

Geometry Unit 1 Tools of Geometry

Unit Topic and Length (This is your focus for lesson planning for the next 18 days/):

This topic introduces students to various topics in the study of geometry. Students will define basic geometric figures; use visual representations to show undefined terms such as point, line and plane; be introduced to postulates; measure segments with and without a coordinate grid; use the midpoint and distance formulas; and use protractors to measure angles. (Omit 1.1)

Common Core Content Standards:

G-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.

G-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.

G-GPE.B.6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

N-Q.A.1 Reason quantitatively and use units to solve problems

Mathematical Practice Standards:

1. Making sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
5. Use appropriate tools strategically.
6. Attend to precision.

Student Actions

- Learn and accurately use geometric vocabulary and notation
- Work together to address Performance tasks
- Measure using compass, ruler, and protractor
- Note taking/organizers

Teacher Actions

- Provide list of vocabulary used in unit
- Visual examples to aid in understanding
- Providing knowledge for notes

BIG IDEAS/ENDURING UNDERSTANDINGS

Central concept, provides a real-world context, & continues through to reflection

Students will:

- define basic geometric figures.
- Undefined terms such as point, line, and plane will be shown with visual representations.
- Postulates, which will lead to proofs later

ESSENTIAL QUESTIONS

Focuses big idea on what is relevant to the student. Provides provocative questions that foster inquiry, understanding, and transfer of learning.

- What are the building blocks of geometry? (1-2/1-3)
- How can you describe the attributes of a segment or angle? (1-3/1-4/1-7/1-8)

<ul style="list-style-type: none"> ● Segments will be measured with and without coordinate grid. ● Use Midpoint and Distance Formulas. ● Protractors will be used to measure angles. 	
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MISCONCEPTIONS:

Students have common errors with the following:

- Measuring Segments: When measuring the length of a segment on a number line, students might forget how to subtract a negative number. complementary and supplementary angles. (page 3B)
- Distance Formula: When using the Distance Formula, students are often confused about which point is the first and which point is second. (page 3B)
- Complementary and Supplementary angles: Students often confuse complementary and supplementary angles, thinking that angle pairs that sum to 180° are complementary and angle pairs that sum to 90° are supplementary. (page 3B)

CONTENT (noun):

Students will be able to:

- Segments
- Rays
- Interception of planes
- Congruent points
- Midpoints
- Measuring
- Classifying angles
- Supplementary angles
- Complimentary angles
- Adjacent angles
- Coplaner
- Coliner points
- Perpendicular bisectors
- Circumference
- Perimeter
- Area

SKILLS (verb):

Prerequisite skills:

To be successful with this chapter, students should understand the following concepts:

- Squaring numbers
- Simplifying expressions
- Evaluating expressions
- Finding absolute value
- Solving equations

Skills:

- Identifying line segments
- Construct
- Measure

KEY TERMS / VOCABULARY:

include language notes, vocabulary documents, graphic organizers, and/or anchor charts

acute angles, adjacent angles, angle bisector, collinear points, complementary angles, congruent angles, congruent segments, coplanar, line, linear pair, obtuse angle, opposite rays, perpendicular bisector, perpendicular lines, plane, point, postulate, ray, right angle, segment, segment bisector, straight angles, supplementary angles, vertex of an angle, vertical angles.

ASSESSMENT EVIDENCE AND ACTIVITIES:

Initial Assessment: "Get Ready" page 1, questions 1-15. Asks questions on squaring numbers, simplifying expressions, evaluating expressions, finding absolute value, and solving equations.

FORMATIVE ASSESSMENT:

Short term assessments used gauge student understanding and adjust instruction

- Each lesson has a lesson check that has a "Do you know HOW?" and a "Do you UNDERSTAND?" set of questions. These are in the e-text and have a link.
- Study Guide Questions that go with the unit test in MathXL (Sunnyside Group Mock class)

SUMMATIVE ASSESSMENT

End of unit assessment of learning

20 question test in Math XL under Sunnysidegeom

Computer Scored Items

- Meeting Proficiency - 15 out of 20 points (75%)
- Developing Proficiency - 12 to 14 out of 20 points
- Insufficient Progress - 11 or fewer out of 20 points

Assessment Map

Lesson 1-2 Points, lines and planes (4 questions)

Lesson 1-3 Measuring Segments (2 questions)

Lesson 1-4 Measuring Angles (2 questions)

Lesson 1-5 Exploring Angle Pairs (2 questions)

Lesson 1-6 Basic Construction (3 questions)

Lesson 1-7 Midpoint and Distance in the Coordinate Plane (4 questions)

Lesson 1-8 Perimeter, Circumference and Area (3 questions)

Performance Task

This performance task is introduced on page 3, works on it after lesson 1-3 on page 26, after lesson 1-4 on page 33, after lesson 1-5 on page 40, and final “Pull it all Together” on page 69. We will not do the “on your own” for this unit. Want to build expectations this unit.

- Meeting Proficiency - 14 out of 18 points (75%)
- Developing Proficiency - 11 to 13 out of 18 points
- Insufficient Progress - 10 or fewer out of 18 points

Student recording sheet

Scoring Guide

LEARNING PLAN & ACTIVITIES:

Focus on mathematical practices

- Skip lesson 1-1 not in common core
- Lesson 1-2 Points, lines and planes (G-CO.A.1) two days; pg 17 Key Hw (11, 19, 38, 46, & 51)
- Lesson 1-3 Measuring Segments (G-CO.A.1 and G-GPE.B.6) one day; pg 24 Hw (13, 19, 35, 37, & 39)
- Lesson 1-4 Measuring Angles (G-CO.A.1) two days: pg 32 Hw (7, 19, 28, 29, & 32)
- Lesson 1-5 Exploring Angle Pairs (Prepares for (G-CO.A.1)) two days; pg 38 Hw (11, 17, 31, 38, & 39)
- Lesson 1-6 Basic Construction (G-CO.A.1 and G-CO.D.12) two days: pg 47 Hw (11, 15, 20, 25, & 26)
- Lesson 1-7 Midpoint and Distance in the Coordinate Plane (Prepares for G-GPE.B.4, G-GPE.B.7, and G-GPE.B.6) two days; pg 54 Hw (11, 27, 45, 46, & 47)
- Lesson 1-8 Perimeter, Circumference, and Area (N-Q.A.1) two days; pg 65 Hw (13, 15, 38, 39, & 55)

Notes about areas of emphasis and areas that might be an enrichment if time permits

- “Get Ready” for the chapter - Great for the students to check for Prerequisite skills
- Before Lesson 1-6 Concept Byte: Compass Designs prepares for G-CO.D.12
- After Lesson 1-6 Concept Byte: Exploring Constructions prepares for G-CO.D.12
- Before Lesson 1-8 Review Classifying Polygons prepares for G-MG.A.1
- After Lesson 1-8 Concept Byte: Comparing Perimeters and Areas prepares for G-MG.A.2

ADDITIONAL RESOURCES:

For teachers:

Measurement power point [Measure segments and angles](#)

Midpoint and Distance power point [Midpoint and Distance](#)

For students:

Khan academy [Points, lines, and planes](#)

Khan academy [Measuring segments](#)

Virtual nerd [measuring segments](#)

Khan academy [Exploring angle pairs](#)

Virtual nerd [Perimeter, Circumference, and Area](#)

