

Analytic Geometry **January 5, 2016**

**Basic Constructions:
Congruent & Bisecting Segments & Angles**


EQ: What is the difference between sketching geometric figures, drawing geometric figures, and constructing geometric figures?

EQ: What tools are used with geometric constructions and why?

MCC9-12.G.CO.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.

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Two basic instruments used in Geometry are the _____ and the _____.



A straightedge is similar to a ruler, but without any _____ markings.


A compass is an instrument for creating _____.

A _____ geometric figure precisely created using only a straightedge and compass.




When constructing figures, it is very important not to erase your _____. Markings show that the figure was constructed and not measured and drawn.

A _____ is a precise representation of a figure, created with measurement tools such as a protractor and a ruler.



A _____ is a quickly done representation of a figure or a rough approximation of a figure.



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Let's Construct

Point: • Draw a point and label it with a capital letter.

Segment: • Draw a straight line.
• Put points on each of the ends and label them A and B.


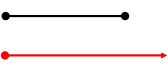
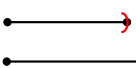
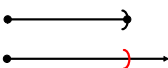
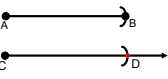
Line: • Draw a straight line.
• Put arrows on the ends
• Put points on each side, inside of the arrows, and label them A and B

Ray: • Draw a straight line.
• Put a point on one end and an arrow on the other.
• Put another point on the side with the arrow and label the points A and B.

Angle: • Construct a ray.
• Starting at the endpoint, construct another ray.
• Label the points A, B, and C.


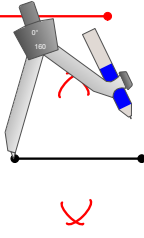
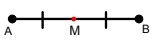
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Copying a Segment (on a separate piece of paper)

- Construct a line segment. 
- Construct a ray underneath the line segment. 
- Open your compass to the length of the segment and make a mark. 
- Make the same mark on the ray. 
- Put a point at the mark. Label all points. 







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Bisecting a Segment (on a separate piece of paper)

- Construct a line segment. 
- Open your compass to the length of the segment. Placing the compass on the endpoint mark above and below the segment. Repeat from the other endpoint. 
- Line up the intersections with the straightedge and mark the midpoint on the segment. Label all points. 


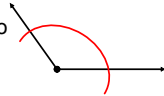
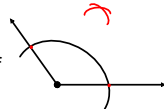
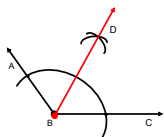
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Copy an Angle (on a separate piece of paper)

- Construct an angle and a ray below it. 
- From the vertex of the angle, open the compass to less than the length of the side. Make an arc. 
- Make the same arc on the ray. 
- Open the compass from one point of intersection of the angle and arc to the other. Make a mark. 
- From the ray and arc intersection, make a mark on the arc. 
- Construct another ray from the end point to the intersecting arcs. Label the angles. 

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Bisecting an Angle (on a separate piece of paper)

- Construct an angle. 
- From the vertex of the angle, open the compass to about half the length of the side. Make an arc. 
- Open the compass a little more. Make a mark from each point of intersection of the angle and arc. 
- Construct a ray from the vertex to this intersection. Label all points. 

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Homework:

Create the first 4 pages of your journal:

- Copying a line segment
- Copying an angle
- Bisecting a line segment
- Bisecting an angle

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