

# Chapter 1-6



# Geometry Constructions



Geometric Constructions***Construct a segment congruent to a given segment***

Given:  $\overline{AB}$

Construct a segment congruent to  $\overline{AB}$

1. Use a straightedge to draw a segment longer than the given segment. Label a point R at one endpoint of the new segment.
2. Place the compass tip at point A of the given segment. Adjust your compass width to equal the length of  $\overline{AB}$ .
3. Using this **same** compass setting, place the compass tip at point R and draw an arc. Label the intersection point S.
4. Erase the excess segment.
5.  $\overline{AB} \cong \overline{RS}$



<http://mathopenref.com/constcopysegment.html>

Construct a segment congruent to  $\overline{AB}$ .

1.



2.



3.



4.

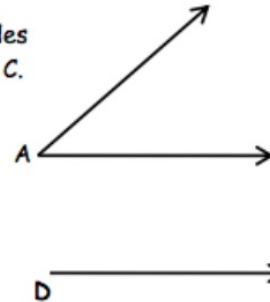


**Construct an angle congruent to a given angle**

**Given:**  $\angle A$

Construct an angle congruent to  $\angle A$ .

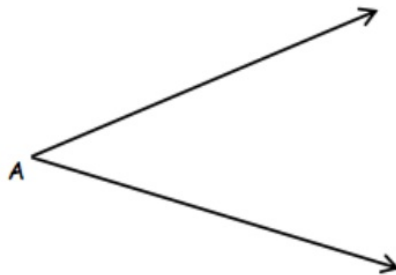
3. Draw a ray. Label the endpoint D.
4. Place the compass tip at the vertex of  $\angle A$ . Draw an arc across both sides of the given angle. Label the points of intersection with the rays B and C.
3. Using this same compass setting, place the compass tip at point D (the new ray) and draw a long arc across the ray. Label the intersection point E.
5. Set the compass so that it is the width of BC.
5. Using this same compass setting, place the compass tip at point E and draw an arc, intersecting the arc from step 3. Label the intersection F.
6. Draw  $\overline{DF}$ .  $\angle EDF \cong \angle BAC$



<http://mathopenref.com/constcopyangle.html>

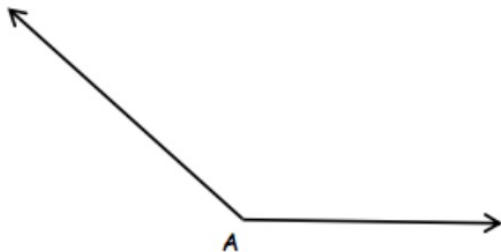
Construct an angle congruent to  $\angle A$ .

1.



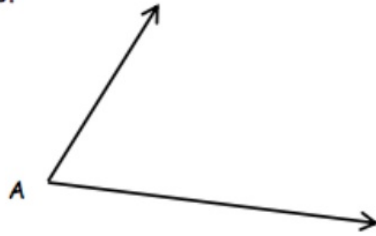
Your construction here:

2.

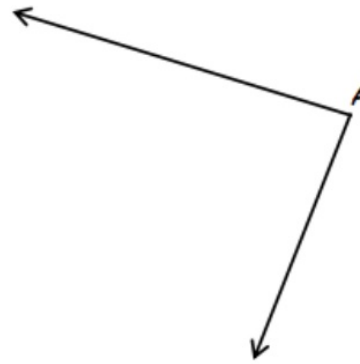


Construct an angle congruent to a given angle

3.



4.



### Perpendicular Bisector

Given:  $\overline{AB}$

Construct the perpendicular bisector of  $\overline{AB}$ .

1. Choose a compass opening greater than  $1/2$  of  $\overline{AB}$  and less than the length of  $\overline{AB}$ . Place compass tip at A. Draw two arcs - above **and** below  $\overline{AB}$ .
2. Using the **same** compass opening, place compass tip at point B. Draw two arcs - above **and** below  $\overline{AB}$ .
3. Draw the line connecting the intersections of the two arcs.

This is the perpendicular bisector of  $\overline{AB}$ .

(Can also be used to find the midpoint of  $\overline{AB}$ .)



<http://mathopenref.com/constbisectline.html>

Construct the perpendicular bisector of each of the following line segments.

1.



2.



Perpendicular Bisector

3.



4.

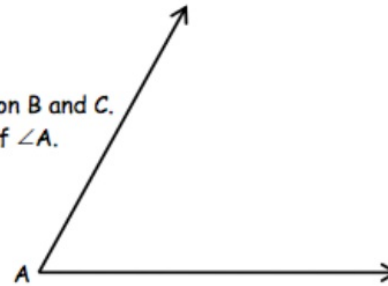


### Angle Bisector

Given:  $\angle A$ .

Construct the angle bisector of  $\angle A$ .

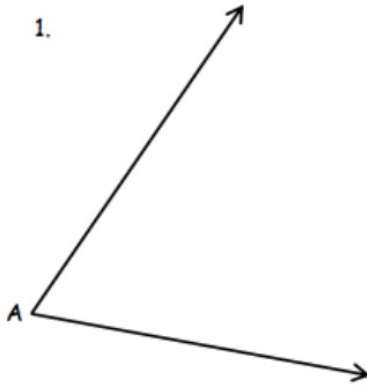
1. Place the compass tip at point  $A$ . Draw an arc that intersects both rays of the angle. Label the points of intersection  $B$  and  $C$ .
2. Place the compass tip at point  $B$  and draw an arc in the interior of  $\angle A$ .
3. Using this same compass setting, place the compass tip at point  $C$  and draw an arc that intersects the arc you drew in #2. Label the point of intersection  $Q$ .
6. Use a straightedge to draw  $AQ$ .  
\* This is the angle bisector of  $\angle A$ .
7.  $\angle BAQ \cong \angle QAC$



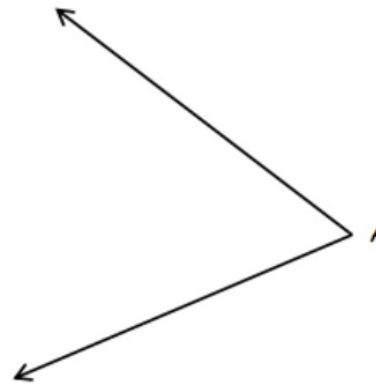
<http://mathopenref.com/constbisectangle.html>

Construct the angle bisectors for each of the following angles.

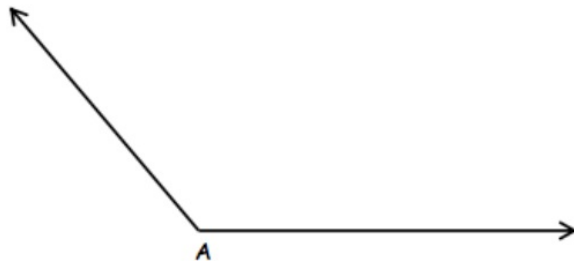
1.



2.



3.



4.

