



Manhattan Center for Science and Math High School

Mathematics Department Curriculum

Content/Discipline Common Core Algebra 2 Term II

<http://mcsportal.net>

Marking Period 1

Topic: Exponential and Logarithmic Functions. Sequences and Series.

Essential Questions: How do you convert between exponential and logarithmic form?
What is the Exponential Growth/Decay Model?
What is the difference between arithmetic and geometric sequences?

Unit/Topics **Unit 8. Exponential and Logarithmic Functions. 11 days**
Properties of exponential functions and logarithmic functions.
Solving exponential and logarithmic equations.
Properties of logarithms.
Natural Logarithms.
Exponential growth/decay models.

Unit 9. Sequences and Series. 8 days
Arithmetic sequences and series.
Geometric sequences and series.

SWBAT/Objectives **Unit 8.** Sketch graphs of exponential and logarithmic functions
Solve exponential equations with common and uncommon bases
Solve logarithmic equations by converting to exponential form
Apply the properties of logarithms to rewrite logarithmic expressions in equivalent forms
Apply exponential equations to solve exponential growth/decay model problems.

Unit 9. Identify mathematical patterns found in sequence
Discover the formula for finding the n th term of an arithmetic and geometric sequences
Define series
Discover the formula for finding the sum of the first n terms of an arithmetic and geometric series

Vocabulary/Key Terms **Unit 8.** Exponential function, logarithm, common and natural logarithm, exponential growth/decay.

Unit 9. Sequence, series, arithmetic sequence, geometric sequence, finite series, sigma notation.

Assessments: **Homework:** to be given daily on each introduced topic.
Class discussions: students will be expected to be prepared for class, participate in class activities and actively engage in class discussion.
Uniform Tests: on concepts involving equations and functions.

Common Core Standards: **Unit 8.** F-IF.C.8, F-IF.C.7e, F-LE.A.4, A-REI.D.11, F-BF.A.1b, F-BF.B.4a, F-IF.C.9
Unit 9. F-IF.A.3, A-SSE.B.4.

Differentiated Instruction: MATHXL, a student-driven online learning platform, is used to differentiate instruction for all students in class and subject areas. All students are held to the Common Core-aligned standards. Teacher performs formative assessments through lessons to check student understanding, including cold-calling, student board work, and exit tickets. Teacher circulates room to perform further formative assessments and guide small groups and individuals.

ELLs: English Language Learners are paired with students who are fluent in English, and given extra time. Visual aids, including pictures and Smart boards help students make clear connections to the text.

SWDs: Students with special needs are grouped with helpers and given instructions or assessments with simplified language or extra time.

High-Achievers: Gifted students are given challenge problems during lessons, homework, and summative assessments, which earn extra credits.

Resources/Books Textbook Algebra 2 Common Core by Pearson, 2015 edition
Website: www.engageny.org www.MathXL.com
Graphing calculator

Homework: Per Teacher



Manhattan Center for Science and Math High School

Mathematics Department Curriculum

Content/Discipline Common Core Algebra 2 Term II

<http://mcsportal.net>

Marking Period 2

Topic: Conic Sections and Transformations. Trigonometric Functions.

Essential Questions: How do you write the equation of a parabola using vertex and focus?
How do you write and graph equation of a circle?
How do you perform transformations with functions and relations?
What is the Unit circle?
How do you graph trigonometric functions?

Unit/Topics Unit 10. Conic Sections and Transformations. 8 days

Equation of parabola using vertex and focus.

Equation and graph of a circle.

Transformations

Unit 11. Trigonometric Functions. 14 days

Unit Circle.

Finding reference angle.

Relationship between degrees and radians.

Graphs of trigonometric functions.

Finding amplitude, frequency, period.

SWBAT/Objectives Unit 10. Write the equation of parabola
Graph parabola using directrix
Find the center and radius of a circle
Perform transformations of different forms and explain their effect on the graph of a function.

Unit 11. Sketch and label the Unit Circle
Explain what is meant by the reference angle
Define a radian
Convert radian measure into degree measure and vice versa
Graph sine, cosine, and tangent functions
Apply trigonometry to model real world problems.

Vocabulary/Key Terms	<p>Unit 10. Focus, directrix, radius, parent function, translation, vertical stretch, horizontal shift.</p> <p>Unit 11. Standard position, coterminal angles, unit circle, sine, cosine, tangent, reference angle, quadrant, central angle, radian, amplitude, frequency, period.</p>
Assessments:	<p>Homework: to be given daily on each introduced topic.</p> <p>Class discussions: students will be expected to be prepared for class, participate in class activities and actively engage in class discussion.</p> <p>Uniform Tests: on concepts involving equations and functions.</p>
Common Core Standards:	<p>Unit 10. G-GPE.A.2, G-GPE.A.1F, F-BF.B.3, A-CED.A.1.</p> <p>Unit 11. G-SRT.C.6, F-TF.A.1, F-TF.A.2, F-IF.B.4, F-IF.C.7e, F-TF.B.5</p>
Differentiated Instruction:	<p>MATHXL, a student-driven online learning platform, is used to differentiate instruction for all students in class and subject areas. All students are held to the Common Core-aligned standards. Teacher performs formative assessments through lessons to check student understanding, including cold-calling, student board work, and exit tickets. Teacher circulates room to perform further formative assessments and guide small groups and individuals.</p>
ELLs:	<p>English Language Learners are paired with students who are fluent in English, and given extra time. Visual aids, including pictures and Smart boards help students make clear connections to the text.</p>
SWDs:	<p>Students with special needs are grouped with helpers and given instructions or assessments with simplified language or extra time.</p>
High-Achievers:	<p>Gifted students are given challenge problems during lessons, homework, and summative assessments, which earn extra credits.</p>
Resources/Books	<p>Textbook Algebra 2 Common Core by Pearson, 2015 edition Website: www.engageny.org www.MathXL.com Graphing calculator</p>

Homework: Per Teacher



Manhattan Center for Science and Math High School

Mathematics Department Curriculum

Content/Discipline **Common Core Algebra 2 Term II**

<http://mcsportal.net>

Marking Period **3**

Topic: **Probability and Statistics.**

Essential Question: **What are the different ways in which data can be organized and analysed?**

Unit/Topics

Unit 12. Probability. 8 days

Permutations, combinations and probability.

Conditional probability.

Probability of independent events.

Unit 13. Statistics. 11 days

Standard deviation.

Normal curve.

Scatter plot and correlation.

Line of best fit.

Non-linear regressions.

Review. 7-10 days

SWBAT/Objectives

Unit 12. Define and compute permutations and combinations

Find the probability of independent events

Solve problems involving “at most” and “at least”.

Unit 13. Define and calculate range, deviation, variance and standard deviation

Explain the properties of a normal distribution

Define and draw a scatter plot for a set of data

Explore the similarities and differences between and among the scatter plots of exponential, logarithmic, and power functions.

Vocabulary/Key
Terms

Unit 12. Counting principle, permutation, combination, probability, binomial probability.

Unit 13. Variance, standard deviation, normal distribution, normal curve, scatter plot, correlation, regression.

Assessments: **Homework:** to be given daily on each introduced topic.
Class discussions: students will be expected to be prepared for class, participate in class activities and actively engage in class discussion.
Uniform Tests: on concepts involving equations and functions.

Common Core Standards: **Unit 12.** S-IC.A.2, S-CP.A.1, S-CP.A.3, S-CP.A.4, S-CP.A.5, S-CP.B.9, S-CP.B.6, S-CP.B.7.
Unit 13. S-ID.A.4, S-IC.B.6, F-IF.B.4.

Differentiated Instruction: MATHXL, a student-driven online learning platform, is used to differentiate instruction for all students in class and subject areas. All students are held to the Common Core-aligned standards. Teacher performs formative assessments through lessons to check student understanding, including cold-calling, student board work, and exit tickets. Teacher circulates room to perform further formative assessments and guide small groups and individuals.

ELLs: English Language Learners are paired with students who are fluent in English, and given extra time. Visual aids, including pictures and Smart boards help students make clear connections to the text.

SWDs: Students with special needs are grouped with helpers and given instructions or assessments with simplified language or extra time.

High-Achievers: Gifted students are given challenge problems during lessons, homework, and summative assessments, which earn extra credits.

Resources/Books Textbook Algebra 2 Common Core by Pearson, 2015 edition
Website: www.engageny.org www.MathXL.com
Graphing calculator

Homework: Per Teacher