

SECONDARY MATHEMATICS LESSON PLAN

TEACHER: Mr. Sinnott

SCHOOL: Connetquot High School

DATE: 3/26/2025

CLASS: Regents Geometry

TOPIC: Constructing angle bisectors and perpendicular points on/off a line.

Context for Learning	
Describe the class this lesson is designed for (e.g. type of class, any cooperating teacher requirements, curriculum or textbook, the overall number of students, students with IEPs/504s, ELLs, etc). The following lesson is designed for a Regents Geometry class. There are 21 students total, 7 of them being male and 14 of them being female. There are no ELL's or students with an IEP, although 3 students have a 504 plan for time and a half and ADHD. Note: Instruction material is the cooperating teachers.	
NYS Next Gen Mathematics Learning Standard(s)	
List the NYS Standard(s) addressed in this lesson. • Make, justify, and apply formal geometric constructions. (No coded standard)	
Lesson Objective(s)	
List at least three observable and measurable learning objectives. Your learning objectives should be rigorous and target different levels of Bloom's taxonomy. • SWBAT construct an angle bisector. • SWBAT construct a perpendicular line from a point on a line. • SWBAT construct a perpendicular line from a point off a line.	
Procedural Knowledge	Conceptual Understanding
What procedural knowledge will students develop during this lesson? - Students will know the steps of constructing an angle bisector. - Students will know the steps for constructing a perpendicular line for a point on the line and off the line.	What conceptual understanding will students develop during this lesson? - Students recognize what an angle bisector does upon construction. (i.e. forms two congruent angles) - Students recognize what kind of angle perpendicular lines form. - Students can determine which triangles when cut by an angle bisector form two congruent triangles.
Real-World Application	Mathematical Practices
What opportunities will students have to apply their knowledge to real-world problems during this lesson? - Floor plans in architecture. - Various engineering applications on CAD systems.	What mathematical practices will students engage in during this lesson? • Construct viable arguments and critique the reasoning of others. • Use appropriate tools strategically. • Reason abstractly and quantitatively.

Assessment

What informal and formal assessments will you include in **this lesson** that will evidence whether your students met your intended learning objectives?

- Walking around during a practice question/ during group discussion.
- Quick concept skill check question.
- Ask class by a show of hands if they feel confident about the material they learned.
- Exit ticket about how they'd rate today's lesson on a scale 0-10.

Instruction

Please give a detailed, step by step description of your lesson. This should be the BULK of your lesson plan. Be sure to list all materials needed for this lesson, including any links to slides, handouts, websites, etc.

Materials:

- Straight-edge
- Compass
- SmartBoard w/ Compass
-  constructions 1 2025.pdf (unit packet pgs 16-22)
- Pencil w/ eraser
- Scrap paper

Warm Up: (4 minutes) How will you get your students excited about the lesson?

- Lesson opens up by asking the class if they can think about some real world applications of constructions.
- Brief recap of constructions we learned prior and how they might show up today.

Discussion: (16 minutes)

- Lesson opens by asking students to turn and talk to brainstorm with their peers about real world applications of constructions.
- Before showing students a construction on an angle bisector, I'll ask students to talk in small groups of 3-4 to think about how we might construct an angle bisector.
- Similarly to the above bullet, I'll ask students the same for a perpendicular line drawn from a point on and off the line to get them thinking before I explicitly teach.

Instruction: (12 minutes)

- After each discussion, I will ask students what their groups came up with and then segway that into performing the actual construction. For example, after the discussion on angle bisectors, I will hear the responses that the groups came up with and then show them the construction of an angle bisector step-by-step.
- If time allows, I'd like to show the triangles cut by angle bisectors on Geogebra (may also be a discussion prompt).

Independent Practice (8 minutes):

- Once each construction is shown explicitly at the Smartboard, I will ask students to try an example on their own.

Cool Down/Closure: (2 minutes) How will you summarize and close out the lesson?

- To wrap up, I will recap every new construction that we learned today and then relate how our understanding of constructions is crucial for our understanding of proofs (which we will learn next). I will also ask the class to give me a thumbs up/down/side to relay how confident they felt learning today.

Questioning and Higher Order Thinking

What essential questions will you ask during this lesson? What questions will you ask that will require students to engage in higher order thinking? Your questions should target different levels of Bloom's taxonomy.

- What kind of angles do perpendicular bisectors form? What do they do to a line segment?
- When you hear the word "bisect", what comes to mind? Can we make a conjecture about what an angle bisector does?
- How might we construct an angle bisector?
- Any ideas for how we can construct a perpendicular line from a point on a line?
- Would this process be similar or different for a perpendicular line from a point off of the line?
- Can an angle bisector perfectly cut a triangle into two equal halves? Which kinds of triangles would this be true for?

Differentiation and Adaptations to Meet Individual Needs (IEPs/504s)

In what ways have you differentiated this lesson according to students' varied readiness levels, interests, and learning profiles? Be sure to describe **specific strategies** you have incorporated into **this lesson** for **this topic**. Strategies should specifically address students with IEPs/504s, ELLs, and other student groups.

- Pre annotated notes will be available to students with ADHD and anxiety.
- Color coding construction marks, points, lines, etc to make for a more clear presentation.
- The student with anxiety is placed up front and is often asked scaffolded questions before asking her a major question.
- Fast finishers will be offered the angle bisector of a triangle question early.

Academic Language

What reading, writing, and/or speaking tasks are included in this lesson? What key vocabulary terms and/or mathematical notation will students need to know and be able to use? What **supports** will you incorporate to help your students with the reading, writing, and/or speaking components of this lesson?

- Bisect
- Perpendicular
- Perpendicular bisector

- Angle bisector
- Equidistant
- Midpoint
- Right angle
- Isosceles
- Equilateral
- Congruent
- Obtuse
- Acute

Cooperative Learning

When will students be asked to talk to one another during this lesson? How will you support your students in engaging in true cooperation and discussion?

- Students will be asked to turn and talk during the warm up discussion on real life applications.
- Students will form small groups during each discussion for pre-constructions.

Technology Component

What technology have you incorporated into this lesson? In what ways does the technology substitute, augment, modify, or redefine (SAMR) your instruction?

- SmartBoard
- GeoGebra
- Notability