Educational Epiphany ™

Districtwide PLC Protocol for **Mathematics**

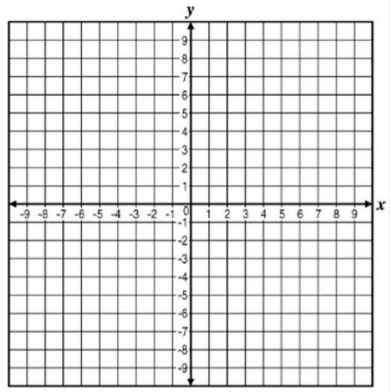
Teacher/Teacher Team: Mr. Samuel F.
Grade/Course: Geometry
Date: Week of August 14, 2023

#	Planning Question	Teacher/Teacher Team Response	
Geometry Coherence Tool: Access the foundational standards to make connections to previously taught skills during the lesson introduction.			
1	Which **state standard** is your lesson progression addressing?	**Lesson 1.1 – Points, Lines, and Planes** **G.CO.A.3** Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. **Foundational Standards:** 8.G.A.1	**Lesson 1.2 – Measuring and Constructing Segments** **G.CO.D.11** Perform formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). **Foundational Standards:** 7.G.A.2
2	What **mathematical concepts** are embedded in the state standard?	• Develop and give a student-generated definition of a rotation in terms of distances, angles, and arcs. • Develop and give a student-generated definition of a reflection in terms of distance, and parallel and perpendicular lines. • Develop and give a student-generated definition of a translation in terms of distance and parallel lines. • Generate precise definitions of rotations, reflections, and translations using appropriate mathematical vocabulary such that they are unique to the given transformation.	• Bisect an angle using a compass. • Construct perpendicular lines, including the perpendicular bisector of a line segment. • Construct a line parallel to a given line through a point not on the line. • Use the virtual compass and line tool in dynamic geometry software to construct various geometric objects. • Develop methods using a variety of appropriate tools (compass, straightedge, string, reflective device, paper folding, etc.) to perform precise geometric constructions. • Explain informally why and how these construction methods work. • Understand the importance of precision in these constructions and attend to precision when performing geometric constructions.
3	What teacher **knowledge**, **reminders**, **and misconceptions** are assumed in the standard?	**Knowledge:** • One of the most difficult aspects of this standard for students is the level of precision required to generate definitions for rotations, reflections, and translations. Therefore, students should have ample time to experiment with transformations as they develop these definitions. • Hands-on experiments can involve using transparencies or tracing paper to visualize and describe the movements of specific angles or points during each transformation. • Students should also be challenged to use a straightedge and a compass to perform transformations (an application of G.CO.D.11) to help students focus in on what specific movements	**Knowledge:** • Students must be allowed to experiment with the construction tools to develop their own method to perform these constructions rather than just be given specific instructions to follow. • They will need a basic understanding of the expected outcome. However, it is through the process of the construction and particularly discovering the method that students will develop a deeper understanding of the properties of these objects. • Students will want to use a ruler to bisect a line segment or a protractor to bisect an angle, but when performing these formal constructions, students should not use tools that measure. Instead, they need to focus on the properties of the figures in the construction.

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

		occur during each transformation and develop more precise definitions. • Students should be encouraged to use the properties of each transformation and focus on the relationships that exist between the lines and angles in the pre-image and the lines and angles in the resulting image. Student discourse should focus on observations of the movements that occur during each transformation and measurements taken between the pre-image and resulting image. • They should use appropriate tools such as rulers, protractors, compasses, and/or dynamic geometry software to precisely measure the distances and angles and construct any arcs which occur during the transformations. They may also use the coordinates on a graph to verify geometric relationships algebraically (G.GPE.A cluster). **Reminders:** • In grade 8, students explored the effect of transformations on two-dimensional figures (8.G.A.1). In Geometry, students continue to explore transformations both on and off the coordinate plane as they experiment with transformations in this cluster of standards. • It is important that students be allowed adequate time to explore transformations so that they have the appropriate conceptual understanding that allows them to develop the definitions on their own. • It is vital that students attend to precision when writing their definitions to ensure they are accurate and unique to the given transformation. **Misconceptions:** • Students may struggle with precision in this standard. • Counterexamples may be needed to support students.	• Likewise, when students are using dynamic geometry software, they should avoid using automatic commands for bisecting and performing other constructions and use the virtual compass and line tool instead. **Reminders:** • In grade 7 (7.G.A cluster), students begin to experiment with mathematical tools to construct geometric figures and explore their relationships. In this course, students learn to use these and additional tools to perform constructions to explore and demonstrate geometric properties and help students visualize geometric theorems. • It is important that students understand that constructions serve a purpose. Therefore, pairing this standard with others throughout this course, including G.CO.A.3 and G.CO.D.12, will help students see the why behind these valuable skills. • Requiring students to perform constructions by hand will help them discover the need for precision, which is essential in performing these constructions or they will not work. • It is important that students be required to show their understanding by informally explaining what their chosen method does and why it works. **Misconceptions:** • Ensure students understand that their constructions must work in every situation in order to avoid misconceptions.
4	What **objective(s)** must be taught? In what order? Why?	**PBO:** SWBAT use precise mathematical vocabulary IOT generate definitions of rotations, reflections, and translations. **Lesson objectives**: • I can describe a point, a line, and a plane. • I can define and name segments and rays. • I can sketch intersections of lines and planes.	**PBO:** SWBAT use a variety of tools and methods (compass, straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.) IOT perform formal geometric constructions. **Lesson objectives:** • I can measure a line segment. • I can copy a line segment. • I can explain and use the Segment Addition Postulate.
5	What **academic language** must be taught before the teacher models for students? How will the academic	**Academic Language:** • **Use** – take, hold, or apply • **Precise** – the quality, condition, or fact of being exact and accurate • **Generate** – to produce; give or supply • **Definition** – a statement of the exact meaning of a word	**Academic Language:** • **Use** – take, hold, or apply • **Variety** – more than one; several • **Method** – a step of a procedure of an experiment • **Compass** – a tool used for drawing and drafting to create arcs, circles or other geometric figures

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

	language be **taught and assessed**?	• **Rotation** – a transformation that moves every point of a preimage through a specified angle and direction about a fixed point • **Reflection** – a transformation of a figure that creates a mirror image or "flips" over a line • **Translation** – a transformation that slides each point of a figure the same distance in the same direction **Instructional Practice 2:** Strategies used to teach unfamiliar words will include: • 30 – 30 – 30 (common math-related word parts in the text, problem or objective) • Point of Use Annotation of the Performance Based Objective • Universal Language of Literacy • Word and Definition Walls • Word Parts • Context Clues • Point of Use Annotation of the Text (in Real Time)	• **Perform** – carry out, accomplish, or fulfill • **Formal** – characterized by precise respect for form • **Geometric** – related to geometry • **Construction** – a geometric figure made with only a straightedge and compass. • **Instructional Practice 2:** Strategies used to teach unfamiliar words will include: • 30 – 30 – 30 (common math-related word parts in the text, problem or objective) • Point of Use Annotation of Performance-Based Objective • Universal Language of Literacy • Word-and-Definition Word Walls • Word Parts • Context Clues • Point of Use Annotation of the Texts (In Real Time)
6	What **activities/practice problems** are you planning to use for **Launch the Lesson, Explore It, Examples & Self-Assessment, and Practice** portions of the lesson? What did you learn from working the problems **in advance** of using them in class with students?	**Monday 08/014/2023** **Do Now 08/14/2023** **5 minutes** **Name:** _____ **Period** ____ Warm Up. (Show your steps to receive full credit.) 1. Solve the formula $A = 4s^2$ for s. 2. Find the value of s given $A = 49$. **Agenda** **2 minutes** • Using undefined terms – points, lines, and planes • Naming points, lines, and plains • Practice & Self-assessment **PBO Annotations/Word Wall** **5 minutes**	**Wednesday 08/16/2023** **Do Now 08/16/2023** **Name:** _____ **Period** ____ 1. Plot the point in a coordinate plane. $A(8, -5)$ 2. Plot the point in a coordinate plane. $G(6, 4)$  **Agenda** **2 minutes** • Examples – straightedge/tools that can be used to measure or copy a line • Using the Ruler Postulate • Using the Segment Addition Postulate **PBO Annotations/Word Wall** **5 minutes**

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

Laurie's Notes

5 minutes

Lesson 1.1 Points, Lines, and Planes

Launch the Lesson

- Write two lists of words on the board—those beginning with *geo-* and those ending with *-metry*.
  - geothermal, geopolitics, geophysical, geology, geoid, geometry
  - asymmetry, symmetry, trigonometry, optometry, densitometry, geometry
- Ask students to discuss the two lists with partners, specifically to decide what the prefix *geo-* and the suffix *-metry* mean.
- The prefix *geo-* is derived from the Greek word *gē*, which means "earth."
- The suffix *-metry* means "the process or science of measuring." It is derived from the Greek word *metria*, which means "to measure."

Technology Integration Suggestions: Big Ideas Platform

- Dynamic Classroom
- Resources: Digital Example Videos
- Resources: Everyday Connections Video Series
- Lesson Example PowerPoints
- Resources: Explorations (Dynamic)

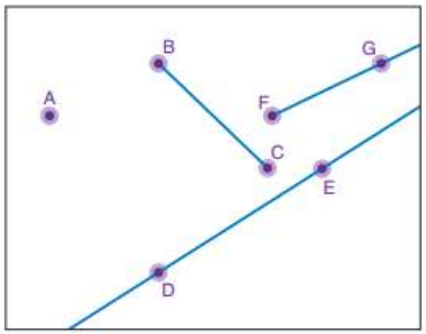
Technology Integration Resources and Suggestions, please click here.

Big Ideas Geometry

Explore It! Using Technology – Points, Lines, and Planes

Work with a partner.

a. Use technology to draw several points. Also, draw some lines, line segments, and rays.



b. How would you describe a line? a point?

c. What is the difference between a line and a line segment? a line and a ray?

d. Write your own definitions for a line segment and a ray, based on how they relate to a line.

Laurie's Notes

Launch the Lesson

- At the front of the room, display four items, such as a standard paper clip, an unsharpened pencil, a marker, and an empty one-liter bottle.
- Divide the class into four groups. Assign one of the items to each group and ask them to estimate the length of one classroom wall using their nonstandard unit.
- Collect and record the estimates. Have students vote to decide which estimate is best.
- ? "Is it possible to measure the wall using any of the four items as the unit of measure?" Yes
- It would take quite a bit of time to actually use the items to measure the wall. So, find the measurements in advance, using the efficient method of measuring the wall and items in inches and performing conversions. Share the results with students.

Technology Integration Suggestions: Big Ideas Platform

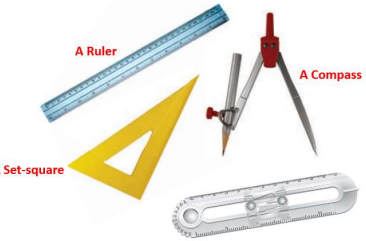
- Dynamic Classroom
- Resources: Digital Example Videos
- Resources: Everyday Connections Video Series
- Lesson Example PowerPoints
- Resources: Explorations (Dynamic)

For technology integration resources and suggestions, please click here.

EXPLORE IT! Measuring and Copying Line Segments

TENNESSEE MATH STANDARDS
G.CO.D.11

Work with a partner. A *straightedge* is a tool that you can use to draw a straight line. An example of a straightedge is a ruler. A *compass* is a tool that you can use to draw circles and arcs, and copy segments. Choose from these tools to complete the following tasks.



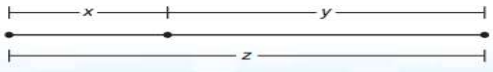
a. Find the length of the line segment.

b. MP CHOOSE TOOLS Make a copy of the line segment in part (a). Explain your process.

c. Draw a different line segment that has a length between 4 centimeters and 10 centimeters.

d. Make a copy of the line segment in part (c) using a different method than you used in part (b). Explain your process.

e. Find the lengths x, y, and z. What do you notice?



Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

Feedback:

- The data from the Do Now will allow the teacher to know what prior knowledge the students already have about points, lines, and planes.
- Students will have the opportunity to improve upon language use, relate their findings from the derivation of Geometry "geo" and "metry" and begin to explore the concepts and what to expect as content in geometry.
- Students become familiar with describing points, lines, and planes and relate the terms to shapes or objects they know and interact with at home and in the classroom. The students will make connections using pictures and compare points, lines, and planes with terms that have precise definitions.
- With technology, the students will be able to visualize and name points, lines, and segments; and will see the difference between lines, rays, and segments with terminal points and endpoints respectively.

Using Undefined Terms

In geometry, the words *point*, *line*, and *plane* are **undefined terms**. These words do not have formal definitions, but there is agreement about what they mean.

KEY IDEA

Undefined Terms: Point, Line, and Plane

Point A **point** has no dimension. A dot represents a point.

poir

Line A **line** has one dimension. It is represented by a line with two arrowheads, but it extends without end.

Through any two points, there is exactly one line. You can use any two points on a line to name it.

line ℓ, lir
or line B,

Plane A **plane** has two dimensions. It is represented by a shape that looks like a floor or a wall, but it extends without end.

Through any three points not on the same line, there is exactly one plane. You can use three points that are not all on the same line to name a plane.

plane M, o

Collinear points are points that lie on the same line. **Coplanar points** are lie in the same plane.

Using the Ruler Postulate

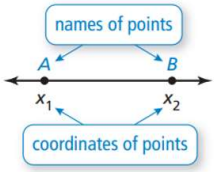
GO DIGITAL

In geometry, a rule that is accepted without proof is called a **postulate** or an **axiom**. A rule that can be proved is called a *theorem*, as you will see later. Postulate 1.1 shows how to find the distance between two points on a line.

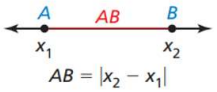
POSTULATE

1.1 Ruler Postulate

The points on a line can be matched one to one with the real numbers. The real number that corresponds to a point is the **coordinate** of the point.



The **distance** between points A and B, written as AB, is the absolute value of the difference of the coordinates of A and B.



$AB = |x_2 - x_1|$

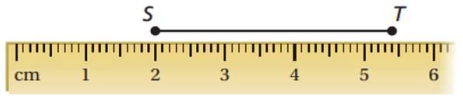
EXAMPLE 1 Using the Ruler Postulate

WATCH

Measure the length of $\overline{ST}$ to the nearest tenth of a centimeter.

SOLUTION

Align one mark of a metric ruler with S. Then estimate the coordinate of T. For example, when you align S with 2, T appears to align with 5.4.



$ST = |5.4 - 2| = 3.4$ Ruler Postulate

▶ So, the length of $\overline{ST}$ is about 3.4 centimeters.

SELF-ASSESSMENT 1 I do not understand. 2 I can do it with help. 3 I can do it on my own. 4 I can

Use a ruler to measure the length of the segment to the nearest $\frac{1}{8}$ inch.

1. M N

2. P

3. U V

4. W

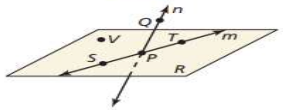
5. **WRITING** Explain how $\overline{XY}$ and XY are different.

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

EXAMPLE 1 Naming Points, Lines, and Planes

a. Give two other names for $\overleftrightarrow{PQ}$ and plane R.

b. Name three points that are collinear. Name four points that are coplanar.



SOLUTION

a. Other names for $\overleftrightarrow{PQ}$ are $\overleftrightarrow{QP}$ and line n. Other names for plane R are plane SVT and plane PTV.

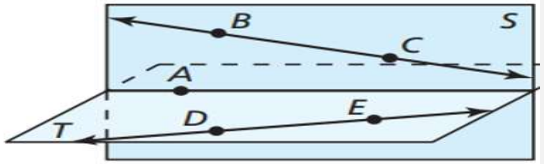
b. Points S, P, and T lie on the same line, so they are collinear. Points S, P, T, and V lie in the same plane, so they are coplanar.

SELF-ASSESSMENT 1 I do not understand. 2 I can do it with help. 3

1. Use the diagram in Example 1. Give two other names for $\overleftrightarrow{ST}$. Name a po *not* coplanar with points Q, S, and T.
2. **WRITING** Compare collinear points and coplanar points.

1.1 Practice

In Exercises 1–4, use the diagram.



1. Name four points.
2. Name two lines.
3. Name the plane that contains points A, E
4. Name the plane that contains points A, E

Exit Ticket

7. Name three points that are collinear. Then name a fourth point that is not collinear with these three points.
8. Name a point that is not coplanar with R, S, and T.

Homework

KEY IDEA

Congruent Segments

Line segments that have the same length are called **congruent segments**. You can say "the length of $\overline{AB}$ is equal to the length of $\overline{CD}$," or you can say "$\overline{AB}$ *is congruent to* $\overline{CD}$." The symbol $\cong$ means "is congruent to."

Lengths are equal. $AB = CD$ ↑ "is equal to"

Segments are congruent. $\overline{AB} \cong \overline{CD}$ ↑ "is congruent to"

READING

In the diagram, the red tick marks indicate $\overline{AB} \cong \overline{CD}$. When there is more than one pair of congruent segments, use multiple tick marks.

EXAMPLE 2 Comparing Segments for Congruence

Plot $J(-3, 4)$, $K(2, 4)$, $L(1, 3)$, and $M(1, -2)$ in a coordinate plane. Then determine whether $\overline{JK}$ and $\overline{LM}$ are congruent.

SOLUTION

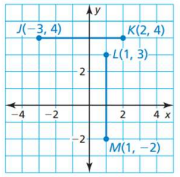
Plot the points, as shown. To find the length of a horizontal segment, find the absolute value of the difference of the x-coordinates of the endpoints.

$JK = |2 - (-3)| = 5$ Ruler Postulate

To find the length of a vertical segment, find the absolute value of the difference of the y-coordinates of the endpoints.

$LM = |-2 - 3| = 5$ Ruler Postulate

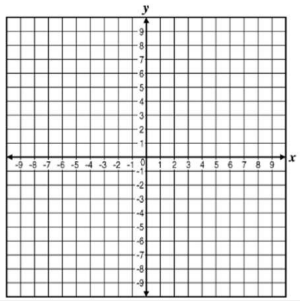
▶ $\overline{JK}$ and $\overline{LM}$ have the same length. So, $\overline{JK} \cong \overline{LM}$.



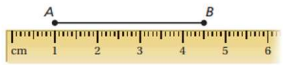
1.2 Practice WITH CalcChat® AND CalcView®

7. $A(-4, 5)$, $B(-4, 8)$, $C(2, -3)$, $D(2, 0)$

8. $A(6, -1)$, $B(1, -1)$, $C(2, -3)$, $D(4, -3)$



ERROR ANALYSIS In Exercises 21 and 22, describe and correct the error in finding the length of $\overline{AB}$.

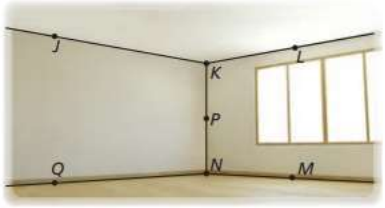


21. ✗ $AB = 1 - 4.5 = -3.5$

22. ✗ $AB = |1 + 4.5| = 5.5$

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

MODELING REAL LIFE **In Exercises 33 and 34, use the diagram.** *Example 5*



33. Name two points that are collinear with P.

34. Name two planes that contain J.

35. **MODELING REAL LIFE** When two trucks traveling in different directions approach an intersection at the same time, one of the trucks must change its speed or direction to avoid a collision. Two airplanes, however, can travel in different directions and cross paths without colliding. Explain how this is possible.

36. **CRITICAL THINKING** Given two points on a line and a third point not on the line, is it possible to draw a plane that includes the line and the third point? Explain your reasoning.

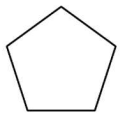
Tuesday 08/15/2023

Do Now 08/15/2023 **5 minutes**

Name: _____ **Period** ____

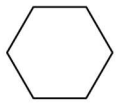
Warm Up

1. Name the polygon.



_____

2. Name the polygon.

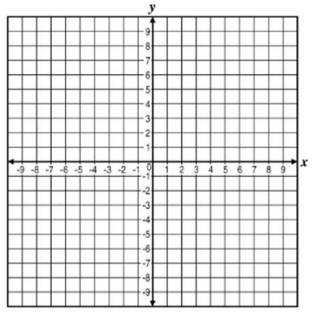


_____

Exit Ticket

Determine whether $\overline{AB}$ and $\overline{CD}$ are congruent.

10. $A(6, -8)$, $B(6, 1)$, $C(7, -2)$, $D(-2, -2)$



Thursday 08/16/2023

Do Now 08/17/2023 **5 minutes**

Name: _____ **Period** ____

Simplify the following.

1. $|-3 - 5| =$

2. $|-4 - (-7)| =$

Agenda 2 minutes

- The Segment Addition Postulate
- Using the Segment Addition Postulate to Solve Problems

PBO Annotations/Word Wall **5 Minutes**

Launch the Lesson

Laurie's Notes

- "What does the verb *postulate* mean?" Answers will vary. The definition is to claim or assume the existence or truth of, especially as a basis for reasoning or arguing.
- "What does the noun *postulate* mean?" Answers will vary. The general definition is a statement that is taken as self-evident. Explain to students that in geometry a postulate is a rule that is accepted without proof.
- Write and discuss the Ruler Postulate. I like to demonstrate the Ruler Postulate by measuring the length of a segment using a broken ruler, meaning I cannot start at 0.
- Discuss the difference between AB and $\overline{AB}$.
- If you are confident that students can accurately use a ruler to measure, you may want to skip Example 1 and Self-Assessment Exercises 1–5.

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

Agenda 2 minutes

- Review – Points, Lines, and Planes (describing, representing, naming)
- Explore It! Points, lines, planes, segments, rays
- Using defined terms – Segment and Ray
- Practice & Self-assessment

PBO Annotations

Review/Prior Knowledge – Points, Lines, and planes **3 mins**

Launch the Lesson:

Laurie's Notes **5 minutes**

- Introduce the *undefined terms: point, line,* and *plane.*
- ? "How many lines can be drawn through one point?" infinitely many "How many lines can be drawn through two points?" one
- ? "How many planes can be drawn through one point?" infinitely many "How many planes can be drawn through two points?" infinitely many "How many planes can be drawn through three points not on the same line?" one
- Use these questions to help students visualize geometric relationships and understand the conditions that are necessary for establishing a line and a plane.

Using Defined Terms

In geometry, terms that can be described using known words such as *point* or *line* are called **defined terms**.

KEY IDEA

Defined Terms: Segment and Ray

The diagrams below use the points A and B and parts of the line AB.

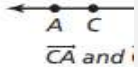
Segment A **line segment**, or **segment**, is a part of a line that consists of two **endpoints** and all points on the line between the endpoints.

segment A
segment B

Ray A **ray** is a part of a line that consists of an endpoint and all points on the line on one side of the endpoint.

ray A

Opposite Rays Two rays that have the same endpoint and form a line are **opposite rays**.



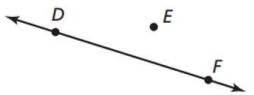
$\overrightarrow{CA}$ and
opposit

Using the Segment Addition Postulate

GO DIGITAL

When three points are collinear, you can say that one point is **between** the other two.

Point B is between points A and C.



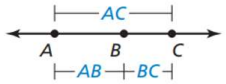
Point E is not between points D and F.

POSTULATE

1.2 Segment Addition Postulate

If B is between A and C, then $AB + BC = AC$.

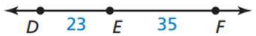
If $AB + BC = AC$, then B is between A and C.



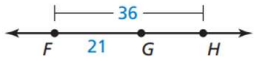
EXAMPLE 3 Using the Segment Addition Postulate

WATCH

a. Find DF.



b. Find GH.



SOLUTION

a. Use the Segment Addition Postulate to write an equation. Then solve the equation to find DF.

$DF = DE + EF$ Segment Addition Postulate

$DF = 23 + 35$ Substitute 23 for DE and 35 for EF.

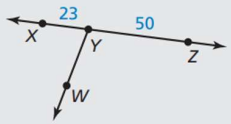
$DF = 58$ Add.

b. Use the Segment Addition Postulate to write an equation. Then solve the equation to find GH.

SELF-ASSESSMENT 1 I do not understand. 2 I can do it with help. 3 I can do it on my own. 4 I can teach someone else.

6. Plot $A(-2, 4)$, $B(3, 4)$, $C(0, 2)$, and $D(0, -2)$ in a coordinate plane. Then determine whether $\overline{AB}$ and $\overline{CD}$ are congruent.

Use the diagram.



7. Find XZ.

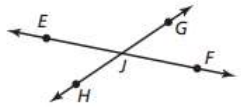
8. In the diagram, $WY = 30$. Can you use the Segment Addition Postulate to find the distance between points W and Z? Explain your reasoning.

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

EXAMPLE 2 Naming Segments, Rays, and Opposite Rays

a. Give another name for $\overline{GH}$.

b. Name all rays with endpoint J. Which of these rays are opposite rays?



SOLUTION

a. Another name for $\overline{GH}$ is $\overline{HG}$.

b. The rays with endpoint J are $\overrightarrow{JE}$, $\overrightarrow{JG}$, $\overrightarrow{JF}$, and $\overrightarrow{JH}$. The pairs of opposite rays with endpoint J are $\overrightarrow{JE}$ and $\overrightarrow{JF}$, and $\overrightarrow{JG}$ and $\overrightarrow{JH}$.

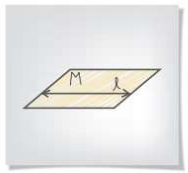
EXAMPLE 3 Sketching Intersections of Lines and Planes

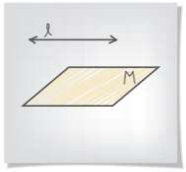
a. Sketch a plane and a line that is in the plane.

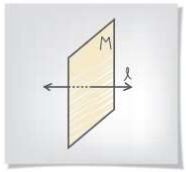
b. Sketch a plane and a line that does not intersect the plane.

c. Sketch a plane and a line that intersects the plane at a point.

SOLUTION

a. 

b. 

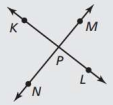
c. 

SELF-ASSESSMENT 1 I do not understand. 2 I can do it with help. 3 I can do it on my own. 4 I can teach someone else.

Use the diagram.

3. Give another name for $\overline{KL}$.

4. Are $\overrightarrow{KP}$ and $\overrightarrow{PK}$ the same ray? Are $\overrightarrow{NP}$ and $\overrightarrow{NM}$ the same ray? Explain.



1.1 Practice WITH CalcChat® AND CalcView®

In Exercises 9–14, use the diagram. Example 2

9. What is another name for $\overline{BD}$?

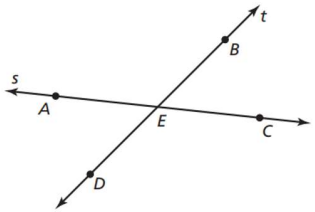
10. What is another name for $\overline{AC}$?

11. What is another name for $\overrightarrow{AE}$?

12. Name all rays with endpoint E.

13. Name two pairs of opposite rays.

14. Name one pair of rays that are not opposite rays.

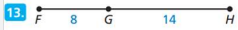


Closure: Two students will give a summary of the lesson defining rays and line segments precisely and give examples of each.

Exit Ticket

1.2 Practice WITH CalcChat® AND CalcView®

In Exercises 13–20, find *FH*. Example 3

13. 

14. 

17. 

18. 

33. **CONNECTING CONCEPTS** In the diagram, $\overline{AB} \cong \overline{BC}$, $\overline{AC} \cong \overline{CD}$, and $AD = 12$. Find the lengths of all segments in the diagram. You choose one of the segments at random. What is the probability that the length of the segment is greater than 3? Explain your reasoning.

31. **MP REASONING** The round-trip distance between City X and City Y is 647 miles. A national park is between City X and City Y, and is 27 miles from City X. Find the round-trip distance between the national park and City Y. Justify your answer.

Closure

- What is a postulate?
- Mention two postulates learned in this lesson.

Exit Ticket

23. **COLLEGE PREP** Which expression does *not* equal 10?

Ⓐ $AC + CB$ Ⓑ $BA - CA$

Ⓒ AB Ⓓ $CA + BC$

Homework

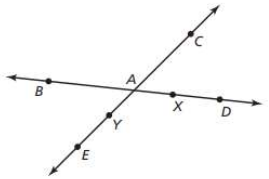
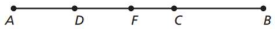
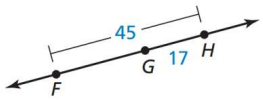
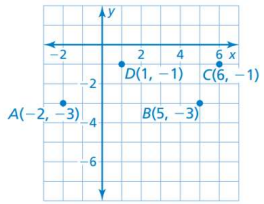
28. **CONNECTING CONCEPTS** Point S is between points R and T on $\overline{RT}$. Use the information to write an equation in terms of x. Then solve the equation and find RS, ST, and RT.

a. $RS = 2x + 10$, $ST = x - 4$, $RT = 21$

b. $RS = 4x - 9$, $ST = 19$, $RT = 8x - 14$

29. **MAKING AN ARGUMENT** Your friend says that when measuring with a ruler, you must always line up objects at the zero on the ruler. Is your friend correct? Explain your reasoning.

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

		ERROR ANALYSIS In Exercises 15 and 16, describe and correct the error in naming opposite rays in the diagram.  15. ✗ $\overrightarrow{AD}$ and $\overrightarrow{AC}$ are opposite rays. 16. ✗ $\overrightarrow{YC}$ and $\overrightarrow{YE}$ are opposite rays. **Homework** **CRITICAL THINKING** In Exercises 51–58, complete the statement with *always*, *sometimes*, or *never*. Explain your reasoning. 51. A line _____ has endpoints. 52. A line and a point _____ intersect. 53. A plane and a point _____ intersect. 54. Two planes _____ intersect in a line. 55. Two points _____ determine a line. 56. Any three points _____ determine a plane. 57. Any three points not on the same line _____ determine a plane. 58. Two lines that are not parallel _____ intersect.	**32. ABSTRACT REASONING** The points (a, b) and (c, b) form a segment, and the points (d, e) and (d, f) form a segment. The segments are congruent. Write an equation that represents the relationship among the variables. Are any of the variables *not* used in the equation? Explain. **33. CONNECTING CONCEPTS** In the diagram, $\overline{AB} \cong \overline{BC}$, $\overline{AC} \cong \overline{CD}$, and $AD = 12$. Find the lengths of all segments in the diagram. You choose one of the segments at random. What is the probability that the length of the segment is greater than 3? Explain your reasoning.  **34. CRITICAL THINKING** Points A, B, and C lie on a line where $AB = 35$ and $AC = 93$. What are the possible values of BC? **35. DIG DEEPER** Is it possible to use the Segment Addition Postulate to show that $FB > CB$? that $AC > DB$? Explain your reasoning.  **36. THOUGHT PROVOKING** Is it possible to design a table where no two legs have the same length? Assume that the endpoints of the legs (that are not attached to the table) must all lie in the same plane. Include a diagram with your answer. **Friday 08/18/2023** • Assessment • Homework Completion **Mini-Assessment** 1. Measure the length of $\overline{ST}$ to the nearest tenth of a centimeter.  2. Use a compass and a straightedge to construct a copy of the segment in Exercise 1. 4. Find FG.  3. Plot $A(-2, -3)$, $B(5, -3)$, $C(6, -1)$, and $D(1, -1)$ in a coordinate plane. Then determine whether $\overline{AB}$ and $\overline{CD}$ are congruent. 
7	What **manipulatives** might be integrated into the lesson? What did you learn from using the manipulatives **in advance** of using them in class with students?	Compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, protractor, etc. **Reference:** Interactive Manipulatives • Didax Virtual Manipulatives	Compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, protractor, etc. **Reference:** Interactive Manipulatives • Didax Virtual Manipulatives
8	What **graphic organizer(s)** might support students'	**Reference:** • Graphic Organizer Templates • Google Drawing Graphic Organizers	**Reference:** • Graphic Organizer Templates • Google Drawing Graphic Organizers

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.

	conceptual understanding of the process outlined by the performance-based objective(s)?	• Teacher Vision	• Teacher Vision

Additional supporting and prerequisites standards are indicated on the curriculum map. In addition, this is not a comprehensive breakdown of each lesson for this weekly PLC protocol guide.