



Basic Geometry A: Full Course Summary

Note: If this course is intended to be a Credit Recovery course, the following assumptions apply:

- This course is a core course at the “Basic” level in Connections Academy’s system, which titles courses as Basic, Standard, Honors, or Advanced Placement (AP).
- The student has previously taken this or a similar course but did not achieve a passing grade based on his/her school’s grading scale.
- This course will be modified by the teacher in order to skip over areas in which the student shows understanding of the material, leaving more time to focus on gaps in the student’s knowledge or understanding.
- Because Credit Recovery courses will be shortened and/or modified based on individual student needs, these courses are generally **not** appropriate for students who have **not** previously taken this or a similar course, nor for students wishing to accelerate their high school studies.

If a student wishes to take this course for the first time he/she will be expected to cover all material in the course without the above-noted modifications. Students must discuss this option with the NaCA Admission and Support Representative prior to enrolling in the course for the first time.

Course Summary

This is the first of two courses that comprise Geometry. In this course, the student will learn the basic principles of logic and begin to construct formal proofs. Then, the student will study parallel and perpendicular lines. Next, the student will begin to explore the properties of congruent triangles and the relationships within triangles. This course ends with the study of quadrilaterals.

Connections Academy’s Basic Geometry A consists of varied curriculum that provides students the opportunity to develop an understanding of key concepts through expanded lessons and differentiated assessments.

Prerequisites: Algebra 1

Unit 1: Tools of Geometry

In this unit, you will review the basic principals of geometry in preparation for extensive study of the geometry course. You will begin by using mental math to evaluate patterns and predict future outcomes using deductive reasoning. You will then use terms you are already familiar with including point, line, and plane in postulates about segments, rays, lines, planes, and angles. While building on your knowledge of geometry you will use tools, such as a straightedge and a compass to measure geometric shapes, angles, and segments to construct your own figures. In the next section, you will expand your knowledge of the coordinate plane, including how to find the distances between points, and how to calculate the midpoints of segments. Finally, you will measure perimeters and circumferences, as well as find areas of various shapes.

Lessons

1. Patterns and Inductive Reasoning
2. Points, Lines, and Planes: 1
3. Points, Lines, and Planes: 2
4. Segments, Rays, Parallel Lines and Planes: 1
5. Segments, Rays, Parallel Lines and Planes: 2
6. Measuring Segments and Angles: 1
7. Measuring Segments and Angles: 2
8. Basic Constructions: 1
9. Basic Constructions: 2

10. The Coordinate Plane: 1
11. The Coordinate Plane: 2
12. Perimeter, Circumference, and Area: 1
13. Perimeter, Circumference, and Area: 2
14. Review
15. Unit Test

Unit 2: Reasoning and Proof

In this unit, you will use your knowledge of deductive reasoning to write special types of statements. The statements are known as conditionals, biconditionals, and definitions. These statements will help you to determine the validity of other geometric events. You will use this information to determine your preliminary conclusions about geometric relationships.

Lessons

1. Conditional Statements: 1
2. Conditional Statements: 2
3. Biconditionals and Definitions: 1
4. Biconditionals and Definitions: 2
5. Deductive Reasoning: 1
6. Deductive Reasoning: 2
7. Reasoning in Algebra
8. Proving Angles Congruent: 1
9. Proving Angles Congruent: 2
10. Review
11. Unit Test

Unit 3: Parallel and Perpendicular Lines

In this unit, you will continue to use deductive reasoning to make conclusions about parallel and perpendicular lines. You will use parallel lines in relation to other geometric figures, using them to measure shapes. The Polygon Angle-Sum Theorem will be used to classify triangles and find measures of angles. To finish out the unit you will learn to construct your own angle bisectors, perpendicular lines, quadrilaterals, and parallel lines.

Lessons

1. Properties of Parallel Lines
2. Proving Lines Parallel: 1
3. Proving Lines Parallel: 2
4. Parallel Lines and the Triangle Angle-Sum Theorem1
5. Parallel Lines and the Triangle Angle-Sum Theorem2
6. The Polygon Angle-Sum Theorems: 1
7. The Polygon Angle-Sum Theorems: 2
8. Lines in the Coordinate Plane: 1
9. Lines in the Coordinate Plane: 2
10. Slopes of Parallel and Perpendicular Lines: 1
11. Slopes of Parallel and Perpendicular Lines: 2
12. Constructing Parallel and Perpendicular Lines
13. Review
14. Unit Test

Unit 4: Congruent Triangles

In this unit, you will discover how to recognize and prove that triangles are congruent. You will be introduced to postulates and theorems to help you determine the congruency of triangles. Throughout

the unit you will be noting different types of triangles, including right, congruent, isosceles, and equilateral and seeing how they relate to the different postulates you use them with to complete proofs. Your work in this unit will help you manage the rest of this course.

Lessons

1. Congruent Figures
2. Triangle Congruence by SSS and SAS
3. Triangle Congruence by ASA and AAS
4. Using Congruent Triangles: CPCTC
5. Isosceles and Equilateral Triangles
6. Congruence in Right Triangles
7. Using Corresponding Parts of Congruent Triangles 1
8. Using Corresponding Parts of Congruent Triangles 2
9. Review
10. Unit Test

Unit 5: Relationships Within Triangles

In this unit, you will test your knowledge of triangle relationships. With this knowledge you will discover how to use what you know to determine geometric relationships within other figures. You will learn more intricate details about triangles and lines and how they affect one another geometrically, involving concurrent lines and bisectors. Finally, you will explore the roles of indirect reasoning, inverses, and contrapositives in determining inequalities in triangles.

Lessons

1. Midsegments of Triangles
2. Bisectors in Triangles
3. Concurrent Lines, Medians, and Altitudes: 1
4. Concurrent Lines, Medians, and Altitudes: 2
5. Inverses, Contrapositives, and Indirect Reasoning1
6. Inverses, Contrapositives, and Indirect Reasoning2
7. Inequalities in Triangles: 1
8. Inequalities in Triangles: 2
9. Review
10. Unit Test

Unit 6: Quadrilaterals

In this unit, you will apply what you have learned about triangles, postulates, algebraic techniques, and other methods of proof in the study of quadrilaterals. You will learn the different properties of polygons and parallelograms as well as classification techniques for working with quadrilaterals. Finally, you will be introduced to special parallelograms and how to place figures on the coordinate plane.

Lessons

1. Classifying Quadrilaterals
2. Properties of Parallelograms: 1
3. Properties of Parallelograms: 2
4. Proving that a Quadrilateral is a Parallelogram
5. Special Parallelograms: 1
6. Special Parallelograms: 2
7. Trapezoids and Kites
8. Placing Figures in the Coordinate Plane
9. Proofs Using Coordinate Geometry

- 10. Review
- 11. Unit Test

Basic Geometry A Final Exam

In this unit, you will have the opportunity to prepare for and take the final exam. Since this is a comprehensive exam, it may be helpful to organize your notes in the order of the course outline before you begin to review. Using the test-taking strategies that you have previously learned can help you be successful with both objective and essay questions.

Lessons

1. Basic Geometry A Final Review
2. Basic Geometry A Final

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