

Math Department Sequence

	Non-Accelerated Pathway	Accelerated Pathway	Conceptual Algebra (Algebra I over two years) Pathway	Graduation Requirements
Grade:	Course Title	Course Title	Course Title	All pathways require three years of high school level math for graduation. Most students will take the non-accelerated pathway unless they have qualifying assessment scores and teacher recommendation.
Grade 7	Math 7	Math 7 1 st Sem Pre-Algebra 2 nd Sem	Math 7	
Grade 8	Pre-Algebra	Honors Algebra	Pre-Algebra	
Grade 9	Algebra	Honors Geometry	Conceptual Algebra 1	
Grade 10	Geometry	Honors Algebra II/Trigonometry	Conceptual Algebra 2	
Grade 11	Algebra II	Pre-Calculus	Geometry	
Grade 12	Pre-Calculus * Senior Math Statistics (MAT-156-NICC) Consumer Math †	Calculus Senior Math Statistics (MAT-156-NICC) Consumer Math	Algebra II Honors Algebra II/Trigonometry Senior Math Statistics (MAT-156-NICC) Consumer Math	

* It is highly recommended that students take Honors Algebra II with Trigonometry before enrolling in Pre-Calculus.

† Consumer math is only open to juniors who meet placement criteria that include assessment placement and recommendation.

MATH DEPARTMENT

PHILOSOPHY

The math department believes that all students should be well rounded in the area of mathematics. This includes understanding the content, communicating ideas (both written and oral), reading/comprehending mathematical terminology, and applying appropriate concepts to solve real-world problems. The department strives to achieve this by:

- Presenting information for various learning styles including: visual, kinesthetic, and auditory. Appropriate technology is integrated via the online textbooks, 1:1 Chromebooks, and graphing calculators.
- Providing courses for a range of student thinking styles and learning paces
- Varying the mode of instruction in terms of individual, small group, and large group activities and discussions
- Promoting good questioning techniques and higher order thinking skills

STANDARDS: The student will:

- 1) Effectively use a variety of strategies in the problem-solving process.
- 2) Understand and apply basic and advanced properties of the concept of numbers.
- 3) Use basic and advanced procedures while performing the process of computation.
- 4) Understand and apply basic and advanced properties of the concept of measurement.
- 5) Understand and apply basic and advanced properties of the concepts of geometry.
- 6) Understand and apply basic and advanced concepts of data analysis and distributions.
- 7) Understand and apply basic and advanced concepts of probability and statistics.
- 8) Understand and apply basic and advanced properties of functions and algebra.
- 9) Understand the general nature and uses of mathematics.
- 10) Effectively use appropriate technology in the problem solving process.
- 11) Effectively use written and verbal communication to articulate a variety of mathematical ideas.

CAREERS IN THE MATH FIELD

Actuary	G.P.S. Technician	Quality engineer
Air traffic controller	Guidance counselor	Regional planner
Airline pilot	Cartographer	Reliability engineer
Architect	CNC Operator	Research environmental engineer
Artist	College Professor	Sales manager
Auto mechanic	High School physics teacher	School superintendent
Bank employee	Investment planner	School system technology coordinator
Biomedical engineer	Internal auditor	Scientist
Bookkeeper	Industrial Engineer	Software engineer
Building contractor	Life Insurance Administrator	Statistical process controller facilitator
Carpenter	Mathematics/Science Teacher	Statistician
Computer systems analyst/designer	Mortgage supervisor	Structural engineer
Computer Programmer	Nuclear engineer	Systems engineer
Construction contractor	Nuclear physicist	Tax consultant
Cryptologist	Operations manager	Technical manager for a chemical company
Customer service manager	Pediatric nurse practitioner	Tool and gage designer
Development engineer	Pension analyst	Training coordinator-information services
Draftsperson	Photographer	Veterinarian
Engineering technician	President of a training/consulting firm	Web page designer
Farmer	Professor of meteorology	

NUMBER:	633/634	TITLE:	Conceptual Algebra I
GRADE(S):	9	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester

COURSE OUTCOMES

The student completing Conceptual Algebra I will have been introduced to or furthered their learning and tested in the following standards and their applications:

The Real Number System <ul style="list-style-type: none"> Use properties of rational and irrational numbers. 	Quantities <ul style="list-style-type: none"> Reason quantitatively and use units to solve problems
Seeing Structure in Expressions <ul style="list-style-type: none"> Interpret the structure of expressions Write expressions in equivalent forms to solve problems 	Arithmetic with Polynomials and Rational Expressions <ul style="list-style-type: none"> Rewrite rational expressions
Creating Equations <ul style="list-style-type: none"> Create equations that describe numbers or relationships 	Reasoning with Equations and Inequalities <ul style="list-style-type: none"> Understand solving equations as a process of reasoning and explain the reasoning Solve equations and inequalities in one variable Represent and solve equations and inequalities graphically
Interpreting Functions <ul style="list-style-type: none"> Understand the concept of a function and use function notation Interpret functions that arise in applications in terms of the context Analyze functions using different representations 	Building Functions <ul style="list-style-type: none"> Build a function that models a relationship between two quantities Build new functions from existing functions

COURSE SUMMARY:

This course is designed for students who struggle with math. Students will be recommended by their teacher to enroll in Conceptual Algebra 1 followed by Conceptual Algebra 2 as a sophomore. However, just because a student is recommended does not mean that they must take this pathway. The two courses will satisfy two years of the school and state math requirements but will only count as one year of math for the purpose of college entrance requirements. The *Concepts and Skills* program is committed to meeting the needs of all learning levels by providing an accessible approach that helps prepare students for success in algebra. The course is designed to build a solid foundation in the fundamentals with visual learning strategies, easy-to-follow examples, and help-notes for homework, vocabulary, and problem solving and to provide flexible and manageable pacing and prepare students with targets and frequent practice. Upon completion of this course students will be prepared to take Conceptual Algebra 2

NUMBER:	643/644	TITLE:	Conceptual Algebra II
GRADE(S):	10	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester

COURSE OUTCOMES

The student completing Conceptual Algebra II will have been introduced to or furthered their learning and tested in the following standards and their applications:

The Real Number System

- Extend the properties of exponents to rational exponents
- Use properties of rational and irrational numbers.

Quantities

- Reason quantitatively and use units to solve problems
- (IA) Understand and apply the mathematics of voting.
- (IA) Understand and apply some basic mathematics of information processing and the Internet.

Seeing Structure in Expressions

- Interpret the structure of expressions
- Write expressions in equivalent forms to solve problems

Arithmetic with Polynomials and Rational Expressions

- Perform arithmetic operations on polynomials
- Understand the relationship between zeros and factors of polynomials
- Use polynomial identities to solve problems
- Rewrite rational expressions

Creating Equations

- Create equations that describe numbers or relationships

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning
- Solve equations and inequalities in one variable
- Solve systems of equations
- Represent and solve equations and inequalities graphically

Interpreting Functions

- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations

Building Functions

- Build a function that models a relationship between two quantities
- Build new functions from existing functions

Linear, Quadratic, and Exponential Models

- Construct and compare linear, quadratic, and exponential models and solve problems
- Interpret expressions for functions in terms of the situation they model

COURSE SUMMARY:

This course is the second year of the Conceptual Algebra sequence. This course is designed for students who struggle with math. Students who completed Conceptual Algebra 1 will need to complete this course to complete the Algebra course work. The two courses will satisfy two years of the school and state math requirements but will only count as one year of math for the purpose of college entrance. Upon completion of this course students will be prepared to take Geometry.

NUMBER:	625/626	TITLE:	Honors Algebra I
GRADE(S):	8,9	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Honors guidelines apply		

COURSE OUTCOMES	
The student completing Honors Algebra I will have been introduced to or furthered their learning and tested in the following standards and their applications:	
The Real Number System <ul style="list-style-type: none"> Extend the properties of exponents to rational exponents Use properties of rational and irrational numbers. 	Quantities <ul style="list-style-type: none"> Reason quantitatively and use units to solve problems
Seeing Structure in Expressions <ul style="list-style-type: none"> Interpret the structure of expressions Write expressions in equivalent forms to solve problems 	Creating Equations <ul style="list-style-type: none"> Create equations that describe numbers or relationships
Arithmetic with Polynomials and Rational Expressions <ul style="list-style-type: none"> Perform arithmetic operations on polynomials Understand the relationship between zeros and factors of polynomials Use polynomial identities to solve problems Rewrite rational expressions 	Reasoning with Equations and Inequalities <ul style="list-style-type: none"> Understand solving equations as a process of reasoning and explain the reasoning Solve equations and inequalities in one variable Solve systems of equations Represent and solve equations and inequalities graphically
Interpreting Functions <ul style="list-style-type: none"> Understand the concept of a function and use function notation Interpret functions that arise in applications in terms of the context Analyze functions using different representations 	Building Functions <ul style="list-style-type: none"> Build a function that models a relationship between two quantities Build new functions from existing functions
Linear, Quadratic, and Exponential Models <ul style="list-style-type: none"> Construct and compare linear, quadratic, and exponential models and solve problems Interpret expressions for functions in terms of the situation they model 	
COURSE SUMMARY: Honors Algebra is designed for students with above average math skills and above average work ethic. Students will build a strong base of math knowledge for more advanced math courses and also assess the importance of Algebra in other areas of study and everyday living. While the topics covered are similar to Algebra 1, the topics are examined in more detail with strong emphasis on discovery and application. Students will be expected to develop critical thinking skills, problem solving skills and oral and written articulation of concepts. Upon completion of this course students will be prepared for Honors Geometry. A TI-84 calculator is recommended but not required. A non-graphing calculator could be used.	

NUMBER:	629/630	TITLE:	Algebra I
GRADE(S):	9	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester

COURSE OUTCOMES

The student completing Algebra I will have been introduced to or furthered their learning and tested in the following standards and their applications:

The Real Number System

- Extend the properties of exponents to rational exponents
- Use properties of rational and irrational numbers.

Quantities

- Reason quantitatively and use units to solve problems

Seeing Structure in Expressions

- Interpret the structure of expressions
- Write expressions in equivalent forms to solve problems

Creating Equations

- Create equations that describe numbers or relationships

Arithmetic with Polynomials and Rational Expressions

- Perform arithmetic operations on polynomials
- Understand the relationship between zeros and factors of polynomials
- Use polynomial identities to solve problems
- Rewrite rational expressions

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning
- Solve equations and inequalities in one variable
- Solve systems of equations
- Represent and solve equations and inequalities graphically

Interpreting Functions

- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations

Building Functions

- Build a function that models a relationship between two quantities
- Build new functions from existing functions

Linear, Quadratic, and Exponential Models

- Construct and compare linear, quadratic, and exponential models and solve problems
- Interpret expressions for functions in terms of the situation they model

COURSE SUMMARY:

Algebra is designed for students with average math skills. Students will be expected to develop and practice newly introduced concepts and apply these concepts to real-life situations. Emphasis will be placed on developing critical thinking skills, problem solving skills and oral and written articulation of the concepts. A TI-84 calculator is recommended but not required. A non-graphing calculator could be used. Upon completion of this course students will be prepared for Geometry.

NUMBER:	639/640	TITLE:	Honors Geometry
GRADE(S):	9	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Algebra I Honors guidelines apply		

COURSE OUTCOMES

The student completing Honors Geometry will have been introduced to or furthered their learning and tested in the following standards and their applications:

Congruence <ul style="list-style-type: none"> Experiment with transformations in the plane Understand congruence in terms of rigid motions Prove geometric theorems Make geometric constructions 	Similarity, Right Triangles, and Trigonometry <ul style="list-style-type: none"> Understand similarity in terms of similarity transformations Prove theorems involving similarity Define trigonometric ratios and solve problems involving right triangles Apply trigonometry to general triangles
Circles <ul style="list-style-type: none"> Understand and apply theorems about circles Find arc lengths and areas of sectors of circles 	Expressing Geometric Properties with Equations <ul style="list-style-type: none"> Use coordinates to prove simple geometric theorems algebraically
Geometric Measurement and Dimension <ul style="list-style-type: none"> Explain volume formulas and use them to solve problems Visualize relationships between two-dimensional and three-dimensional objects 	Modeling with Geometry <ul style="list-style-type: none"> Apply geometric concepts in modeling situations (IA) Use diagrams consisting of vertices and edges (vertex-edge graphs) to model and solve problems related to networks.

COURSE SUMMARY:

Honors Geometry is designed for students with above average math skills and above average work ethic. Students will build a strong base of math knowledge for more advanced math courses and for careers in math and science. While the topics covered are similar to Geometry, the topics are examined in more detail with strong emphasis on discovery application. Students will be expected to develop critical thinking skills, problem solving skills and oral and written articulation of concepts. A TI-84 calculator is recommended but not required. A non-graphing calculator could be used. Upon completion of this course students will be prepared for Honors Algebra 2/Trigonometry.

NUMBER:	671/672	TITLE:	Geometry
GRADE(S):	9	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Algebra I		

COURSE OUTCOMES

The student completing Honors Geometry will have been introduced to or furthered their learning and tested in the following standards and their applications:

Congruence

- Experiment with transformations in the plane
- Understand congruence in terms of rigid motions
- Prove geometric theorems
- Make geometric constructions

Similarity, Right Triangles, and Trigonometry

- Understand similarity in terms of similarity transformations
- Prove theorems involving similarity
- Define trigonometric ratios and solve problems involving right triangles
- Apply trigonometry to general triangles

Circles

- Understand and apply theorems about circles
- Find arc lengths and areas of sectors of circles

Expressing Geometric Properties with Equations

- Use coordinates to prove simple geometric theorems algebraically

Geometric Measurement and Dimension

- Explain volume formulas and use them to solve problems
- Visualize relationships between two-dimensional and three-dimensional objects

Modeling with Geometry

- Apply geometric concepts in modeling situations
- (IA) Use diagrams consisting of vertices and edges (vertex-edge graphs) to model and solve problems related to networks.

COURSE SUMMARY:

Geometry is designed for the student with typical math skills and follows the completion of Algebra. Students will be expected to develop and practice newly introduced concepts and apply these concepts to real-life situations. Critical thinking, problem-solving, and oral and written articulation of the concepts will be emphasized. A TI-84 calculator is recommended but not required. A non-graphing calculator could be used. Upon completion of this course, students will be prepared to take Algebra 2 or Honors Algebra 2/Trig

NUMBER:	681/682	TITLE:	Algebra II
GRADE(S):	11,12	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Geometry		

COURSE OUTCOMES

The student completing Algebra II will have been introduced to or furthered their learning and tested in the following standards and their applications:

The Complex Number System

- Perform arithmetic operations with complex numbers
- Represent complex numbers and their operations on the complex plane
- Use complex numbers in polynomial identities and equations

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning
- Solve equations and inequalities in one variable
- Solve systems of equations
- Represent and solve equations and inequalities graphically

Seeing Structure in Expressions

- Interpret the structure of expressions
- Write expressions in equivalent forms to solve problems

Creating Equations

- Create equations that describe numbers or relationships

Interpreting Functions

- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations

Arithmetic with Polynomials and Rational Expressions

- Perform arithmetic operations on polynomials
- Understand the relationship between zeros and factors of polynomials
- Use polynomial identities to solve problems
- Rewrite rational expressions

Linear, Quadratic, and Exponential Models

- Construct and compare linear, quadratic, and exponential models and solve problems
- Interpret expressions for functions in terms of the situation they model

Building Functions

- Build a function that models a relationship between two quantities
- Build new functions from existing functions

Trigonometric Functions

- Extend the domain of trigonometric functions using the unit circle
- Model periodic phenomena with trigonometric functions
- Prove and apply trigonometric identities

COURSE SUMMARY:

Students will apply algebraic concepts and skills in a variety of settings both individually and cooperatively. They will apply analytical reasoning to problem solving for present and future use. Honors Algebra 2/Trigonometry, rather than this course, is the best preparation for students planning to take Pre-Calculus or Physics. A TI-84 graphing calculator will be required for this course.

NUMBER:	693/694	TITLE:	Honors Algebra II/Trigonometry
GRADE(S):	10,11	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Geometry Honors guidelines apply		

COURSE OUTCOMES

The student completing Algebra II will have been introduced to or furthered their learning and tested in the following standards and their applications:

The Complex Number System

- Perform arithmetic operations with complex numbers
- Represent complex numbers and their operations on the complex plane
- Use complex numbers in polynomial identities and equations

Arithmetic with Polynomials and Rational Expressions

- Perform arithmetic operations on polynomials
- Understand the relationship between zeros and factors of polynomials
- Use polynomial identities to solve problems
- Rewrite rational expressions

Seeing Structure in Expressions

- Interpret the structure of expressions
- Write expressions in equivalent forms to solve problems

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning
- Solve equations and inequalities in one variable
- Solve systems of equations
- Represent and solve equations and inequalities graphically

Creating Equations

- Create equations that describe numbers or relationships

Building Functions

- Build a function that models a relationship between two quantities
- Build new functions from existing functions

Interpreting Functions

- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations

Trigonometric Functions

- Extend the domain of trigonometric functions using the unit circle
- Model periodic phenomena with trigonometric functions
- Prove and apply trigonometric identities

Linear, Quadratic, and Exponential Models

- Construct and compare linear, quadratic, and exponential models and solve problems
- Interpret expressions for functions in terms of the situation they model

COURSE SUMMARY:

Honors Algebra 2/Trigonometry is designed for students with consistently above average math skills and demonstrated above average work ethic. Students will build depth to their strong math knowledge base in preparation for more advanced math courses while identifying the importance of algebra in other areas of study and everyday living. While topics covered are similar to Algebra 2, the topics will be examined in more detail with strong emphasis on discovery and application. Students will be expected to develop critical thinking skills, problem solving skills, and oral and written articulation of concepts. A TI-84 graphing calculator will be required for this course. This course is the best preparation for students planning to take Pre-Calculus or Physics.

NUMBER:	653	TITLE:	Senior Math Applications
GRADE(S):	12	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Geometry		

COURSE OUTCOMES	
The student completing Senior Math Applications will have been introduced to or furthered their learning and tested in the following standards and their applications:	
The Real Number System <ul style="list-style-type: none"> Extend the properties of exponents to rational exponents. Use properties of rational and irrational numbers. 	Seeing Structure in Expressions <ul style="list-style-type: none"> Interpret the structure of expressions Write expressions in equivalent forms to solve problems
Arithmetic with Polynomials and Rational Expressions <ul style="list-style-type: none"> Perform arithmetic operations on polynomials Understand the relationship between zeros and factors of polynomials Rewrite rational expressions 	Creating Equations <ul style="list-style-type: none"> Create equations that describe numbers or relationships
Reasoning with Equations and Inequalities <ul style="list-style-type: none"> Understand solving equations as a process of reasoning and explain the reasoning Solve equations and inequalities in one variable Solve systems of equations Represent and solve equations and inequalities graphically 	Congruence <ul style="list-style-type: none"> Experiment with transformations in the plane Understand congruence in terms of rigid motions Prove geometric theorems Make geometric constructions
Similarity <ul style="list-style-type: none"> Understand similarity in terms of similarity transformations 	Geometric Measurement and Dimension <ul style="list-style-type: none"> Explain volume formulas and use them to solve problems Visualize relationships between two-dimensional and three-dimensional objects
COURSE SUMMARY:	
This course will consist of review and further work in various topical areas introduced in algebra and geometry courses. Emphasis will be placed on linear algebra, linear programming, and the mathematics of finance. This course is meant for those students wishing to have a fourth year of math but do not need the trigonometry or analytic geometry needed for the study of calculus. A TI-84 graphing calculator will be required for this course.	

NUMBER:	657	TITLE:	Statistics I (MAT-156: Statistics) NICC
GRADE(S):	12	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester, 3 Semester Credits @ NICC

COURSE OUTCOMES		35
The student completing statistics will have been introduced to or furthered their learning and tested in the following standards and their applications:		
Interpreting Categorical and Quantitative Data <ul style="list-style-type: none"> Summarize, represent, and interpret data on a single count or measurement variable Summarize, represent, and interpret data on two categorical and quantitative variables Interpret linear models 	Making Inferences and Justifying Conclusions <ul style="list-style-type: none"> Understand and evaluate random processes underlying statistical experiments Make inferences and justify conclusions from sample surveys, experiments and observational studies 	
Conditional Probability and the Rules of Probability <ul style="list-style-type: none"> Understand independence and conditional probability and use them to interpret data Use the rules of probability to compute probabilities of compound events in a uniform probability model 	Using Probability to Make Decisions <ul style="list-style-type: none"> Calculate expected values and use them to solve problems Use probability to evaluate outcomes of decisions 	
Quantities <ul style="list-style-type: none"> Reason quantitatively and use units to solve problems (IA) Understand and apply the mathematics of voting. (IA) Understand and apply some basic mathematics of information processing and the Internet. 	Creating Equations <ul style="list-style-type: none"> Create equations that describe numbers or relationships 	
COURSE SUMMARY: The purpose of this course is an introduction to the basic methods of statistical reasoning. The student will be able to describe and summarize data using descriptive statistical methods. The student will be able to analyze relationships between variables, use techniques from probability theory as an aid in interpreting sample data, and use statistical inference to make valid generalizations from sample data. NICC Description: Introduces the basic methods of statistical reasoning to help develop the ability to summarize data, interpret data, and draw conclusions based on data. Pre-requisites: ACT: 20; ALECKS: 35 or High School Cumulative GPA 2.80 or above.		

NUMBER:	651/652	TITLE:	Pre-Calculus
GRADE(S):	11,12	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Algebra / Honors Algebra II		

COURSE OUTCOMES

The student completing Algebra II will have been introduced to or furthered their learning and tested in the following standards and their applications:

The Complex Number System

- Perform arithmetic operations with complex numbers
- Represent complex numbers and their operations on the complex plane
- Use complex numbers in polynomial identities and equations

Vector and Matrix Quantities

- Represent and model with vector quantities.
- Perform operations on vectors.
- Perform operations on matrices and use matrices in applications.

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning
- Solve equations and inequalities in one variable
- Solve systems of equations
- Represent and solve equations and inequalities graphically

Building Functions

- Build a function that models a relationship between two quantities
- Build new functions from existing functions

Interpreting Functions

- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations

Trigonometric Functions

- Extend the domain of trigonometric functions using the unit circle
- Model periodic phenomena with trigonometric functions
- Prove and apply trigonometric identities

Expressing Geometric Properties with Equations

- Translate between the geometric description and the equation for a conic section
- Use coordinates to prove simple geometric theorems algebraically

Geometric Measurement and Dimension

- Explain volume formulas and use them to solve problems
- Visualize relationships between two-dimensional and three-dimensional objects

COURSE SUMMARY:

This course is intended for those students planning to attend college and major in science, engineering, business, or mathematics. The student entering this class should have taken and excelled in Honors Algebra 2/Trig. The student finishing this class will be prepared for entry into calculus courses based on their math proficiency. A TI-84 graphing calculator is required for this course.

NUMBER:	661/662	TITLE:	AP Calculus
GRADE(S):	11,12	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Pre-Calculus		

COURSE OUTCOMES

The student completing AP Calculus will have been introduced to and tested in the following topics and their applications as directed by the College Board's Advanced Placement Program:

Functions, graphs, and limits

- Analysis of graphs
- Limits of functions (including one-sided limits)
- Asymptotic and unbounded behavior
- Continuity as a property of functions

Derivatives

- Concept of derivative
- Derivative at a point
- Derivative as a function
- Second derivatives
- Applications of derivatives
- Computation of derivatives

Integrals

- Riemann sums
- Interpretations of properties of definite integrals
- Applications of integrals
- Fundamental Theorem of Calculus
- Techniques of anti-differentiation
- Applications of anti-differentiation

COURSE SUMMARY

Calculus will be taught as a college class and should only be taken by those excelling in mathematics. The class will be rigorous in order to prepare for the AP Calculus Exam with some lessons assigned on days that class does not meet. A graphing calculator will be required for this course. A TI-84 graphing calculator will be required for this course. Students have the opportunity to take the Advanced Placement test offered in May with the possibility of gaining college credit. Students will prepare for the Advanced Placement test through sample problems, previous year free-response problems, and the option of taking a mock test.

NUMBER:	655/656	TITLE:	Consumer Math
GRADE(S):	11,12	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester
GUIDELINE:	Juniors need assessment and recommendation.		

COURSE SUMMARY: Students will:

1. Review use of fractions, including operations of adding, subtracting, multiplying and dividing in mixed, proper and improper forms.
2. Develop career and financial goals and evaluate the effect career choices have on finances.
3. Understand how to calculate gross pay, payroll deductions, and net pay and analyze their effect on creating a spending plan.
4. Identify types and sources of credit and calculate their various costs.
5. Evaluate savings instruments and long-term investments.
6. Analyze risk and evaluate various types of insurance to minimize risk.
7. Maintain a financial record-keeping system to include a record of cash purchases, a checkbook register, and a budget of monthly expenditures

This course covers the objectives of the Iowa Core Curriculum for financial literacy and meets the financial literacy graduation requirement. This course does not meet math requirements for entrance into a four-year college.

NUMBER: 601/602

TITLE: Math 7

GRADE(S): 7

MEETS: Daily

LENGTH: Year

CREDIT: 5 per semester

COURSE OUTCOMES

The Number System

- Addition and subtraction of rational numbers
- Multiplication and division of rational numbers
- Solve situations using the four basic operations

Ratios and Proportional Relationships

- Identify quantities to make ratios and rates
- Determine if relationships are proportional
- Solve ratio and percent problems.

Geometry

- Apply scale factors to scale drawings
- Draw shapes using tools such as compass, protractor, and ruler.
- Describe two-dimensional cross-sections and three-dimensional figures
- Calculate area and circumference of circles
- Solve information about angles using angle relationships
- Solve real-world problems involving area, volume, and surface area.

Expressions & Equations

- Simplify, factor, and apply distribution to expressions
- Use expressions and equations to solve real-world problems

Statistics & Probability

- Use populations to gather a data sample to make generalizations.
- Use random samples to make inferences about a population.
- Assess the overlap of data.
- Make inferences from center and measures of variability in data.

Mathematical Practices

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

COURSE SUMMARY

Students cover material in the form of group problem solving, real-world projects, and teacher presentations.

All incoming 7th graders take the first semester of Math 7. At the end of first semester, students are recommended for acceleration into a combination of Math 7 and Pre-Algebra (Math 8) based on their FAST testing scores, math assessment scores, math attitude, and teacher recommendation. Accelerated students will be on pace to take Honors Algebra 1 as an 8th grader.

NUMBER:	611/612	TITLE:	Math 8 (Pre-Algebra)
GRADE(S):	8	MEETS:	Daily
LENGTH:	Year	CREDIT:	5 per semester

COURSE OUTCOMES

Geometry

- Understand congruence and similarity
- Work with transformations and apply them
- Understand and apply the Pythagorean Theorem
- Solve problems involving volume of cylinders, cones, and spheres.

Expressions & Equations

- Simplify expressions using properties of exponents including base 10 and using scientific notation.
- Solve linear equations with graphs.
- Make connections between proportional relationships, lines, and linear equations such as slope.

Functions

- Define, evaluate, and compare functions by their equation, graph, table, and description.
- Use functions to model relationships between quantities.

The Number System

- Understand rational and irrational numbers.
- Write rational numbers as fractions
- Use rational numbers to approximate irrational numbers on a number line

Statistics & Probability

- Investigate patterns of associations in bivariate data with scatter plots and frequencies in a two-way table.
- Interpret linear models relating to bivariate data.

Mathematical Practices

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

COURSE SUMMARY

Students cover material in the form of group problem solving, real-world projects, and teacher presentations.

All 8th graders have the choice of taking Conceptual Algebra 1, Algebra 1, Honors Algebra 1, or Honors Geometry their freshman year based on assessment scores, FAST and ISASP test scores, and teacher recommendation.