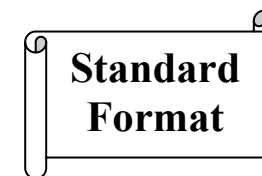




Washington Township Public Schools

Office of Curriculum & Instruction

Curriculum Guide Checklist



Course Title: Math Enrichment Lab

Submitted By: _____

Date: 4/8/2022

(Elementary Director or /MS/HS Dept Supervisor please check)

Acceptable	Not Acceptable	N/A		Comments
			I. Cover Page (Course Description)	
			II. Demonstrable Proficiencies (MS & HS only)	
			III. Scope & Sequence (Elementary only)	
			IV. List of Major Units of Study	
			V. (For each unit of study include the following A-E)	
			A. Unit Overview	
			B. Unit Graphic Organizer (Web)	
			C. Unit Plan	
			1. Topics/Concepts	
			2. Critical Content	
			3. Skill Objectives	
			4. Learning Activities	
			5. Instructional Resources with Title and Page Number	
			6. Evaluation/Assessment	
			7. Core Curriculum Standards/Cumulative Progress Indicator References	
			D. Lesson Plan Detail (Elementary Only)	
			E. Cross-Content Standards Analysis	
			D. Curriculum Modification Page Insert	

Approval: Principal: _____

Curriculum Director: _____

Department Supervisor: _____

Asst. Superintendent: _____

Board of Education: _____

PLEASE NOTE: A completed and signed checklist MUST accompany any course of study that is submitted for approval.

Washington Township Public Schools

Office of Curriculum & Instruction

Course: Math Enrichment Lab

Brumberg

Under the Direction of: Carole English

Description:

This course is designed to provide students with a more sophisticated understanding of algebraic concepts. The purpose of this course is to provide the opportunity for students to demonstrate proficiency on college mathematics entrance exams. The course includes operations with signed numbers, evaluation and simplification of algebraic expressions, solutions to linear equations with applications, exponents, polynomials, and functions. Mathematical reasoning processes will also be integrated into the course of study. An emphasis on problem-solving and mathematical reasoning. Prerequisite: Successful completion of College Algebra.

Joseph A. Vandenberg: *Assistant Superintendent for Curriculum & Instruction*
Barbara E. Marciano: *Director of Elementary Education*
Jack McGee: *Director of Secondary Education*

Written: _____

Revised: _____

BOE Approval: _____

DEMONSTRABLE PROFICIENCIES

COURSE TITLE: Math Enrichment Lab

CLASSWORK REQUIREMENTS

- A. Homework, tests, quizzes, exam, participation in class activities, organization, attention to detail, daily attendance, materials such as pen or pencil, notebook, and textbook. Calculators are not used in this course.

ATTITUDE & BEHAVIOR

- A. Effort, cooperation, perseverance, following directions, pride in work, self control, respect for others, responsibility, paying attention, effective use of time, proper use of equipment and supplies.

COURSE OBJECTIVES/OVERVIEW

A. COURSE CONTENT

The student will be able to:

1. Use exponents
2. Utilize the order of operations
3. Form an inequality
4. Evaluate algebraic expressions
5. Differentiate between expressions and equations
6. Classify numbers
7. Order numbers on a number line
8. Find the opposite of a number
9. Find the absolute value of a number
10. Add, subtract, multiply and divide real numbers
11. Translate words into algebraic expressions or equations
12. Use the properties of real numbers
13. Simplify algebraic expressions
14. Solve linear equations using the addition or multiplication properties of equations
15. Solve multi-step linear equations
16. Solve application problems using linear equations
17. Solve ratio, proportion and percent problems
18. Interpret graphs
19. Find the solution to a linear equation with two variables using a chart
20. Plot ordered pairs on a Cartesian plane
21. Graph a linear equation with two variables
22. Find the slope of a line
23. Find the equation of a line
24. Solving linear inequalities
25. Add and subtract polynomials
26. Use the product and power rules for exponents
27. Multiply polynomials
28. Expand the special products
29. Simplify expressions using integer exponents
30. Divide polynomials

B. SKILLS

1. Apply effective test taking strategies to math tests specifically.
2. Developing critical thinking skills
3. Overcome math anxiety
4. Solving real world applications
5. Addition, subtraction, multiplication and division of real numbers
6. Rules of exponents
7. Order of operations
8. Solving linear equations
9. Solving linear inequalities
10. Graphing equations
11. Finding the slope of a line
12. Addition, subtraction, multiplication and division of polynomials
13. Factoring

C. APPRECIATION OF CONCEPTS

This course will serve to refresh students' core skills in basic mathematics. In addition, emphasis will be placed on problem solving and mathematical reasoning. At the conclusion of this course, the student should be well prepared for college level mathematics entrance exams.

ATTENDANCE

Attendance: Refer to Board of Education Policy

GRADING PROCEDURES

- A. Each marking period grade will be a composite of: quiz scores, test scores, and participation reflecting a student's mastery of the areas outlined above. Exam scores will be averaged where appropriate. The student can pass the course with an overall average of 70%. Students will have the grading system explained to them by the individual teacher.

MAJOR UNITS OF STUDY

Course Title: Math Enrichment Lab

- I.** The Real Number System
- II.** Equations and Applications
- III.** Graphs of Linear Equations in Two Variables
- IV.** Exponents and Polynomials
- V.** Factoring
- VI.** Rational Expressions and Applications
- VII.**
- VIII.**

Unit Overview

Course Title: Math Enrichment Lab

Unit #: UNIT 1 OVERVIEW **Unit Title:** The Real Number System

Unit Description:

This unit reviews the number system including exponents, order of operations, variables, expressions and equations. Operations with real numbers and the property of real numbers are also reviewed. This unit will also strengthen the student's ability to work with real numbers in application problems.

Enduring Understandings/Generalizations

Students will understand that:

The real numbers system consists of different classification of numbers. All operations can be performed on any real number and that these numbers are subject to the order of operations and the properties of real numbers.

Guiding Questions

1. What are exponents and how do we use them?
2. What is the order of operations?
3. What are the classifications of numbers?
4. What is the procedure for adding, subtracting, multiplying and dividing real numbers?
5. What are the properties of real numbers?
6. What is the procedure for simplifying algebraic expressions?
7. What is the procedure for translating words into algebraic expressions or equations?

CURRICULUM – Unit Plan

Course Title: Math Enrichment Lab

NJ Student Learning Standards and Cumulative Progress

Unit Title: The Real Number System

Indicators:

Time Allocation: 3 weeks

N.RN1

A.REI10

A.REI11

A.SSE3a

F.LE1

Objectives: The student will be able to:

Use exponents

Find the absolute value of a number

Use the order of operations procedure

Order numbers on a number line

Evaluate algebraic expressions

Add, subtract, multiply and divide real numbers

Translate words into algebraic expressions and equations

Use the properties of real numbers

Classify numbers

Simplify algebraic expressions

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
1. Exponents, order of operations, and inequality - Evaluating exponential expressions - Evaluating expressions with more than one grouping symbol - Knowing the meaning of the inequality symbols - Translating words into algebraic symbols 2. Variables, expressions and equations - Evaluating algebraic expressions - Translating words into algebraic symbols and sentences 3. Real numbers and the number line - Classification of real numbers - Number line	1. Teacher led discussions 2. Student led discussions 3. Group learning - Cooperative learning - Team competition 4. Internet Activities 5. Self checks throughout the chapter	1. Text: Introductory Algebra Chapter 1 pages 23 - 106 2. Notebook 3. Internet websites (listed below) 4. Teacher made activities 5. White boards 6. Communicators Interactive math websites: http://www.awesomelibrary.org/Classroom/Mathematics/Middle-High_School_Math/Middle-High_School_Math.html www.funmaths.com/ http://wneo.org/hotlists/highschoolmathematics.htm www.regentsprep.org	1. Homework (suggested) Pg 29 – 30: 7 – 21 odd, 25 – 69 odd Pg 35 – 38: 13 – 43 odd, 47, 51, 55, 59, 63 Pg 45 – 46: 1 – 53 eoo Pg 51 – 54: 1 – 47 eoo, 55 – 73 odd Pg 59 – 64: 7 – 39 eoo, 49 – 53 odd, 57 – 75 eoo Pg 73 – 76: 1 – 6, 7 – 39 eoo, 45 – 77 eoo Review Pg 77 – 78: 1 – 42 Pg 85 – 88: 9 – 25 eoo, 43 – 65 odd Pg 93 – 94: 37 – 57 odd 2. Quizzes 3. Tests - Multiple Choice Questions - Open ended questions

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
c. Opposite of a number d. Absolute value of a number 4. Adding real numbers a. With same sign b. With different signs c. Applications 5. Subtracting real numbers a. Find the difference of signed numbers b. Definition of subtraction c. Applications 6. Multiplying and dividing real numbers a. With the same sign b. With different signs c. Reciprocals d. Order of operations e. Applications 7. Properties of real numbers a. Commutative property b. Associative property c. Identity properties d. Inverse properties e. Distributive property 8. Simplifying expressions a. Combining like terms b. Applications		• http://highschoolace.com/ace/math.cfm • http://cte.jhu.edu/techacademy/web/2000/heal/mathsites.htm • http://rozauer.tripod.com/math.htm • http://www.fcps.edu/dis/OHSICS/math/socha/index.html • http://mrsroberts.com/MrsRoberts/Calculus/calculus.htm • http://miamisburgcityschools.org/Schools/Resources/math_portal.htm • http://www.davis.k12.ut.us/ets/Math.htm • http://www.internet4classrooms.com/tcap_math.htm	

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
Rephrase questions for student clarification.	Ask reflective and extension questions to build on classroom knowledge to develop a deeper understanding.	Use a translator device.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.
Preferential seating – close proximity to teacher.	Pose “What if…” questions.	Provide access to language dictionary, instructor, or any other means to help interpret any language/communication difficulties.		
Redirect student attention.	Have the students share their knowledge	Rephrase questions for student clarification.		
After school availability for help.		Have student create vocabulary flash cards in addition to topical index.		
Internet resources (videos on topic, websites relevant to the particular topic, etc.).				

Unit Overview

Course Title: Math Enrichment Lab

Unit #: UNIT 2 OVERVIEW **Unit Title:** Equations and Applications

Unit Description:

This unit explores the procedures for formulating and solving linear equations. Ratios, percents and proportions are also included in this unit. These skills are also used to solve application problems involving linear equations.

Enduring Understandings/Generalizations

Students will understand that:

Words can be transformed into algebraic sentences or equations and that these equations can be solved using properties of equality. This unit will strengthen the student's ability to work independently with linear equations in application problems.

Guiding Questions

1. How can the properties of equality be used to solve linear equations?
2. What are the steps utilized to solve a linear equation?
3. What are the steps utilized to solve an application problem?
4. What types of application problems can be solved with linear equations?
5. What are ratios and proportions?
6. What are the different types of percent problems?
7. What is the procedure for solving linear inequalities?

CURRICULUM – Unit Plan

Course Title: Math Enrichment Lab

NJ Student Learning Standards and Cumulative Progress

Unit Title: Equations, Inequalities and Applications

Indicators:

Time Allocation: 3.5 weeks

N.RN1	A.SSE1a	F.LE4	A.CED2
A.SSE3a	A.REI1,3	F.IF9	F.IF8a
A.REI4a,b	G.MG1-3	8F7, 8	A.CED4

Objectives: The student will be able to:

Use the properties of equality to solve linear equations

Solve applications from geometry using geometric formulas

Use the four steps to solving an equation

Write ratios

Solve equations that have no solution or infinitely many solutions

Solve proportions

Use the six step method to solving applied problems

Find percentages and percents

Solve applied problems including finding unknown numbers, sums of quantities and consecutive numbers

Solve application problems using proportions

Solve a linear inequality

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
1. Addition Property of equality a. linear equations b. using addition property of equality to solve equations 2. Multiplication property of equality a. solving equations 3. Solving multi-step equations a. Four steps to solving a linear equation b. Solving equations with non-integer coefficients c. Equations that have no solutions or infinite number of solutions 4. Applications of linear equations a. The six steps to solving an application problem	1. Teacher led discussions 2. Student led discussions 3. Group learning A. Cooperative learning B. Team competition 4. Internet Activities 5. Self checks throughout the chapter	1. Text: Introductory Algebra Chapter 2 pages 107 - 190 2. Notebook 3. Internet websites (listed below) 4. Teacher made activities 5. White boards 6. Communicators Interactive math websites: • http://www.awesomelibrary.org/Classroom/Mathematics/Middle-High_School_Math/Middle-High_School_Math.html • www.funmaths.com/ • http://wneo.org/hotlists/highschoolmathematics.htm	1. Homework Pg 113 – 114: 5 – 51 eoo Pg 119 – 120: 19 – 55 eoo Pg 127 – 130: 1, 4, 7, 10, 13, 21, 27, 37, 41, 45, 49, 53 Pg 131 – 132 (Review of equation solving) Pg 141 – 146: every other odd Pg 153 – 156: 13, 17, 21, 25, 29, 31, 49, 52, 55, 58, 61, 64 Pg 163 – 166: 3, 6, 9, 11, 15, 21, 24, 27, 30, 33, 37, 43, 45, 47, 49 Pg 167 – 170 (Review of solving application problems) Pg 177 – 180: 1 – 53 odd

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
b. Hints to problem solving c. Problems involving unknown numbers, sums of quantities, supplementary and complementary angles and consecutive numbers 5. Formulas and applications from geometry a. Solving an equation for a specific variable b. Using formulas to solve applications 6. Ratio, proportion and percent a. Writing ratios b. Solving proportions c. Finding percentages and percents 7. Solving linear inequalities a. Graphing solutions b. Solving inequalities algebraically c. Solving applications		• www.regentsprep.org • http://highschoolace.com/ace/math.cfm • http://cte.jhu.edu/techacademy/web/2000/heal/mathsites.htm • http://rozauer.tripod.com/math.htm • http://www.fcps.edu/dis/OHSICS/math/socha/index.html • http://mrsroberts.com/MrsRoberts/Calculus/calculus.htm • http://miamisburgcityschools.org/Schools/Resources/math_portal.htm • http://www.davis.k12.ut.us/ets/Math.htm • http://www.internet4classrooms.com/tcap_math.htm	2. Quizzes 3. Tests a. Multiple Choice Questions b. Open ended questions

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
Rephrase questions for student clarification.	Ask reflective and extension questions to build on classroom knowledge to develop a deeper understanding.	Use a translator device.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.
Preferential seating – close proximity to teacher.	Pose “What if…” questions.	Provide access to language dictionary, instructor, or any other means to help interpret any language/communication difficulties.		
Redirect student attention.	Have the students share their knowledge	Rephrase questions for student clarification.		
After school availability for help.		Have student create vocabulary flash cards in addition to topical index.		
Internet resources (videos on topic, websites relevant to the particular topic, etc.).				

Unit Overview

Course Title: Math Enrichment Lab

Unit #: UNIT 3 OVERVIEW **Unit Title:** Graphs of Linear Equations and Inequalities in Two Variables

Unit Description:

This unit connects the linear equation to a graph, explains the meaning of slope and how to formulate an equation from the given information. These skills will allow the student to visualize the solutions to equations.

Enduring Understandings/Generalizations

Students will understand that:

Lines are a series of points and that the points contained on a line are the solutions to a linear equation. There is a definite meaning to the slope of a line and an equation of a line can be formed using the slope. This unit will strengthen the student's ability to find the solutions to a linear equation.

Guiding Questions

1. How can you determine if ordered pairs are part of the solution to a linear equation?
2. What are different ways to graph a linear equation?
3. What are intercepts?
4. What are the equations of vertical and horizontal lines?
5. What is the slope of a line and how do you find the slope?
6. How can you use the slope of two lines to determine if they are parallel or perpendicular?
7. What are the different procedures to writing the equation of a line?
8. What is the procedure for graphing linear equalities in two variables?

CURRICULUM – Unit Plan

Course Title: Math Enrichment Lab

NJ Student Learning Standards and Cumulative Progress Indicators:

Unit Title: Graphs of Linear Equations and Inequalities in Two Variables

Time Allocation: 2.5 weeks

A.CED4

A.REI1,3

F.IF8a

A.REI4a,b

Objectives: The student will be able to:

Interpret graphs

Determine if an ordered pair is a solution to a linear equation

Complete a table of values for a linear equation

Plot ordered pairs

Graph linear equations in two variables

Find the intercepts of a linear equation

Graph vertical and horizontal lines

Find the slope of a line given two points

Find the slope from the equation of a line

Determine if two lines are perpendicular or parallel

Write the equation of a line given its slope and y-intercept

Graph a line given the slope and a point on the line

Write the equation of a line given its slope and two points on the line

Graph linear inequalities

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
1. Reading graphs a. Circle graphs b. Bar Graphs c. Line graphs 2. Linear equations in two variables a. Standard form of an equation b. Ordered paired solution c. Completing a table of values d. Plotting ordered pairs 3. Graphing linear equations in two variables a. By plotting ordered pairs b. Graph by using intercepts c. Graph $y = k$ or $x = k$	1. Teacher led discussions 2. Student led discussions 3. Group learning A. Cooperative learning B. Team competition 4. Internet Activities 5. Self checks throughout the chapter	1. Text: Introductory Algebra Chapter 3 pages 193 - 270 2. Notebook 3. Internet websites (listed below) 4. Teacher made activities 5. White boards 6. Communicators Interactive math websites: • http://www.awesomelibrary.org/Classroom/Mathematics/Middle-High_School_Math/Middle-High_School_Math.html • www.funmaths.com/	1. Homework Pg. 203 – 208: 1 – 12, 19, 22, 25, 31, 37, 39, 42, 45, 49, 51, 53, 55-58, 61-70, 71, 73, 75 Pg 217 – 222: 1, 3, 11, 17 – 31 odd Pg 231 – 234: 3, 5, 616, 19, 22, 25, 29, 31, 34, 37, 41, 43, 45, 47, 49, 51 Pg 241 – 246: 5, 710, 11, 15 – 29 odd, 31, 35, 39, 43, 45, 47, 49 Summary Exercises Pg 247 – 248 Pg 253 – 256: 9 – 31 odd

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
4. Slope of a line - Rise over run - Given two points using the slope formula - From an equation - Parallel and perpendicular 5. Equations of lines - Given the slope and y-intercept (slope intercept form) - Given the slope and a point on the line - Given two points on the line 6. Graphs of linear inequalities - Difference between greater than and greater than or equal to - Difference between less than or less than or equal to		http://wneo.org/hotlists/highschoolmathematics.htm www.regentsprep.org http://highschoolace.com/ace/math.cfm http://cte.jhu.edu/techacademy/web/2000/heal/mathsites.htm http://rozauer.tripod.com/math.htm http://www.fcps.edu/dis/OHSICS/math/socha/index.html http://mrsroberts.com/MrsRoberts/Calculus/calculus.htm http://miamisburgcityschools.org/Schools/Resources/math_portal.htm http://www.davis.k12.ut.us/ets/Math.htm http://www.internet4classrooms.com/tcap_math.htm	2. Quizzes 3. Tests - Multiple Choice Questions - Open ended questions

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
Rephrase questions for student clarification.	Ask reflective and extension questions to build on classroom knowledge to develop a deeper understanding.	Use a translator device.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.
Preferential seating – close proximity to teacher.	Pose “What if…” questions.	Provide access to language dictionary, instructor, or any other means to help interpret any language/communication difficulties.		
Redirect student attention.	Have the students share their knowledge	Rephrase questions for student clarification.		
After school availability for help.		Have student create vocabulary flash cards in addition to topical index.		
Internet resources (videos on topic, websites relevant to the particular topic, etc.).				

Unit Overview

Course Title: Math Enrichment Lab

Unit #: UNIT 4 OVERVIEW **Unit Title:** Exponents and Polynomials

Unit Description:

This unit examines performing addition, subtraction, multiplication and division on polynomials. These procedures will enable to student to solve application problems.

Enduring Understandings/Generalizations

Students will understand that:

Polynomials can be added, subtracted, multiplied and divided. This unit will strengthen the student's ability to perform operations on polynomials and solve application problems.

Guiding Questions

1. How can you classify polynomials?
2. What is the procedure for evaluating polynomials?
3. What is the procedure for adding or subtracting polynomials?
4. What are the rules for exponents?
5. What is the procedure for multiplying polynomials?
6. What are the special products?
7. What are negative exponents?
8. What is the procedure for dividing polynomials?
9. What is scientific notation?

CURRICULUM – Unit Plan

Course Title: Math Enrichment Lab

NJ Student Learning Standards and Cumulative Progress

Unit Title: Exponents and Polynomials

Indicators:

Time Allocation: 3 weeks

N.RN2	A.APR1,3,4, 6	A.REI2	A.CED4
A.REI1,3,4a,b	8NS1	F.IF8a	
N.RN1	A.SSE3a, c	F.IF8b	

Objectives: The student will be able to:

Evaluate polynomials

Use the special products for multiplying two polynomials

Add and subtract polynomials

Use negative exponents

Use the rules for exponents

Divide a polynomial by a monomial

Multiply a monomial by a polynomial

Divide a polynomial by a polynomial

Multiply two polynomials

Use scientific notation in application problems

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
1. Adding and subtracting polynomials a. combining terms b. classification of polynomials c. using more than one variable 2. Rules for exponents a. Using exponents b. Product rule for exponents c. Power rule for exponents d. Combination of rules 3. Multiplying polynomials a. Monomial by polynomial b. Two polynomials c. FOIL 4. Special products a. Square binomials b. Product of sum and difference of two terms 5. Integer exponents a. Exponent of zero b. Negative exponents	1. Teacher led discussions 2. Student led discussions 3. Group learning A. Cooperative learning B. Team competition 4. Internet Activities 5. Self checks throughout the chapter	1. Text: Introductory Algebra Chapter 5 pages 331 - 390 2. Notebook 3. Algebra Tiles 4. Internet websites (listed below) 5. Teacher made activities 6. White boards 7. Communicators Interactive math websites: • http://www.awesomelibrary.org/Classroom/Mathematics/Middle-High_School_Math/Middle-High_School_Math.html • www.funmaths.com/ • http://wneo.org/hotlists/highschoolmathematics.htm • www.regentsprep.org	1. Homework Pg 337 – 340: 15, 18, 21, 24, 31, 33, 37, 39, 41, 47, 50, 51, 55 – 77 odd Pg 347 – 348: 25 – 79 odd Pg 355 – 356: 7 – 37 odd Pg 361 – 362: 3, 7, 11, 15, 19, 23, 27, 29 Pg 371 – 372: 1 – 27 odd, 33 – 67 odd Summary exercises on the rules for exponents Pg 377 – 378: 7 – 27 odd Pg 383 – 384: 5, 9, 13, 17, 21, 25, 29 Pg 389 – 390: 1 – 43 odd 2. Quizzes 3. Test a. Multiple choice questions b. Open ended questions

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
c. Quotient rule for exponents d. A combination of exponents 6. Dividing a polynomial by a monomial 7. Dividing a polynomial by a polynomial a. Long division 8. Scientific Notation a. Express numbers in scientific notation b. Convert from scientific to standard notation c. Use scientific notation in calculations		• http://highschoolace.com/ace/math.cfm • http://cte.jhu.edu/techacademy/web/2000/heal/mathsites.htm • http://rozauer.tripod.com/math.htm • http://www.fcps.edu/dis/OHSICS/math/socha/index.html • http://mrsroberts.com/MrsRoberts/Calculus/calculus.htm • http://miamisburgcityschools.org/Schools/Resources/math_portal.htm • http://www.davis.k12.ut.us/ets/Math.htm • http://www.internet4classrooms.com/tcap_math.htm	

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
Rephrase questions for student clarification.	Ask reflective and extension questions to build on classroom knowledge to develop a deeper understanding.	Use a translator device.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.
Preferential seating – close proximity to teacher.	Pose “What if…” questions.	Provide access to language dictionary, instructor, or any other means to help interpret any language/communication difficulties.		
Redirect student attention.	Have the students share their knowledge	Rephrase questions for student clarification.		
After school availability for help.		Have student create vocabulary flash cards in addition to topical index.		
Internet resources (videos on topic, websites relevant to the particular topic, etc.).				

Unit Overview

Course Title: Math Enrichment Lab

Unit #: UNIT 5 OVERVIEW **Unit Title:** Factoring and Applications

Unit Description:

This unit details the different types of factoring including finding the greatest common factor, factoring trinomials, factoring by grouping, special factors. Also studied is solving quadratic equations using factoring.

Enduring Understandings/Generalizations

Students will understand that:

There are different ways to factor a polynomial and more than one way may be used in a single problem. This unit will strengthen the student's ability to factor polynomials and therefore solve application problems that involve higher order polynomials

Guiding Questions

1. What is the greatest common factor?
2. What is the procedure for factoring a trinomial whose leading coefficient is one?
3. What is factoring by grouping?
4. How is factoring a trinomial related to FOIL?
5. If there are special products, are there special factors?
6. How is factoring used to solve a quadratic equation?
7. How can quadratic equations be used to solve application problems?

CURRICULUM – Unit Plan

Course Title: Math Enrichment Lab

Unit Title: Factoring and Applications

Time Allocation: 3.5 weeks

NJ Student Learning Standards and Cumulative Progress

Indicators:

N.RN1	A.CED4	A.REI1,3,4a,b	F.IF 2,4,5,8a
N.RN2	A.SSE3a	A.APR4,6	F.BF1b
A.CED1,2	F.IF8b	A.SSE3c	F.LE1-3

Objectives: The student will be able to:

Factor out the greatest common factor

Factor a trinomial with a leading coefficient of one

Factor a trinomial completely

Factor by grouping

Factor using FOIL

Factor the special products

Solve quadratic equations by factoring

Solve application problems using factoring

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
- Greatest Common Factor - How to find GCF - Factoring out GCF - Factor by grouping - Factoring trinomials - Leading coefficient is one - All terms are positive - Middle term is negative - Two terms are negative - Prime polynomial - Factoring out a GCF first - Factoring trinomials by grouping - Leading coefficient is not one - Factoring out a GCF first - Factoring trinomials using FOIL - Special Factors - Difference of two squares - Perfect square trinomial	- Teacher led discussions - Student led discussions - Group learning - Cooperative learning - Team competition - Internet Activities - Self checks throughout the chapter	- Text: Introductory Algebra Chapter 6 pages 404 - 456 - Notebook - Algebra Tiles - Internet websites (listed below) - Teacher made activities - White boards - Communicators Interactive math websites: http://www.awesomelibrary.org/Classroom/Mathematics/Middle-High_School_Math/Middle-High_School_Math.html www.funmaths.com/ http://wneo.org/hotlists/highschoolmathematics.htm www.regentsprep.org	- Homework Pg 411 – 412: 1 – 73 odd Pg 417 – 418: 11 – 55 odd Pg 421 – 422: 15 – 39 odd Pg 427 – 428: 15 – 49 odd Pg 433 – 434: 5 – 27 odd, 33 – 49 odd Summary exercises on factoring Pg 435 – 436 Pg 443 – 444: 17 – 57 odd Pg 451 – 456: 1 – 37 odd - Quizzes - Test - Multiple choice questions - Open ended questions

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
6. Solving quadratic equations by factoring - Identifying a quadratic equation - Zero-factor property - Steps to solve a quadratic equation - Factoring out a GCF first 7. Applications of quadratic equations - Area problems - Consecutive integer problems - Pythagorean Theorem - Given quadratic models		http://highschoolace.com/ace/math.cfm http://cte.jhu.edu/techacademy/web/2000/heal/mathsites.htm http://rozauer.tripod.com/math.htm http://www.fcps.edu/dis/OHSICS/math/socha/index.html http://mrsroberts.com/MrsRoberts/Calculus/calculus.htm http://miamisburgcityschools.org/Schools/Resources/math_portal.htm http://www.davis.k12.ut.us/ets/Math.htm http://www.internet4classrooms.com/tcap_math.htm	

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
Rephrase questions for student clarification.	Ask reflective and extension questions to build on classroom knowledge to develop a deeper understanding.	Use a translator device.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.
Preferential seating – close proximity to teacher.	Pose “What if…” questions.	Provide access to language dictionary, instructor, or any other means to help interpret any language/communication difficulties.		
Redirect student attention.	Have the students share their knowledge	Rephrase questions for student clarification.		
After school availability for help.		Have student create vocabulary flash cards in addition to topical index.		
Internet resources (videos on topic, websites relevant to the particular topic, etc.).				

Unit Overview

Course Title: Math Enrichment Lab

Unit #: UNIT 6 OVERVIEW **Unit Title:** Rational Expressions and Applications

Unit Description:

This unit shows the process to add, subtract, multiply and divide rational expressions as well as determine the domain of the rational expression. Finding the LCD is detailed and applied to complex fractions and rational equations.

Enduring Understandings/Generalizations

Students will understand that:

Rational expressions may not be defined at every point and that rational expressions can be added, subtracted, multiplied and divided. This unit will strengthen the student's ability to solve rational equations.

Guiding Questions

1. How is the domain of a rational expression determined?
2. How is a rational expression evaluated?
3. How is a rational expression simplified?
4. What is the procedure for multiplying and dividing rational expressions?
5. What is the procedure for adding and subtracting rational expressions?
6. What is the process for simplifying complex fractions?
7. What is the procedure for solving rational equations?

CURRICULUM – Unit Plan

Course Title: Math Enrichment Lab

NJ Student Learning Standards and Cumulative Progress Indicators:

Unit Title: Rational expressions and applications

N.RN1

A.SSE3a

Time Allocation: 2.5 weeks

A.REI10,11

F.LE1

Objectives: The student will be able to:

Find the domain of a rational expression

Add and subtract rational expressions

Evaluate a rational expression

Simplify complex fractions

Simplify rational expressions

Solve equations with rational expressions

Multiply and divide rational expressions

Find the LCD of two rational expressions

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
1. Rational expressions a. Domain b. Evaluate c. Simplify 2. Multiplying and dividing rational expressions a. Process to multiply rational expression b. Find reciprocal c. Process to divide rational expressions 3. Least Common Denominator a. Steps to find LCD b. Writing rational expressions with given denominator 4. Adding and subtracting rational expressions a. With like denominators b. With unlike denominators 5. Complex fractions	1. Teacher led discussions 2. Student led discussions 3. Group learning A. Cooperative learning B. Team competition 4. Internet Activities 5. Self checks throughout the chapter	1. Text: Introductory Algebra Chapter 7 pages 472 - 556 2. Notebook 3. Algebra Tiles 4. Internet websites (listed below) 5. Teacher made activities 6. White boards 7. Communicators Interactive math websites: • http://www.awesomelibrary.org/Classroom/Mathematics/Middle-High_School_Math/Middle-High_School_Math.html • www.funmaths.com/ • http://wneo.org/hotlists/highschoolmathematics.htm • www.regentsprep.org	1. Homework - Pg 479 – 480: 5 – 19 odd, 23 – 41 odd - Pg 487 – 488: 3 – 19 odd, 23 – 39 odd - Pg 493 – 494: 5 – 11 odd, 17 – 41 odd - Pg 501 – 504: 9, 15, 19 – 57 odd - Pg 511 – 512: 3 – 15 odd - Pg 521 – 524: 9 – 21 odd, 31, 40, 45, 46

A. CONTENT/SKILLS	B. LEARNING ACTIVITIES	C. SUGGESTED MATERIALS	D. STUDENT EVALUATION
a. Simplify by writing it as a division problem b. Simplify by finding the LCD 6. Solving equations with rational expressions		• http://highschoolace.com/ace/math.cfm • http://cte.jhu.edu/techacademy/web/2000/heal/mathsites.htm • http://rozauer.tripod.com/math.htm • http://www.fcps.edu/dis/OHSICS/math/socha/index.html • http://mrsroberts.com/MrsRoberts/Calculus/calculus.htm • http://miamisburgcityschools.org/Schools/Resources/math_portal.htm • http://www.davis.k12.ut.us/ets/Math.htm http://www.internet4classrooms.com/tcap_math.htm	

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
Rephrase questions for student clarification.	Ask reflective and extension questions to build on classroom knowledge to develop a deeper understanding.	Use a translator device.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.
Preferential seating – close proximity to teacher.	Pose “What if…” questions.	Provide access to language dictionary, instructor, or any other means to help interpret any language/communication difficulties.		
Redirect student attention.	Have the students share their knowledge	Rephrase questions for student clarification.		
After school availability for help.		Have student create vocabulary flash cards in addition to topical index.		
Internet resources (videos on topic, websites relevant to the particular topic, etc.).				