



BELLOWS FREE ACADEMY

St. Albans, Vermont

Math Department Course Syllabus

Course Name: *Geometry*

Course ID: 326

Course Credits: 1

Year: 2019-20

Instructor:	Room:	Phone:	Email:
<i>Karla Kane</i>	<i>A301</i>	<i>527-6546</i>	<i>kkane@maplerun.org</i>
<i>Luke Cioffi</i>	<i>A308</i>	<i>527-6545</i>	<i>lcioffi@maplerun.org</i>
<i>Jennifer Parent</i>	<i>A314</i>	<i>527-6551</i>	<i>jparent@maplerun.org</i>

Course Information

Description:

Geometry: Where real-life, mathematics and art collide! Students will learn the basics of constructions, transformations, congruence, circles, area, volume, right triangle trigonometry, similarity and the connections with real-life and the art world. Students will experience geometry through hands-on investigations, class discussion, computer software investigations, demonstration, and online tutorials.

Prerequisites:

- *Successful completion of Algebra I 10316/10318*
- *Teacher recommendation*

Course Standards:

Congruence: Transformation/Constructions:

CONGRUENCE.A.1 - Know and use definitions of geometric terms such as; line, segment, circle, perpendicular, parallel, etc.

CONGRUENCE.A.2 – Identify types of transformations in the plane.

CONGRUENCE.A.3 – Identify and describe the types of symmetry in planar figures.

CONGRUENCE.A.4 – Identify and describe properties of isometric transformations.

CONGRUENCE.A.5 - Use rotation, reflection, or translation to draw and specify a new transformed figure.

CONGRUENCE.D.12 - Make formal geometric constructions with a variety of tools and methods.

CONGRUENCE.D.13 - Construct inscribed and circumscribed polygons and circles

Congruence Theorems:

CONGRUENCE.B.6 - Use geometric descriptions of rigid motions (isometries) to transform figures and to predict the effect of a given rigid motion on a given figure.

CONGRUENCE.B.8 - Use criteria for triangle congruence (ASA, SAS, SSS, AAS, AS_1S_2) to prove triangles are either congruent or not congruent.

CONGRUENCE.C.9 - Prove and use concepts about lines and angles (e.g. alternate interior angles, corresponding angles, etc.).

CONGRUENCE.C.10 - Prove and use concepts about triangles (e.g., triangle angle sum, classifications of triangles).

CONGRUENCE.C.11 - Prove and use concepts about parallelograms and the properties of parallelograms.

Similarity:

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.A.2 - Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar.

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.A.3 - Use criteria for triangle similarity (AA, SAS, and SSS) to prove triangles are either similar or not similar.

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.B.4 - Prove and use concepts about similar triangles and parallel lines.

Right Triangles/Trig:

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.B.5 - Use congruence and similarity criteria for right triangles to solve problems (e.g., geometric mean and special right triangles).

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.C.6 - Understand that side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.C.7 - Explain and use the relationship between the sine and cosine of complementary angles.

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.C.8 - Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.D.10 - Prove the Laws of Sines and Cosines and use them to solve problems.

SIMILARITY/RIGHT TRIANGLES/TRIGONOMETRY.D.11 - Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in real-life situations involving triangles.

Area & Volume:

MEASUREMENT & DIMENSION.A.1 – Solving problems involving perimeter, circumference, arc length, and area.

MEASUREMENT & DIMENSION.A.3 – Solving problems involving the volume of three-dimensional figures.

MEASUREMENT & DIMENSION.B.4 - Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

MODELING WITH GEOMETRY.A.1 - Use geometric shapes, their measures, and their properties to describe objects and to solve real-life problems involving area and volume.

**MODELING WITH GEOMETRY.A.3 - Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*

Circles:

CIRCLES.A.2 - Identify and describe relationships among inscribed angles, radii, and chords.

CIRCLES.A.3 - Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.

Reasoning:

MODELING - Identifying the important information within the problem and creating an understandable representation of the problem.

STRATEGY - Choosing a reasonable strategy and thoroughly developing it.

Execution/Justification:

EXECUTION - Clearly explaining the process mathematically.

CHECKING - Checking solutions and correct errors as appropriate.

COMMUNICATION - Using mathematical language, graphs, diagrams, and/or charts effectively and putting answers into context when appropriate.

Transferable Skills:

***Self-Direction:** The ability to independently see a task through to completion, meet due dates, and come to class prepared; and can communicate with the instructor ahead of time to arrange alternate due dates for extenuating circumstances.*

***Responsible & Involved Citizenship:** Students take responsibility for personal decisions and actions; works collaboratively with others; and uses technology and digital media responsibly.*

***Creative and Practical Problem Solving:** Students can understand the problem, brainstorm and research, select a strategy, analyze and reflect on solutions, in order to solve the problem.*

Required Texts and Materials

Three-Ring Binder
 Compass & Protractor
 Straightedge

Optional Materials:
 Scientific or Graphing Calculator

Standard and Course Scoring Procedures

To calculate standard scores for a reporting period, the default method would be to average the scores within a standard. The average of the proficiency is the **lowest score** a student could receive.

If the **trend** within the standard over time shows a growth of learning not represented by the average, the teacher has the right to **increase** the final standard score, **but not decrease it**.

For example, in Standard 1, the teacher might think the final score would be better represented by a score of 3.0 based on the students recent performance, and the teacher could increase it (see the highlight score).

The average is rounded to the nearest whole number.

	Assignment 1	Assignment 2	Assignment 3	Assignment 4	Assignment 5	Assignment 6	Assignment 7	Assignment 8	Assignment 9	Assignment 10	Average	Trend
Standard 1	1	2	2	2	2	2	3	3	4	3	2	3
Standard 2	2	2	3		2	3	3		2	2	2	
Standard 3	2	2	4	3	3	3	3	4	4	4	3	4
Standard 4	2	2	3	3	2	3	3	3	3	3	3	
										Course Score	2.5	3.0

Standard and Course Scoring Procedures

To calculate standard scores for a reporting period, the default method would be to average the scores within a standard. The average of the proficiency is the **lowest score** a student could receive.

If the **trend** within the standard over time shows a growth of learning not represented by the average, the teacher has the right to **increase** the final standard score, **but not decrease it**.

For example, in Standard 1, the teacher might think the final score would be better represented by a score of 3.0 and the teacher could increase it (see the highlight score).

	Assignment 1	Assignment 2	Assignment 3	Assignment 4	Average	Trend
Standard 1	2.0		3.0	3.5	2.8	3.0
2	3.0	3.5		3.0	3.2	
3	2.5	3.0	3.5	3.0	3.0	
4	2.0		4.0		3.0	
				Course Score	3.0	3.1

Trend Scoring

- We believe students should not be penalized for struggling in the process of learning. With trend scoring, student **growth and progress** is celebrated. A student's score reflects where they are at that *point in time*, while taking into account the growth over time as a positive factor in the student's overall score.
- Growth over time also accounts for a student's consistency in progress toward achieving proficiency.
- It is the teacher's judgement whether or not to use a scoring average or a scoring trend.

Assessment Policy

Geometry Assessments:

- *Unit Assessments*
- *Projects*
- *Performance Tasks*
- *Semester Assessment*

Daily Assignments: *Student participation and completion of daily classwork and homework assignments are essential to the learning process.*

Course Outline

The course outline will follow the order of the Standards listed above with the exception of the Reasoning and Execution/Justification Standards, which are assessed throughout the year.