



NOTRE DAME



Pre-Algebra & Geometry 6

MYP Level I

Grade 6

Ms. Brown

cbrown@ndpma.org

I. Course Description:

Pre-Algebra & Geometry prepares students for more complicated operations and applications in Algebra and Geometry. Mastery of pre-algebraic operations is stressed, as well as problem-solving procedures. Students will expand their ability to reason both orally and in written form. They will discuss and evaluate problem-solving strategies and alternatives using proper mathematical language and conventions. They should be able to write and solve problems at this level. Topics include variables, expressions, integers, exponents, one-step equations, inequalities, decimals, fractions, factors, ratios, proportions, percents, multi-step equations, co-ordinate graphing, angle relationships, area and volume of polygons, probability, and polynomials. Properties of angles, polygons, triangles, circles, metric conversions, and geometric constructions also will be studied.

II. Aims and Objectives:

AIMS – To encourage and enable the students to:

- recognize that mathematics permeates the world.
- appreciate the usefulness, power, and beauty of mathematics.
- enjoy mathematics and develop persistence and patience solving problems.
- understand and be able to use the language, symbols and notation of mathematics.
- develop mathematical curiosity and use inductive and deductive reasoning.
- become confident in using mathematics to analyze text and real life problems.
- develop knowledge, skills, and attitudes to pursue further mathematical studies.
- develop abstract, logical, and critical thinking to reflect critically .
- develop a critical appreciation of information and technological communication.
- appreciate an international dimension of math and its multicultural perspectives

OBJECTIVES – At the end of the course, students should be able to:

- know and demonstrate understanding of the algebraic branch of mathematics.
- solve problems using algebraic concepts and skills.
- recognize, describe, and use patterns to solve problems
- use appropriate mathematical language and representation in presentations.
- explain if answers make sense.

III. Areas of Interaction:

The *Areas of Interaction* will support creative mathematical applications and insights. Unit investigations for Approaches to Learning include how to study math, for *Human Ingenuity* creating a cookbook and converting measurements, for *Community and Service* using and balancing a checkbook, for

Environments investigating the use of angles in the real world around us, and examining the properties of quadrilaterals by building and studying kites. Chapter Reflections and use of the IB Learner Profile will be woven into regular areas of study.

IV. Texts and Resources:

Pre-Algebra (Publisher: Pearson Prentice Hall)

Mathematics for the International Student MYP 2 (Publisher: Haese & Harris)

Various manipulatives as needed.

V. Methodology:

Individual and group problem-solving activities will polish previously practiced strategies and allow students to experiment with and develop new approaches. Group activities allow students to hone their communications skills including vocabulary and demonstration methods. Larger group presentations will allow students to utilize technology, graphing, and other visually representational formats. Formative and summative assessment will keep students updated on their progress. Personal reflective assessment will help students become more aware of how they learn and communicate mathematics best.

VI. Methods of Assessment:

Assessments will include daily homework, investigations, presentations, group work, quizzes, tests, and projects. Journal entries and reflections will help students self assess their learning progress and mastery. Rubrics and exemplars will provide assessment guidelines for students. Grades will follow current school standards and additional IB adaptations as established.

Students are also assessed using MYP assessment criteria. Criterion-referenced assessment measures student work against MYP defined assessment criteria. Students are assessed on the IB MYP criterion for Mathematics including:

- A. Knowledge and understanding
- B. Investigating patterns
- C. Communication in mathematics
- D. Reflection in mathematics

VII. Grading Policy, including the use of MYP criteria:

Each semester is divided into three phases. The grade is based on class work, homework, quizzes, tests, projects and presentations. The semester grade is the cumulative grade of all three phases and the final exam. A letter grade is given based on a norm-referenced scale:

100 – 90 = A

80 – 89 = B

70 – 79 = C

60 – 69 = D

Below 60 = F



NOTRE DAME



Algebra & Geometry 7 7

MYP Level II

Grade

Ms. Brown

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I. Course Description:

Algebra and Geometry 7 prepares students for more complicated operations and applications in Algebra and Geometry 8. Mastery of algebraic principles and operations is stressed as well as problem solving procedures and presentations. Students will expand their ability to reason both orally and in written form. They will discuss and evaluate problem solving strategies and alternatives using proper mathematical language and conventions. They should be able to write and solve problems at this level. Topics include variables, exponents, equations, inequalities, graphing, proportions, polynomials, square roots, and operations with radicals. Properties of angles, polygons, triangles, circles, metric measurement conversions, and international time zones will also be studied.

II. Aims and Objectives:

AIMS – To encourage and enable the students to:

- recognize that mathematics permeates the world.
- appreciate the usefulness, power, and beauty of mathematics.
- enjoy mathematics and develop persistence and patience solving problems.
- understand and be able to use the language, symbols and notation of mathematics.
- develop mathematical curiosity and use inductive and deductive reasoning.
- become confident in using mathematics to analyze text and real life problems.
- develop knowledge, skills, and attitudes to pursue further mathematical studies.
- develop abstract, logical, and critical thinking to reflect critically .
- develop a critical appreciation of information and technological communication.
- appreciate an international dimension of math and its multicultural perspectives

OBJECTIVES – At the end of the course, students should be able to:

- know and demonstrate understanding of the algebraic branch of mathematics.
- solve problems using algebraic concepts and skills.
- recognize, describe, and use patterns to solve problems
- use appropriate mathematical language and representation in presentations.
- explain if answers make sense.

III. Areas of Interaction:

The *Areas of Interaction* will support creative mathematical applications and insights. Unit investigations for the Approaches to Learning will include: how to study math; for *Human Ingenuity*,

how number systems were created; for *Environments*, how parabolas are used in the real world and how polygons can be utilized in stained glass windows; for *Community and Service*, students will investigate and design a co-ordinate graphing booklet of designs to teach younger students the co-ordinate graphing system. Chapter reflections and the IB Learner Profile will be integrated into regular daily activities.

IV. Texts and Resources:

International Mathematics for the Middle Years 2 (Publisher: Pearson)

Algebra 1 Concepts and Skills (Publisher: McDougal Littell)

Various manipulatives as needed.

V. Methodology:

Individual and group problem-solving activities will polish previously practiced strategies and allow students to experiment with and develop new approaches. Group activities allow students to hone their communications skills including vocabulary and demonstration methods. Larger group presentations will allow students to utilize technology, graphing, and other visually representational formats. Formative and summative assessments will keep students updated on their progress. Personal reflective assessment will help students become more aware of how they best learn and communicate mathematics.

VI. Methods of Assessment:

Formative and summative assessments will include daily homework, investigations, presentations, group work, quizzes, tests, and projects. Journal entries and reflections will help students self assess their learning progress and mastery. Rubrics and exemplars will provide assessment guidelines for students. Grades will follow current school standards and additional IB adaptations as established.

Students are also assessed using MYP assessment criteria. Criterion-referenced assessment measures student work against MYP defined assessment criteria. Students are assessed on the IB MYP criterion for Mathematics including:

- A. Knowledge and understanding,
- B. Investigating patterns
- C. Communication in mathematics
- D. Reflection in mathematics

VII. Grading Policy, including the use of MYP criteria:

Each semester is divided into three phases. The grade is based on class work, homework, quizzes, tests, projects and presentations. The semester grade is the cumulative grade of all three phases and the final exam. A letter grade is given based on a norm-referenced scale:

100 – 90 = A

80 – 89 = B

70 – 79 = C

60 – 69 = D

Below 60 = F



NOTRE DAME



Honors Algebra & Geometry 7

MYP Level II

Grade 7

Ms. Brown

cbrown@ndpma.org

I. Course Description:

Honors Algebra & Geometry 7 prepares students for the more advanced mathematics courses traditionally associated with American upper high school classes. The text and material covered is the same as the Honors Algebra I class at NDP. Students successfully completing this course skip over Honors Algebra I when entering high school. Mastery of algebraic principles and operations is stressed as well as problem solving procedures, presentations, and real world application. A sustained focus on algebraic solutions to problems in physics and other disciplines will extend problem solving applications. Students will expand their ability to reason both orally and in written form. They will discuss and evaluate problem solving strategies and alternatives using proper mathematical language and conventions. They will be able to create and solve problems at this level. Topics include exponents, exponential functions and graphs, linear and quadratic equations, inequalities and their graphs, polynomials, direct and inverse quadratic functions, equation systems, operations with radicals, Pythagorean Theorem, basic trigonometric functions, probabilities, matrices, and statistical representations.

II. Aims and Objectives:

AIMS – To encourage and enable the students to:

- recognize that mathematics permeates the world.
- appreciate the usefulness, power, and beauty of mathematics.
- enjoy mathematics and develop persistence and patience solving problems.
- understand and be able to use the language, symbols and notation of mathematics.
- develop mathematical curiosity and use inductive and deductive reasoning.
- become confident in using mathematics to analyze text and real life problems.
- develop knowledge, skills, and attitudes to pursue further mathematical studies.
- develop abstract, logical, and critical thinking to reflect critically .
- develop a critical appreciation of information and technological communication.
- appreciate an international dimension of math and its multicultural perspectives

OBJECTIVES – At the end of the course, students should be able to:

- know and demonstrate understanding of the algebraic branch of mathematics.
- solve problems using algebraic concepts and skills (equations).
- recognize, describe, and use patterns to solve problems
- use appropriate mathematical language and representation in presentations.
- explain if answers make sense (negative distance).

III. Areas of Interaction:

The *Areas of Interaction* will support creative mathematical applications and insights. A project involving purchasing a used car will develop the *Environments* Area of Interaction as students consider the carbon footprint of cars they would like to purchase as well as the mathematics of finance and determining how much monthly payment they can afford based on a fictional part time job. Students will investigate the *Approaches to Learning* Area of Interaction as they investigate the problem-solving process of taking what is given, what is known, and what can be discovered or figured out to solve problems. Some creative alternative uses of “the given” will allow creative approaches to problem solving and *Human Ingenuity*. The *Approaches to Learning* area of interaction will come into play as students reflect on the translation component of algebra. How does the need to translate word problems into algebra problems impact a student’s ability to understand, reason, and solve problems? What correlation does this have with real world problems or problems in other subject areas such as science? How is vocabulary a factor in a student’s ability to learn algebra? On an international level, how do different languages affect understanding and communication of mathematical problems. Learner Profile characteristics will be discussed and investigated in connection with Super Hero Math Geek reports based on technological research.

IV. Texts and Resources:

Algebra 1, including resource materials (Publisher –Holt McDougal Larson)

International Mathematics MYP 3 (Pearson Publisher)

Various manipulatives as needed.

V. Methodology:

Individual and group problem-solving activities will polish previously practiced strategies and allow students to experiment with and develop new approaches. Group activities allow students to hone their communications skills including vocabulary and demonstration methods. Larger group presentations will allow students to utilize technology, graphing, and other visually representational formats. Formative and summative assessment will keep students updated on their progress. Personal reflective assessment will help students become more aware of how they learn and communicate mathematics best.

VI. Methods of Assessment:

Formative and summative assessments will include daily homework, investigations, presentations, group work, quizzes, tests, and projects. Journal entries and reflections will help students self assess their learning progress and mastery. Rubrics and exemplars will provide assessment guidelines for students.

Students also are assessed using MYP assessment criteria. Criterion-referenced assessment measures student work against MYP defined assessment criteria. Students are assessed on the IB MYP criterion for Mathematics including:

- A. Knowledge and understanding
- B. Investigating patterns
- C. Communication in mathematics
- D. Reflection in mathematics

VII. Grading Policy, including the use of MYP criteria:

Each semester is divided into three phases. The grade is based on class work, homework, quizzes, tests, projects and presentations. The semester grade is the cumulative grade of all three phases and the final exam. A letter grade is given based on a norm-referenced scale:

- 100 – 90 = A
- 80 – 89 = B
- 70 – 79 = C
- 60 – 69 = D
- Below 60 = F



NOTRE DAME



Algebra & Geometry 8

MYP Level III

Grade 8

Ms. Brown

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I. Course Description:

Algebra & Geometry 8 continues the study of algebra. Mastery of algebraic principles and operations is stressed, as well as problem-solving procedures, presentations, and real world applications. Students will expand their ability to reason both orally and in written form. They will discuss and evaluate problem solving strategies and alternatives using proper mathematical language and conventions. Students will be able to create and solve problems at this level. Topics include variables, exponential operations and graphs, linear and quadratic equations, inequalities and their graphs, polynomials, equation systems, operations with radicals, Pythagorean Theorem, ratios, proportions, beginning trigonometric functions, probabilities, matrices, and statistical representations.

II. Aims and Objectives:

AIMS – To encourage and enable the students to:

- recognize that mathematics permeates the world.
- appreciate the usefulness, power, and beauty of mathematics.
- enjoy mathematics and develop persistence and patience solving problems.
- understand and be able to use the language, symbols and notation of mathematics.
- develop mathematical curiosity and use inductive and deductive reasoning.
- become confident in using mathematics to analyze text and real life problems.
- develop knowledge, skills, and attitudes to pursue further mathematical studies.
- develop abstract, logical, and critical thinking to reflect critically.
- develop a critical appreciation of information and technological communication.
- appreciate an international dimension of math and its multicultural perspectives.

OBJECTIVES – At the end of the course, students should be able to:

- know and demonstrate understanding of the algebraic branch of mathematics.
- solve problems using algebraic concepts and skills (equations).
- recognize, describe, and use patterns to solve problems
- use appropriate mathematical language and representation in presentations.
- explain if answers make sense (negative distance).

III. Areas of Interaction:

The *Areas of Interaction* will support creative mathematical applications and insights throughout the course. The *Approaches to Learning* area of interaction will come into play as students reflect on the translation component of algebra. How does the need to translate word problems into algebra problems impact a student's ability to understand, reason, and solve problems? How is vocabulary a factor in a

student's ability to learn algebra? On an international level, how do different languages impact mathematical understanding and communication? Also for the *Approaches to Learning* area of interaction, at the end of each chapter student groups will choose different lessons from the chapter and teach/review them for the class demonstrating more than one learning style focus to master the content. Students will complete a chapter reflection following each chapter to self assess and to broaden connections with prior knowledge and anticipate further applications of mathematical content. Ongoing math journaling will help students better understand how they personally learn best, how they communicate their learning, and how effectively they work independently and in groups. *Human Ingenuity* is the focus of a unit on how to solve problems by designing game show challenges for other students to solve. In a unit on numbers as symbols and the cultural and technological development of number systems, students will create their own number system and look at the positive and negative consequences of their choices as they make creative decisions. *Community and Service* will be part of a unit on how people in the community determine if they can afford to purchase a car, what their monthly payment will be, and how to manage a budget. Learner Profile characteristics will be discussed and investigated in connection with Super Hero Math Geek reports based on technological research.

IV. Texts and Resources:

Algebra I, including resource materials (Publisher – Holt, Rinehart, and Winston)

International Mathematics MYP 3 (Pearson Publisher)

Internet and library research resources, and manipulatives as applicable.

V. Methodology:

Individual and group problem-solving activities will polish previously practiced strategies and allow students to experiment with and develop new approaches. Group activities allow students to hone their communications skills including vocabulary and demonstration methods. Larger group presentations will allow students to utilize technology, graphing, and other visually representational formats. Formative and summative assessment will keep students updated on their progress. Personal reflective assessment will help students become more aware of how they best learn and communicate mathematics.

VI. Methods of Assessment:

Formative and summative assessments will include daily homework, investigations, presentations, group work, quizzes, tests, and projects. Journal entries and reflections will help students self assess their learning progress and mastery. Rubrics and exemplars will provide assessment guidelines for students. Grades will follow current school standards and additional IB adaptations as established.

Students also are assessed using MYP assessment criteria. Criterion-referenced assessment measures student work against MYP defined assessment criteria. Students are assessed on the IB MYP criterion for Mathematics including:

- A. Knowledge and understanding
- B. Investigating patterns
- C. Communication in mathematics
- D. Reflection in mathematics

VII. Grading Policy, including the use of MYP criteria:

Each semester is divided into three phases. The grade is based on class work, homework, quizzes, tests, projects and presentations. The semester grade is the cumulative grade of all three phases and the final exam. A letter grade is given based on a norm-referenced scale:

$$100 - 90 = A$$

$$80 - 89 = B$$

$$70 - 79 = C$$

$$60 - 69 = D$$

Below 60 = F



NOTRE DAME



Honors Algebra & Geometry 8 MYP Level III Grades 7 & 8

Ms. Brown & Ms. Keogh

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I. Course Description:

Honors Algebra & Geometry 8 prepares students for the more advanced mathematics courses traditionally associated with American upper high school classes. The text and material covered is the same as the Honors Algebra I class at NDP. Students successfully completing this course skip over Honors Algebra I when entering high school. Mastery of algebraic principles and operations is stressed as well as problem solving procedures, presentations, and real world application. A sustained focus on algebraic solutions to problems in physics and other disciplines will extend problem solving applications. Students will expand their ability to reason both orally and in written form. They will discuss and evaluate problem solving strategies and alternatives using proper mathematical language and conventions. They will be able to create and solve problems at this level. Topics include exponents, exponential functions and graphs, linear and quadratic equations, inequalities and their graphs, polynomials, direct and inverse quadratic functions, equation systems, operations with radicals, Pythagorean Theorem, basic trigonometric functions, probabilities, matrices, and statistical representations.

II. Aims and Objectives:

AIMS – To encourage and enable the students to:

- recognize that mathematics permeates the world.
- appreciate the usefulness, power, and beauty of mathematics.
- enjoy mathematics and develop persistence and patience solving problems.
- understand and be able to use the language, symbols and notation of mathematics.
- develop mathematical curiosity and use inductive and deductive reasoning.
- become confident in using mathematics to analyze text and real life problems.
- develop knowledge, skills, and attitudes to pursue further mathematical studies.
- develop abstract, logical, and critical thinking to reflect critically.
- develop a critical appreciation of information and technological communication.
- appreciate an international dimension of math and its multicultural perspectives.

OBJECTIVES – At the end of the course, students should be able to:

- know and demonstrate understanding of the algebraic branch of mathematics.
- solve problems using algebraic concepts and skills (equations).
- recognize, describe, and use patterns to solve problems
- use appropriate mathematical language and representation in presentations.
- explain if answers make sense (negative distance).

III. Areas of Interaction:

The *Areas of Interaction* will support creative mathematical applications and insights. A project involving purchasing a used car will develop the *Environments* Area of Interaction as students consider the carbon footprint of cars they would like to purchase as well as the mathematics of finance and determining how much monthly payment they can afford based on a fictional part time job. Students will investigate the *Approaches to Learning* Area of Interaction as they investigate the problem-solving process of taking what is given, what is known, and what can be discovered or figured out to solve problems. Some creative alternative uses of “the given” will allow creative approaches to problem solving and *Human Ingenuity*. The *Approaches to Learning* area of interaction will come into play as students reflect on the translation component of algebra. How does the need to translate word problems into algebra problems impact a student’s ability to understand, reason, and solve problems? What correlation does this have with real world problems or problems in other subject areas such as science? How is vocabulary a factor in a student’s ability to learn algebra? On an international level, how do different languages affect understanding and communication of mathematical problems. Learner Profile characteristics will be discussed and investigated in connection with Super Hero Math Geek reports based on technological research.

IV. Texts and Resources:

Algebra 1, including resource materials (Publisher –Holt McDougal Larson)

International Mathematics MYP 3 (Pearson Publisher)

Various manipulatives as needed.

V. Methodology:

Individual and group problem-solving activities will polish previously practiced strategies and allow students to experiment with and develop new approaches. Group activities allow students to hone their communications skills including vocabulary and demonstration methods. Larger group presentations will allow students to utilize technology, graphing, and other visually representational formats. Formative and summative assessments will keep students updated on their progress. Personal reflective assessment will help students become more aware of how they learn and communicate mathematics best.

VI. Methods of Assessment:

Formative and summative assessments will include daily homework, investigations, presentations, group work, quizzes, tests, and projects. Journal entries and reflections will help students self assess their learning progress and mastery. Rubrics and exemplars will provide assessment guidelines for students. Grades will follow current school standards and additional IB adaptations as established.

Students also are assessed using MYP assessment criteria. Criterion-referenced assessment measures student work against MYP defined assessment criteria. Students are assessed on the IB MYP criterion for Mathematics including:

- A. Knowledge and understanding
- B. Investigating patterns
- C. Communication in mathematics
- D. Reflection in mathematics

VII. Grading Policy, including the use of MYP criteria:

Each semester is divided into three phases. The grade is based on class work, homework, quizzes, tests, projects and presentations. The semester grade is the cumulative grade of all three phases and the final exam. A letter grade is given based on a norm-referenced scale:

100 – 90 = A

80 – 89 = B

70 – 79 = C

60 – 69 = D

Below 60 = F