



**Thornton High School**

9351 North Washington • Thornton, CO 80229  
 Office: (720) 972-4800 • Fax: (720) 972-4999  
<http://www.thorntonh.adams12.org>

<b>School Year</b>	2017-2018	<b>Teacher Name</b>	Sonja Ludwig
<b>Room</b>	500	<b>Google classroom</b>	72djt5
<b>Phone</b>	720-972-4800	<b>Off Hours</b>	3rd
<b>Email Address</b>	Sonja.K.Ludwig@adams12.org		

<b>Course Name</b>	<b>IB Mathematics Methods – 2190 Credit: 1 Level: 3 Grades: 11,12</b>		
<b>Course Description</b>	<p>IB Mathematics courses prepare students to take the International Baccalaureate Mathematics exams at the Standard or Higher level. Topics include operations and properties of number sets; trigonometric functions, equations, and graphs; algebra and coordinate geometry; simultaneous linear equations; polynomial and quadratic functions and equations; calculus, including bilinear, exponential and logarithmic functions; two dimensional vectors and matrices; and probability.</p> <p>In addition to the mathematics which is to be covered throughout the year, students will be developing the following skills: problem solving, organizational, communication (both verbal &amp; written), and responsibility. Students will be encouraged, at all times, to think for themselves, ask questions, and work with others, to strengthen both their understanding and that of their peers. It is understood that to become mathematically skilled, one often makes mistakes before experiencing complete comprehension.</p>		

<b>Unit of Study</b>	<b>Grade Level Expectations/Content Standards</b>	<b>Approximate Time Spent or Percent of time Spent</b>	<b>Targeted Date of Assessment</b>
Chapter 1: Functions	Students will be able to identify & evaluate various types of functions; identify the domain & range for various functions; find solutions for various functions through the use of algebra, graphs & technology; write & graph inverse functions; combine two functions (composite functions); and apply transformations of functions. <b>(Standards: 2.1, 2.2, 2.3, 2.5, 2.7, 2.8)</b>	3 weeks	Quarter 1
Chapter 2: Quadratic Functions and Equations	Students will able to solve quadratic equations using various methods including factoring, quadratic formula, and completing the square; find the roots of a quadratic using the discriminant; identify key components of the graph of a quadratic including x/y-intercept, vertex, and axis of symmetry; rewrite quadratic equations in various forms including factored, standard, and vertex form; graph quadratics; write the equation of a quadratic given the graph; and work with applications of quadratics. <b>(Standards: 2.2, 2.4, 2.7, 2.8)</b>	4 weeks	Quarter 1
Polynomials	Students will be able to determine how the degree affects the shape of a graph & its end behavior; multiplicity of roots; list/find possible rational zeros; write equations given roots; synthetic division; and long division	3 weeks	Quarter 2
Chapter 5: Rational Functions	Students will be able to identify, write and graph reciprocal functions; graph rational functions; identify and graph vertical and horizontal asymptotes; apply rational functions to real-life situations; find limits of functions	4 weeks	Quarter 2



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	<b>(Standards: 2.2, 2.5, 2.8, 6.1)</b>		
Chapter 4: Exponential and Logarithmic Functions	Students will be able to apply laws of exponents & laws of logs to simplify and solve equations; simplify and rationalize equations with radicals; solve exponential equations using various methods <b>(Standards: 1.2, 2.6, 2.7, 2.8)</b>	3 weeks	Quarter 2/3
Chapter 11: Trigonometry	Students will be able to do the following: solve for missing sides and or angles using right triangle trigonometry, the unit circle, Law of Sines & Cosines; use both radian & degree measures; construct graphs for the sine, cosine & tangent functions (with & without technology); calculate arc lengths & areas of sectors; ambiguous case for triangles <b>(Standards: 3.1,3.2, 3.3, 3.6)</b>	4 weeks	Quarter 3
Chapter 13: Circular Functions	Students will be able to apply & solve trigonometric equations using the following concepts: sum & difference identities, double & half-angle formulas, Pythagorean identity; solve trigonometric equations that involve multiple angles, trigonometric identities, double angles & proofs <b>(Standards: 3.2, 3.3, 3.4, 3.5)</b>	5 weeks	Quarter 3
Chapter 8: Descriptive Statistics	Students will be able to understand concepts of population, sample, random sample, discrete and continuous data; presentation of data: frequency distributions (tables), frequency histograms with equal class intervals; box-and-whisker plots; outliers; grouped data: use of mid-interval values for calculations, interval width, boundaries, and modal class; statistical measures (mean, median, mode, quartiles and percentiles); dispersion (range, interquartile range, variance, standard deviation; and cumulative frequency and cumulative frequency graphs. <b>(Standards: 5.1, 5.2, 5.3)</b>	2 weeks	Quarter 4
Chapter 10: Bivariate Analysis	Students will be able to do the following: construct & find information using tree diagrams; find possible combinations using the Fundamental Counting Principle ; factorials; Permutations; theoretical & experimental probability; independent vs dependent events; linear correlation of bivariate data; Pearson's correlation coefficient; scatter diagrams & lines of best fit; equation of the regression line & using it for predictions <b>(Standards: 5.4)</b>	2 weeks	Quarter 4
Chapter 6: Patterns, Sequences and Series (if time)	Students will be able to do the following for both arithmetic & geometric sequences: identify & write expressions; find summations; find a specific term; solve using formulas Students will also be able to use Pascal's triangle & the combination formula to expand binomials <b>(Standards: 1.1, 1.3)</b>	3 weeks	Quarter 4

Grading Scale		Grade Percentages/Weights	
A	90-100	Summative Assessments & Projects	80%
B	80-89	Formative Assessments & Projects	20%
C	70-79		
D	60-69	*Weekly progress grades are posted at	
F	59 or below	<a href="https://ic.adams12.org/campus/portal/adams12.isp">https://ic.adams12.org/campus/portal/adams12.isp</a>	



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**General Expectations**

- Grades are based upon the demonstration of proficiency on units associated with a standard given during each formative or summative assessment. Formative grades in addition to summative unit assessments will be used to holistically determine your grade.
- **Summative: 80%** Summative measures of achievement are taken when unit master is expected. (i.e., unit tests, culmination of a project, embedded assessments, etc.)
- **Formative: 20%** Formative assessments measure the scaffolding skills and/or content embedded in the unit. Formative assessments are taken frequently, after a student has practiced a skill or become familiar with content. Examples of formative assessments include but are not limited to exit tickets, paragraphs, oral check for understanding, warm-ups, stages in a large project, etc.
- Assessments will be graded based on teacher/district/state rubrics.
- On group projects, students will receive a grade for individual work and a group grade.
- Grades are based on achievement of Content Standards and Grade Level Expectations.

- First and second semester final exams **ARE NOT** eligible for retake.
- A student is allowed to retake any summative assessment up to ten (school) days after the original summative assessment has been graded and communicated to the student. After the ten days, the eligibility for retake will expire unless prior arrangements have been made with the teacher.
- On the first retake, the student will need to provide a body of evidence of learning as determined by the teacher. Also, the student must fill out a Request to Retest form.

**Class Expectations**

**Homework Policy**

- Typically, homework/extra practice problems will be assigned each day (Monday – Friday), except on days of a Summative Assessment or on specific days as agreed upon by the IB departments.
- The expectation is that these assigned problems will **at least be attempted before the next scheduled class day**, so that students are able to ask questions & contribute to classroom discussions.
- A DO NOW sheet will be given out on Thursday and due the next Wednesday.
- Weekly or Bi-weekly formative quizzes will be given on the homework and any content material covered in class.

**Grading Policy**

- In order to receive a passing grade, a student **must ATTEMPT ALL summative assessments**. If no attempt to take a summative assessment has been made, a “**no evidence**” grade will be recorded until the assessment is completed.
- “**No evidence**” could be defined as not attempting the assessment, not being present for the assessment, or showing no evidence of proficiency of the standard. **NE** will be equal to 0%.
- The presence of a “**no evidence**” (NE) **for any summative assessment at the end of a grading period will result in a grade of F for the course** regardless of performance on other assessments.
- Summative assessments must be taken within a reasonable amount of time after they are first given unless otherwise arranged with the teacher. It is the student’s responsibility to know when assessments are given and schedule a time to make them up or retake them.

**Student Expectation**

The following expectations/policies describe what I expect from you.

**Attending Skills**

- We will focus on the following attending skills
  1. **BEING IN THE MOMENT**
  2. **APPROPRIATE BODY LANGUAGE**
  3. **APPROPRIATE EYE CONTACT**
  4. **APPROPRIATE FEEDBACK**
  5. **QUESTIONS TO CLARIFY OR VALIDATE**

**Behavior Policy**

- Each student is expected to behave **appropriately and respectfully** to the teacher **and** other students
- Each day you will be allowed **3 redirects** from the teacher based on your attending skills
- If the behavior continues after 3 redirects you will be required to leave the classroom
- Students will not be able to re-enter the classroom until a discussion between the teacher and student has taken place

**Tardy Policy**

- I will have a **tardy book** located near the entrance door of the classroom
- If you are late, you are to enter class in an appropriate manner and fill in the tardy book
- You will need to fill in your **name, date, time, and reason** for being tardy
- Excessive tardies will result in parent notification, lunch detention, Wednesday school, In-School Suspension and/or referral to dean

**ID Policy**

- Every student must wear their ID:
- If a student does not have their ID, a new one will be issued & either delivered or retrieved from the Attendance Office



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at the student's expense

**Electronics Policy**

- Students will be given **one verbal warning** at the start of class each day to turn off & put away their phones/music
- Any phones/ music **out after the 1<sup>st</sup> warning will be taken & not returned to the student after class**
- The phone **can be retrieved at the end of the school day in the Attendance Office** or the student may speak with their dean to try to retrieve it earlier
- Habitual offenders (**more than 3 times per quarter**) will result in parent notification and/or referral to the dean
- You can only listen to music at the teacher's discretion & with their verbal permission

**Classroom Materials Policy**

- I expect you to bring the appropriate materials to class everyday (pencil, pen, paper, binder). It is not the teacher's responsibility to provide these items for you.
- A graphing calculator is **highly recommended**: TI-83 or TI-84 version preferred. 'Plus' versions are fine as well.

**GET HELP WHEN NEEDED!** Do not wait till the last minute to get help! Be a Self-Starter. Be prepared to learn when you come to class. You should have your homework completed and have questions prepared for discussion. Be Involved. Math is not a spectator sport. In order to learn mathematics, you must do mathematics.