

Notes and Class Participation

Directions: Print this handout. Use this handout to take notes as you read pages 659 – 666, watch the lecture video, and view the PowerPoint slides. After you complete this handout, scan pages 2 – 9, and attach it to Lesson 1 Class Participation Assignment. Hyperlinks can be found on page 10.

[Section 11.1 Lecture Video](#)



[PowerPoint Slides](#)



History of Geometry

Write about the contributions of the ancient Egyptians in geometry.

Write about the contributions of the ancient Greeks in geometry.

- What are the Greek words that form the components of the English word Geometry?
- Author of the Geometry book *Elements* _____ (c. _____ BC)

Geometry Common Core Recommendations for the following grades

- Kindergarten

- Grades 1-3

- Grade 4

- Grade 5

History of Geometry Education

Who were the Dutch educators in the 1950s that contributed to Geometry education?

Write the Five Levels of Geometric Reasoning Based on the research work of Dutch educators Dina and Pierre van Hiele and expanded by Americans Douglas Clements and Michael Battista.

1. -
2. -
3. -
4. -
5. -

Undefined Terms

Watch this [video](#) on undefined terms.



Point

- A point has no size.
- A point is a location.

• Notation/Symbol:

• Real world example:

Line

- A line has no thickness.
- A line extends without end in opposite directions.
- A line is determined (uniquely) by 2 points

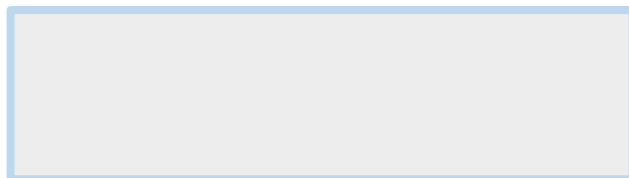
• Notation/Symbol:

• Real world example:

Terms Related to Points and Lines

Collinear Points

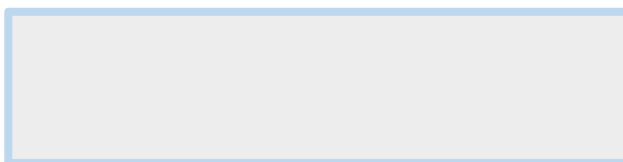
- Define *collinear points*.



- Draw an example of three or more collinear points.
- What does it mean if a point is “between” two points?

Non-collinear points

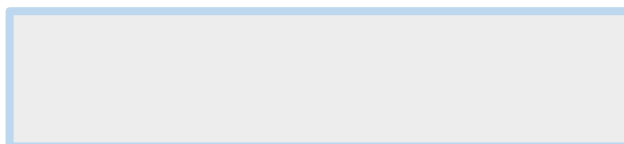
- Define *non-collinear points*.



- Draw an example of non-collinear points.

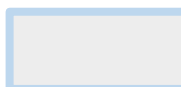
Line Segment/Closed Segment

- Define *line segment/closed segment*.



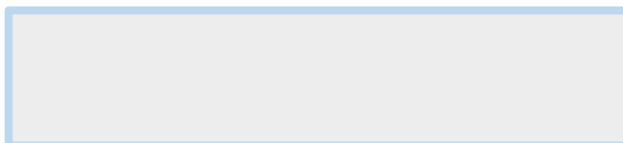
- Draw an example of a line segment.

- What notation is used to write the “line segment AB?”



Half-Open Segment

- Define *half-open segment*.



- Draw an example of a half-open segment.

- What notation is used to write the “half-open segment between A and B including A?”



Open Segment

- Define *open segment*.

- Draw an example of an open segment.

- What notation is used to write the “line segment between A and B?”

Ray

- Define *ray*.

- Draw an example of a ray.

- What notation is used to write the “ray AB?”

Half-line

- Define *half-line*.

- Draw an example of a half-line.

- What notation is used to write the “half-line AB?”



Now Try This 1 (page 662)

Watch a [video](#) about Union and Intersection of sets.

If we think of lines, segments, and rays as sets of points, find:

a. $\overline{AB} \cup \overline{BA}$

b. $\overline{AB} \cap \overline{BA}$

c. $\vec{AB} \cup \vec{BA}$

d. $\vec{AB} \cup \vec{AB}$

e. $\vec{AB} \cap \vec{AB}$

f. $\vec{AB} \cap \vec{BA}$

Building Blocks of Mathematics

- What is an *axiom*?
- What is a *theorem*?
- What is a *definition*?

Non-Collinear Points and Lines Problem

Given n points, no three of which are collinear, how many lines are determined by pairs of these points?

First, fill in this chart:

Number of noncollinear points	Picture of the points with lines drawn connecting 2 points at a time	Total number of lines
3		
4		
5		
6		

Read *Problem Solving* on page **664**. Understand the formula derived from the chart that you created. Make sure that your chart has the same information shown in the solution.

1. Write in your own words what the formula means in the *Looking Back* section of the problem.

2. Given 12 points, no three of which are collinear, how many lines are determined by pairs of these points?

Another Undefined Term

Watch this [video](#) about another undefined term.



Plane

- A plane has no thickness.
- A plane extends indefinitely.
- A plane is determined by 3 noncollinear points.

- Notation/Symbol:

- Real world example:

Terms Related to Planes

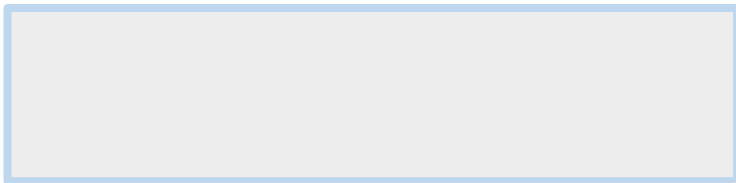
Coplanar Points

- Define *coplanar points*.

- Draw an example of four coplanar points.

Non-Coplanar Points

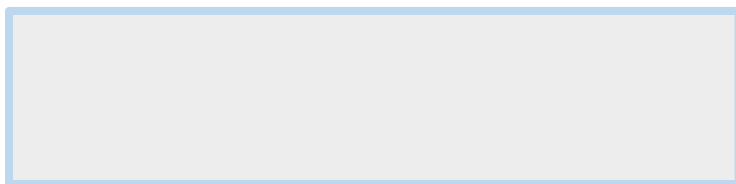
- Define *non-coplanar points*.



- Draw an example of four non-coplanar points.

Coplanar Lines

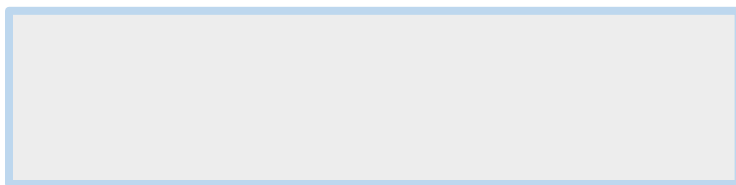
- Define *coplanar lines*.



- Draw an example of three coplanar lines.

Intersecting Lines

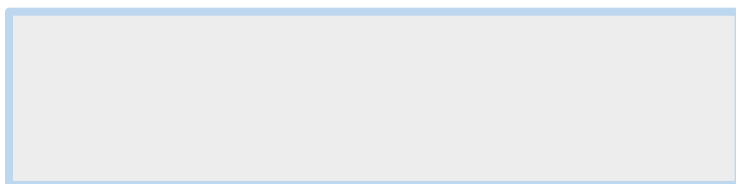
- Define *intersecting lines*.



- Draw an example of intersecting lines.

Skew Lines

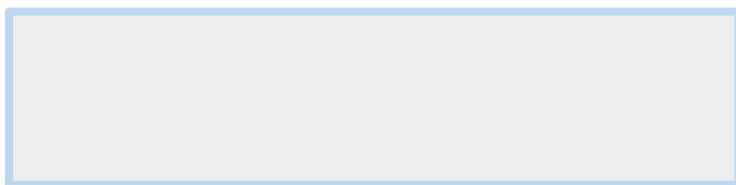
- Define *skew lines*.



- Draw an example of skew lines.

Concurrent Lines

- Define *concurrent lines*



- Draw an example of three concurrent lines.

Parallel Lines

- Define *parallel lines*.
- What notation/symbol is used to say that line m is parallel to line n ?

- Draw an example of two parallel lines.

Planes that intersect

- Define *planes that intersect*.
- Draw an example of two plane that intersect.

Parallel Planes

- Define *parallel planes*. The definition in the book is not correct. The correct definition is as follows. Two planes are parallel if they have no points in common or all points in common.

- Draw an example of two parallel planes.

Half-Plane

- Define *half-planes*.
- Draw an example of a plane and line making a half-plane.

Relationships Between Lines and Planes

Lesson1: Section 11.1 Introduction: Points, Lines, Planes

Watch this [video](#) to learn about the ways a line and plane can be in space.



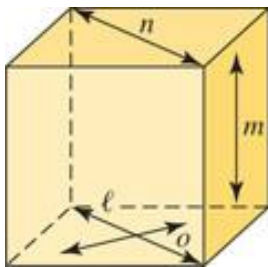
- What are the three ways a line and a plane can be in space?
 1. A line can be wholly contained in a plane.
 2. -
 3. -

- A line and a plane are parallel to each other if

Now Try This 2 Page 666

a. Can skew lines have a point in common? Explain.

b. Can skew lines be parallel? Explain?



Line n is a diagonal of the top

Lines l and o are diagonals of the bottom.

c. Identify all pairs of parallel lines among the lines marked in the figure above.

c. Identify all pairs of skew lines among the lines marked in the figure above.



Review Terms:

Review terms from Section 11.1 by using flashcards found [here](#). Select chapter 11 and then select section 1. Review the terms until you know them.

Hyperlinks

- Lecture video: https://mediaplayer.pearsoncmg.com/assets/BMT13_sl_1101
- PowerPoint slides: <http://faculty.cbcmd.edu/math132/Lesson1Section11.1.pdf>
- Set video: <https://youtu.be/w91XvRU-mJw>
- Flashcards: https://media.pearsoncmg.com/aw/aw_billstein_mathforteachers_13/flashcards/launch.html