The Facing History School

Geometry 2017-2018
Periods: 1, 2, & 6
Teacher: Colleen

Course Overview:

Geometry 3 is designed to engage and challenge students as they use logic and reason to explore and apply the properties of geometry in multiple contexts. Students will use construction, proof, and calculation-based techniques to solve problems throughout the year. The course has been developed to allow for student exploration, practice, and application of topics as they move through multiple levels of performance. 2 or more major projects per semester are positioned at critical moments in the curriculum to allow for students to consolidate and apply the cumulative learning they have engaged in.

Unit Breakdown:

Unit 1: Basics of Geometry
September

Essential Question(s):
How can you measure and construct a line segment?
How can you find the midpoint and length of a line segment in a coordinate plane?
How can you find the perimeter and area of a polygon in a coordinate plane?
How can you measure and classify an angle?
How can you describe angle pair relationships and use these descriptions to find angle measures?

Unit Learning Targets:
I can name points, lines, and planes.
I can name segments and rays.
I can copy segments and compare segments for congruence.
I can use the Segment Addition Postulate.
I can find segment lengths using midpoints and segment bisectors.
I can use the Midpoint Formula.
I can use the Distance Formula.
I can classify polygons.
I can find perimeters and areas of polygons in the coordinate plane.
I can name angles.
I can measure and classify angles.
I can identify congruent angles.
I can use the Angle Addition Postulate to find angle measures.
I can bisect angles.

I can identify complementary and supplementary angles.
I can identify linear pairs and vertical angles.

Assignments:
Learning Activities: Do Now, Homework, Notes, Independent/Group activities
Formative: Exit Tickets (multiple times per week), Interim Assessments
Summative:
Summative Exam 10/13
Summative Project 10/10-10/13 – Book of Proofs

Common Core Standards:
CCSS.MATH.CONTENT.HSG.CO.A.1
Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
CCSS.MATH.CONTENT.HSG.CO.D.12
Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line*.
CCSS.MATH.CONTENT.HSG.MG.A.1
Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*
CCSS.MATH.CONTENT.HSG.GPE.B.7
Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*

Unit 2: Parallel & Perpendicular Lines
October-November

Essential Question(s):
What does it mean when two lines are parallel, intersecting, or skew?
When two parallel lines are cut by a transversal, which of the resulting pairs of angles are congruent?
For which of the theorems involving parallel lines and transversals is the converse true?
What conjectures can you make about perpendicular lines?
How can you write an equation of a line that is parallel or perpendicular to a given line and passes through a given point?

Unit Learning Targets:
I can identify lines and planes.
I can identify parallel and perpendicular lines.
I can identify pairs of angles formed by transversals.
I can use properties of parallel lines.
I can prove theorems about parallel lines.
I can solve real-life problems.
I can use the Corresponding Angles Converse.
I can construct parallel lines.
I can use the Transitive Property of Parallel Lines.
I can find the distance from a point to a line.
I can construct perpendicular lines.
I can prove theorems about perpendicular lines.
I can solve real-life problems involving perpendicular lines.
I can use slope to partition directed line segments.
I can identify parallel and perpendicular lines.
I can write equations of parallel and perpendicular lines.
I can use slope to find the distance from a point to a line.

Assignments:
Learning Activities: Do Now, Homework, Notes, Independent/Group activities
Formative: Exit Tickets (multiple times per week), Interim Assessments
Summative:
Summative Exam (11/10)
Summative Project (11/13-11/15) – Angle City Project

Common Core Standards:
CCSS.MATH.CONTENT.HSG.CO.A.1
Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
CCSS.MATH.CONTENT.HSG.CO.C.9
Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*
CCSS.MATH.CONTENT.HSG.CO.D.12
Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a*

line segment; and constructing a line parallel to a given line through a point not on the line.

CCSS.MATH.CONTENT.HSG.GPE.B.5

Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

CCSS.MATH.CONTENT.HSG.GPE.B.6

Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Unit 3: Transformations
November-December

Essential Question(s):

How can we change a figure's position without changing its size and shape?

How can rigid motion transformations be used in the real world?

How can we represent a transformation in the coordinate plane?

How can we prove two figures congruent?

Unit Learning Targets:

I can perform translations.

I can perform compositions.

I can solve real-life problems involving compositions.

I can perform reflections.

I can perform glide reflections.

I can identify lines of symmetry.

I can solve real-life problems involving reflections.

I can perform rotations.

I can perform compositions with rotations.

I can identify rotational symmetry.

I can identify congruent figures.

I can describe congruence transformations.

I can use theorems about congruence transformations.

I can identify and perform dilations.

I can solve real-life problems involving scale factors and dilations.

I can perform similarity transformations.

I can describe similarity transformations.

I can prove that figures are similar.

Assignments:

Learning Activities: Do Now, Homework, Notes, Independent/Group activities

Formative: Exit Tickets (multiple times per week), Interim Assessments

Summative:
Summative Exam (12/15)
Summative Project (12/18-12/20) – Pattern Design Project

Common Core Standards:
 CCSS.MATH.CONTENT.HSG.CO.A.2
Represent transformations in the plane using, e.g., transparencies and geometry
software; describe transformations as functions that take points in the plane as inputs
and give other points as outputs. Compare transformations that preserve distance and
angle to those that do not (e.g., translation versus horizontal stretch).
CCSS.MATH.CONTENT.HSG.CO.A.3
Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations
and reflections that carry it onto itself.
CCSS.MATH.CONTENT.HSG.CO.A.4
Develop definitions of rotations, reflections, and translations in terms of angles,
circles, perpendicular lines, parallel lines, and line segments.
CCSS.MATH.CONTENT.HSG.CO.A.5
Given a geometric figure and a rotation, reflection, or translation, draw the
transformed figure using, e.g., graph paper, tracing paper, or geometry software.
Specify a sequence of transformations that will carry a given figure onto another.
CCSS.MATH.CONTENT.HSG.CO.B.6
Use geometric descriptions of rigid motions to transform figures and to predict the
effect of a given rigid motion on a given figure; given two figures, use the definition of
congruence in terms of rigid motions to decide if they are congruent.
CCSS.MATH.CONTENT.HSG.SRT.A.1.A

A dilation takes a line not passing through the center of the dilation to a parallel line,
and leaves a line passing through the center unchanged.

CCSS.MATH.CONTENT.HSG.SRT.A.1.BThe dilation of a line segment is longer or shorter
in the ratio given by the scale factor.

CCSS.MATH.CONTENT.HSG.SRT.A.2

Given two figures, use the definition of similarity in terms of similarity transformations
to decide if they are similar; explain using similarity transformations the meaning of
similarity for triangles as the equality of all corresponding pairs of angles and the
proportionality of all corresponding pairs of sides.
CCSS.MATH.CONTENT.HSG.MG.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).*

Unit 4: Congruent Triangles
December-January

Essential Question(s):
How are the angle measures of a triangle related?
Given two congruent triangles, how can you use rigid motions to map one triangle to the other triangle?
What can you conclude about two triangles when you know that two pairs of corresponding sides and the corresponding included angles are congruent?
What conjectures can you make about the side lengths and angle measures of an isosceles triangle?
What can you conclude about two triangles when you know the corresponding sides are congruent?
What information is sufficient to determine whether two triangles are congruent?
How can you use congruent triangles to make an indirect measurement?
How can you use a coordinate plane to write a proof?

Unit Learning Targets:
I can classify triangles by sides and angles.
I can find interior and exterior angle measures of triangles.
I can identify and use corresponding parts.
I can use the Third Angles Theorem.
I can use the Side-Angle Side (SAS) Congruence Theorem.
I can solve real-life problems.
I can use the Base Angles Theorem.
I can use Isosceles and equilateral triangles.
I can use the Side-Side-Side (SSS) Congruence Theorem.
I can use the Hypotenuse-Leg (HL) Congruence Theorem.
I can use the ASA and AAS Congruence Theorems.
I can use congruent triangles to find missing information

Assignments:
Learning Activities: Do Now, Homework, Notes, Independent/Group activities
Formative: Exit Tickets (multiple times per week), Interim Assessments
Summative:
Summative Exam (1/19)

Common Core Standards:
CCSS.MATH.CONTENT.HSG.CO.B.7
Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
CCSS.MATH.CONTENT.HSG.CO.B.8

Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.
CCSS.MATH.CONTENT.HSG.CO.C.10
Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*
CCSS.MATH.CONTENT.HSG.CO.D.13
Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
CCSS.MATH.CONTENT.HSG.MG.A.1
Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*
CCSS.MATH.CONTENT.HSG.MG.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).*
CCSS.MATH.CONTENT.HSG.SRT.B.5
Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
CCSS.MATH.CONTENT.HSG.GPE.B.4
Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point (0, 2).*

Classroom Rules

What to do…	What NOT to do…
- Arrive early or on time - Come prepared with required materials (notebook, pencil, folder) - Stay on task - Use respectful language when responding to or questioning your peers and teacher - Respect your space by cleaning up after yourself - Let the teacher know if you're having a bad day	- Speak when someone else is speaking - Wear headphones without permission - Use your cell phone - Come to class late without a pass - Leave the room without permission - Be out of uniform - Use inappropriate language - Disregard or insult the ideas of your peers

If you break a classroom rule, here is the order of what will happen:

1.) Redirect
2.) *Verbal Warning* or *Request an action*
3.) *One-on-one conversation* (either quietly in the classroom or out in the hallway)
4.) Call home and/or sent to Courtney or admin office.

Classroom behavior also impacts participation scores. Positive behavior will result in increased participation scores and inappropriate behavior will result in decreased participation scores. *Keep in mind that even after a one-on-one conversation,* **you are in control** *of whether you improve the daily score or allow it to be impacted by the mistake.*

Cell Phones
Schoolwide Policy: Cell phones are allowed in the school building but must be locked in your lockers. If you have your cell phone out during class, **depending on how you respond and react depends on what will happen with your cell phone. I will ask you to put it away one time. After that:**

I will either keep it until:
a.) The end of the class period then give it back to you before you leave
b.) The end of the day then give it back to you when you come get it from one of us at the end of the day
c.) Turn the cell phone into the admin office/dean office.
If kept with us, your cell phone will be securely locked in a closet to ensure its safety.

Uniform
You are expected to follow the school uniform policy in this class. If your shirt or pants are out of uniform (including hoodies), you will be sent to the admin offices to receive an appropriate uniform.

Headphones
Headphones **should not be visible** on your body. Headphones are ***not allowed*** in your ears, draped around your ears, and all the other possible ways to wear headphones. Sometimes you'll be allowed to listen to music when you work, but you will be given permission to do so.

If you are wearing headphones without permission:
1. You will be asked to put them away
2. You will submit them until the end of the class period
3. You will submit them until the end of the day
4. You will have to pick up your headphones from administration or Courtney

Bathroom/Water Fountain Policy
School-wide Policy: No students can use the bathroom during the first 10 minutes of class or last 10 minutes of class.

One person is allowed to leave the room at a time. After asking Colleen for permission to leave the room, take the bathroom pass with you. No students should ever leave the room without permission AND a pass.

Late to class
If you come to class late, have a pass. It is your responsibility to ask the adult for a pass. If you do not have a pass, you will be marked as an unexcused tardy. **Lateness will be logged and 3 unexcused lateness = call home.**

If you leave the classroom during class time without permission, you need to get a pass to re-enter without consequence. Leaving the room without permission will result in participation score deduction OR outreach to administration or your guardian, depending on the situation.

Absent to Class
Planned Absence = you know you are going to be absent (e.g. doctor's appointment)
    Make sure you let me know so I can give you the missing work.

Unplanned Absence = you are absent but did not anticipate or expect it (e.g. illness)
    Let me know so I can create a plan to help you make up the work you missed.

Regardless if your absence is planned or unplanned, **IT IS YOUR RESPONSIBILITY to come receive the work you missed that day in order to catch up.** Additionally, if you want one-on-one tutoring, teaching, etc. due to an absence, please set up an appointment with Colleen for before school, during lunch, or after school.

Makeup Work
If your absence is excused, you will be able to make up work with no penalty.

Late work without an eligible excuse:
    ● You may makeup work until we move onto the next unit
    ● Complete a late work slip to submit with your late work
    ● Your work will be deducted 20% for lateness

Grading Policy:
Teacher grade books must be updated each week on Thursdays. I will probably do it more than that but, at minimum, the grade book is updated once a week.

The grade book is divided into three sections:
    ● **Learning Activities (do now, daily activity, etc.)**
3-5 grade learning activities will be entered each week = roughly 60 to 80 grades per semester

    ● **Formative Assessments (quizzes, performance tasks)**
2-4 per unit = roughly 10 per semester

- **Summative Assessments (unit exams, major projects)**

1-2 per unit = roughly 6 per semester

❖ ***Portfolio***: *All students in this class are expected to complete the geometry portfolio in January. This involves the completion of a major assignment and roundtable discussions. The portfolio assessment grade will be considered a summative score for the course.*

Grading Scale:

A+	97-100	B+	87-89	C+	77-79
A	93-96	B	83-86	C	73-76
A-	90-92	B-	80-82	C-	65-73
				F	0-64

Plagiarism (copying) & Cheating

- Copying another student's work is plagiarism.
- Cheating on an assignment, quiz, test, etc. is not tolerated.

All of these acts are forbidden and consequences will be issued on a case-to-case basis by myself, and the admin team (Dana, Kristina, and/or Calee). Your parent and guardian will be notified as well.

Materials for Class
- Notebook
- Folder
- Pencils
- Calculator

Office Hours
T**hursdays from 3pm-4pm** or **by appointment**.
By appointment means that we agree upon a time to meet and then you come see me at that time to meet.

Teacher Contact Information
Colleen Burge
Cell Phone: (215)-350-7187
Feel free to text or call; however, please do not text or call after 8pm. Thanks!
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