Princeton Charter School
Grade Eight Program

English Language and Literature: Grade Eight

The goals of the English language and literature program for grade eight are that students be able to:

- enjoy reading a wide variety of literature;
- compose a well organized, grammatically correct five-paragraph essay; and
- speak confidently to their class about a topic.

Course Content

Literature and Reading Comprehension: Students read, discuss, and interpret novels, essays, narratives, short stories, poetry, and plays. Students identify themes, points of view, plots, settings, characters, moods, and the imagery of works. Reading selections serve as models of good writing and as subjects for a variety of writing assignments.

Expressive and Expository Writing: Students compose five-paragraph essays which are well organized, persuasive, and demonstrate command of grammar and compositional skills. Students practice writing in a variety of forms (essays, stories, poetry, letters, reviews, editorials, dialogues, and reports) and modes (narrative, analytical, expressive, and descriptive). Students apply their knowledge of grammar, spelling, and vocabulary to their writing in all subjects.

Grammar, Syntax, and Language Mechanics: Students diagram sentences; review parts of speech and sentence structure; recognize and use subjunctive voices; study restrictive and nonrestrictive clauses; and identify and begin to use ellipsis.

Vocabulary and Spelling: Vocabulary and spelling work use derivatives, word roots and etymology as tools. Students continue to work on building their vocabulary with particular attention to Greek and Latin roots.

Listening and Speaking Skills: Speaking exercises require students to memorize and recite selected poems. Students take notes during lectures and participate in class discussions. They make five-minute oral reports and field questions from their teacher and fellow students.

Research and Study Skills: Students use library and research skills when they write essays, editorials, and research papers.

Homework: Students have daily assignments amounting to 30 minutes per night in reading, writing, vocabulary, or grammar, as follow-up or preparation for each class period. Students are given frequent writing assignments for which they make notes and produce an outline, rough draft, revision, and edited version. They write essays, stories, book reviews, editorials, poetry, and reports.

Tests and Major Projects: Vocabulary, spelling, reading, or grammar quizzes will be given as needed, and there will be tests at the ends of units. There will also be reading and writing evaluations. Occasional major writing projects and research reports will be assigned.

Grading: Classwork, homework, quizzes, tests, participation in discussions, major projects, and presentations. Opportunities for revision of written work will be given.

Books:

Textbook: *Prentice Hall Literature: Silver,* Prentice Hall. A core anthology of short stories; nonfiction; drama, including the play *The Diary of Ann Frank*; essays; poetry; folk tales; and a novel: *The Pearl,* by John Steinbeck.

Grammar:

Elements of Language, J. E. Warriner.

Rules of the Game 3, M. Page, P. Guthrie, S. Sable, Educators Publishing Service.

Vocabulary: *Vocabulary From Classical Roots C*, N. Fifer and N. Flowers.

Literature:

Ender's Game, Orson Scott Card

To Kill a Mockingbird, Harper Lee

Old Man and the Sea, Ernest Hemingway

The Secret Life of Bees, Sue Monk Kidd

Julius Caesar, William Shakespeare

Biography of a world leader

Supplementary Literature

The Martian Chronicles, Ray Bradbury

The Red Badge of Courage, Stephen Crane

Robinson Crusoe, Daniel Defoe

Oliver Twist, Charles Dickens

The Outsiders, S. E. Hinton

Haunting Tales, Edgar Allen Poe

Frankenstein, Mary Shelley

The Prince and the Pauper, Mark Twain

20,000 Leagues Under the Sea, Jules Verne

The Time Machine, H. G. Wells

Mathematics: Algebra I

The Algebra course provides a rigorous and comprehensive study of first-year algebra during which each student should

- develop algebraic reasoning;
- develop fluency with algebraic operations and expressions;

- use equations, inequalities, or systems of equations to solve problems;
- link coordinate geometry with algebraic equations and inequalities;
- graph equations and inequalities on a coordinate system with pencil and paper, and with a graphing calculator; and
- add terms from algebra to his or her mathematical vocabulary.

Course Content

Number Sense: Variables; real numbers; integers; rational and irrational numbers; exponents; radicals; ratios; proportions; percents; complex numbers; factoring.

Geometry and Spatial Sense: Geometric formulas for perimeter, area, circumference, volume, and surface area of two- and three-dimensional figures; congruence, similarity, and symmetry; properties of right triangles.

Numerical Operations: Order of operations; properties of operations; inverse operations; computations with negative numbers, rational numbers, and percents; polynomial operations;

Measurement: Appropriate units; precision.

Estimation: Reasonable solutions.

Patterns and Functions: Describe patterns in problems; write rules in algebraic terms; function terminology and evaluation; domain and range; linear, quadratic, absolute value, and greatest integer functions.

Probability and Statistics: Experimental probabilities; algebraic equations to solve problems involving probabilities.

Algebra: Multi-step linear equations and inequalities; solutions of multiple linear equations; graphs of linear and quadratic equations; solutions of inequalities; factoring quadratic equations; the use of equations to solve world problems involving various units, arithmetic operations, and types of numbers.

Discrete Mathematics: Combinations, arrangements and permutations; networks; paths; tree diagrams; Boolean logic.

Conceptual Building Blocks of Calculus: Minima and maxima; limits; infinity; linear and exponential growth; change in area or volume with change in dimension.

Textbooks:

Algebra I, M. P. Dolciani, R. Sorgenfrey, and J. Graham, Houghton Mifflin 1989.

Algebra: Structure and Methods Book I, R. Brown, M. P. Dolciani, R. Sorgenfrey, and W. Cole, McDougal Littell.

Problem of the Day: mathematical challenges and puzzles drawn from books by Martin Gardner, Raymond Smullyan, etc.

Homework: Students have daily assignments, approximately 40 minutes long, to review and practice what they have learned in class.

Tests: Quizzes are given approximately once per week, and tests are given at the end of every chapter and at the end of the year.

Grading: Quarterly grades are based on homework completion, quizzes, tests, participation in discussions, and any projects assigned.

Mathematics: Geometry

The Geometry course provides a rigorous and comprehensive study of geometry during which each student should

- develop geometric reasoning;
- to develop fluency with geometric straight-edge and compass constructions;
- to use equations, inequalities, or systems of equations to solve problems;
- link coordinate geometry with algebraic equations and inequalities;
- learn to use geometric transformations;
- add terms from geometry to the individual's vocabulary.

Course Content

Points, lines, planes, and angles: Points, lines, planes, segments, rays, angles; parallel lines and planes; prove that lines are parallel.

Deductive Proofs: Axioms and theorems; if—then statements; converses.

Polygons: Triangles; angles of a triangle; isosceles triangles; medians, altitudes, and perpendicular bisectors; congruent figures; similar figures; proof of congruence or similarity quadrilaterals; proof that quadrilaterals are parallelograms; trapezoids; ratios, proportions, and similarity.

Right Triangles: The Pythagorean theorem and its converse; tangent ration; sine and cosine ratios.

Circles: Tangents; arcs and central angles; arcs and chords; inscribed angles; using circles in proofs.

Geometric constructions: Straight-edge and compass constructions; perpendiculars and parallels; concurrent lines; circles: tangents, circumscribed and inscribed figures; proportional constructions; locus and loci; construction of loci.

Areas of plane figures: Rectangles; parallelograms; triangles; rhombuses; trapezoids; regular polygons; circumferences and areas of circles; arc lengths and lengths of sectors; ratios of areas; geometric probability.

Areas and volumes of solids: Prisms; pyramids; cylinders and cones; spheres; areas and volumes of similar solids.

Coordinate geometry: The distance formula; slope of a line; parallel and perpendicular lines; vectors; the midpoint formula; graphing linear equations; writing linear equations; coordinate geometry proofs.

Transformations: Mappings and functions; reflections; translations; rotations; dilations; composite mappings; inverse and identity mappings; symmetry in the plane and in space.

Textbook: *Geometry,* R. Jurgensen, R. Brown, and J. Jurgensen, McDougal Littell.

Homework: Students have daily assignments, approximately 40 minutes long, to review and practice what they have learned in class.

Tests: Quizzes are given approximately once per week, and tests are given at the end of every chapter and at the end of the year.

Grading: Quarterly grades are based on homework completion, quizzes, tests, participation in discussions, and any projects assigned.

History and Geography: Grade Eight

This course is the fourth year of a four-year, roughly chronological study of world history and geography. This portion of the course covers the founding of the United States government to the modern era, and includes the study of the political, economic, cultural, and technological forces that have shaped the course of events. The general objectives for students are to develop knowledge of the human story and skill in thinking, imagining, and communicating — especially in writing — about how people lived during this period. The curriculum is directed toward developing the students':

- knowledge of historical and geographical facts (people, places, events, chronologies);
- ability to describe the lives of the various peoples they have learned about, and to relate the lives of people in antiquity to their own lives today;
- ability to compare the portion of the human story they are studying with portions they studied previously;
- recognition of primary historical sources, and understanding of how primary sources are used by historians to construct "narratives" of the past; and
- skill with maps and time-lines.

Course Content

Modern World History: The spread of democratic ideals for society and politics; the Enlightenment; the American and French Revolutions; industrialization; the rise of capitalism; the rise of Romanticism and the spread of nationalism; the beginnings of communism; the rise of Imperialism; Existentialism (seen in rise of individualism in art and literature); the age of social revolutions, world wars, and the cold war; the demise of Colonialism.

Books:

World History: Connections to Today, Prentice Hall.

Atlas: *The Nystrom Desk Atlas,* Nystrom.

The Industrial Revolution, James A. Corrick.

Night, Elie Wiesel.

All Quiet on the Western Front, Erich Maria Remarque.

Homework: Students have reading assignments as preparation or follow-up for class. Homework activities include reading, analytical and creative writing, and map skills.

Tests and Major Projects: Tests are given at the ends of units. Projects include simple research reports, book reports, and dramatizations.

Grading: Homework, quizzes, tests, participation in discussions, major projects, and presentations. Opportunities for revision of written work will be given.

Science: Grade Eight

The eighth-grade program includes physical and life sciences. Students are expected to:

- learn scientific concepts and vocabulary in areas covered;
- design and conduct experiments;
- use measurements accurately in the course of experiments;
- record and graph data;
- apply mathematics to analyze experiments;
- use data and analysis to make predictions; and
- write thorough, well organized laboratory reports.

Physical Sciences: Matter: Building Block of the Universe

Topics: general properties of matter: mass, weight, volume, and density; phases of matter; phase changes; mixtures, elements, and compounds; atomic model of matter; structure of atoms; forces within atoms; the periodic table; periodic properties of the elements.

Physical Sciences: Chemistry of Matter

Topics: atoms and bonding; ionic, covalent, and metallic bonds; chemical reactions; equations for chemical reactions; energy released or absorbed in reactions; reaction rates; acids, bases, and salts; carbon and its compounds; hydrocarbons; petroleum; radioactivity; nuclear reactions.

Life Sciences: Evolution: Change Over Time

Topics: the rock record; fossil evidence about large-scale changes over time; the concept of evolution; Darwin; Lamarck; human evolution.

Human Biology

Topics: human body systems.

Instructional Materials:

Matter: Building Block of the Universe	Prentice Hall Science, 1997.
Chemistry of Matter	Prentice Hall Science, 1997.
Evolution: Change Over Time	Prentice Hall Science, 1997.
Human Biology and Health	Prentice Hall Science, 1997.

Milestones: Grade Eight

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Essay Milestone (History - application of English skills)

Task: Write a five-paragraph essay on a conflict studied in the modern world history course. In drafting the paper, consider the political situation immediately prior to the conflict, the causes that led to it, the leading characters, their ideas and the roles they played, and the effects of the conflict in the countries involved.

Criteria: Accurate citations of sources; depth of comparisons, explanations, and judgments; quality of organization, syntax, and spelling; five-paragraph organization.

Science Laboratory Report Milestone (Science - application of Mathematics)

Task: The science teacher designates a school laboratory experiment that uses quantitative measurements to be written up for submission. Students write a draft report, followed by rewriting and expansion. The final report should be a polished version of the original draft, with clear explanations of the purpose of the experiment, procedures, equipment, observations, data analysis, and conclusions as well as possible sources of error.

Criteria: Correct format with conclusions supported by observations; neat layout and handwriting/typing; appropriate data analysis; proper use of language without errors in spelling or grammar.

French Language and Art (French and Art)

Task: Working together, two-three students prepare a paper on a work of art, including its subject, artist, style, and characteristics of the period. The students then present their paper, speaking only in French (2-3 minutes), and respond to questions (in French) from the judge(s) (1-2 minutes).

Criteria: Defensible judgments concerning the work of art; language fluency, accent, and vocabulary consistent with the number of years of study in French.

Spanish Language and Art (Spanish and Art)

Task: Choose a famous Spanish painting that includes several people. Describe in Spanish at least two people who are in the painting and their appearance and personal history or personality.

Criteria: Accuracy of description; correct vocabulary and grammar, consistent with three year's study of Spanish.