral?
	+ In this unit, students will be learning deductive reasoning and combining this with visual skills to determine and *prove* that triangles are congruent.
* *Unit 7: Right Triangles and Trigonometry*
	+ Previously, students have studied the pythagorean theorem and solving for a missing side of a right triangle if given the other two sides. Now, students will find missing sides and angles of right triangles given less information and using trigonometric ratios.
	+ How do you find a side length or angle measure in a right triangle?
	+ How do trigonometric ratios relate to similar triangles?
	+ This unit allows students to combine their algebraic skills with geometric thinking to develop special right triangle ratios. Also, students will be discovering patterns in these special triangles.
* *Unit 8: Probability*
	+ What is the difference between experimental probability and theoretical probability?
	+ What is a frequency table?
	+ Probability isn’t always straightforward and a matter of picking marbles from a bag; we will be investigating condition probability and how to determine the probability of an event given that another event has already happened.

Please sign and return to Mr. Murray by 8/25/17 indicating that you have read and understand the syllabus for Math II.

Student Name (Printed): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Name (Signed): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent Name (Signed) :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_