

HW #4 - Due Fri, Dec 4  
Ch 4 Review Problems pp.176-180 #7-36, 48,51,52

Khan Academy exercises: "Congruence"

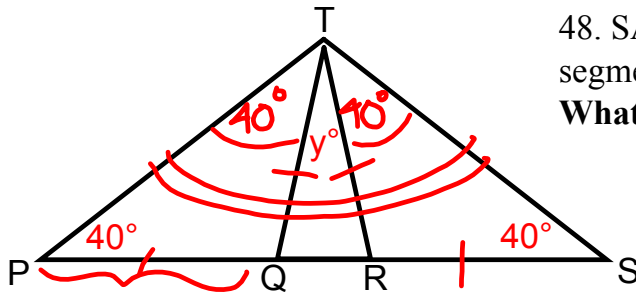
HW #5  
Ch 5 Review Problems pp. 206-209 #?

**Theorem 10**: If two angles of a triangle are equal, the sides opposite them are equal.

**Corollaries** to Theorems 9 and 10:

An equilateral triangle is equiangular.

An equiangular triangle is equilateral.



48. SAT Problem: In this figure, PS is a line segment and  $PQ=QT=TR=RS$ .  
**What is the value of  $y$ ?**

$\angle RTS = 40^\circ$  ( $RS = RT$ )

$\angle PTQ = 40^\circ$  ( $PQ = QT$ )

$(40^\circ + y^\circ + 40^\circ) + 40^\circ + 40^\circ = 180^\circ$

*(betweenness of rays & triangle sum theorem)*

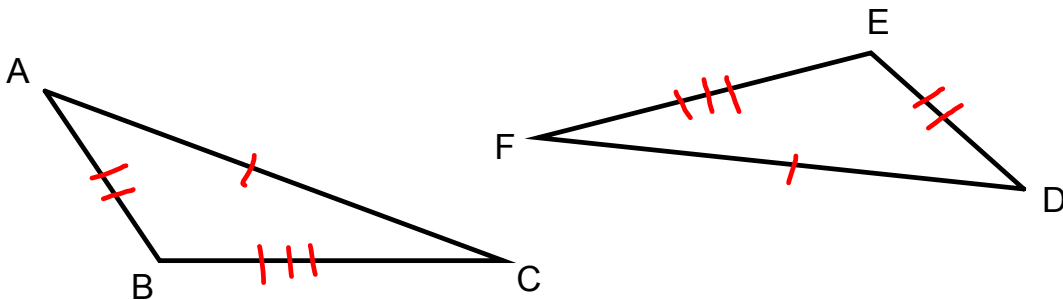
$y^\circ + 160^\circ = 180^\circ$

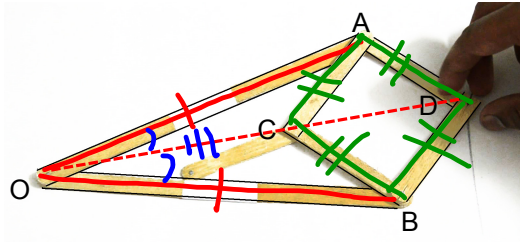
$y = 20$

4.6 – SSS Congruence

Theorem 11: The SSS Theorem

If the three sides of one triangle are equal to the three sides of another triangle, then triangles are congruent.





In this linkage, the rods can pivot about their ends so the figure can change its shape.

Given:  $OA=OB$ ;  
 $AD=DB=BC=CA$

$\triangle AOD \cong \triangle BOD$   
 $OC=OC$  reflexive  
 $\triangle AOC \cong \triangle BOC$  SSS

39. Why are  $\angle AOC$  and  $\angle BOC$  always equal?

corresponding parts of congruent  $\triangle$ 's are equal

40. What relation does line OC have to  $\angle AOB$ ?

angle bisector

41. What relation does line OD have to  $\angle AOB$ ?

angle bisector

42. Why must lines OC and OD be the same line?

angle bisector is unique

43. What does this prove about points O, C, and D?

collinear

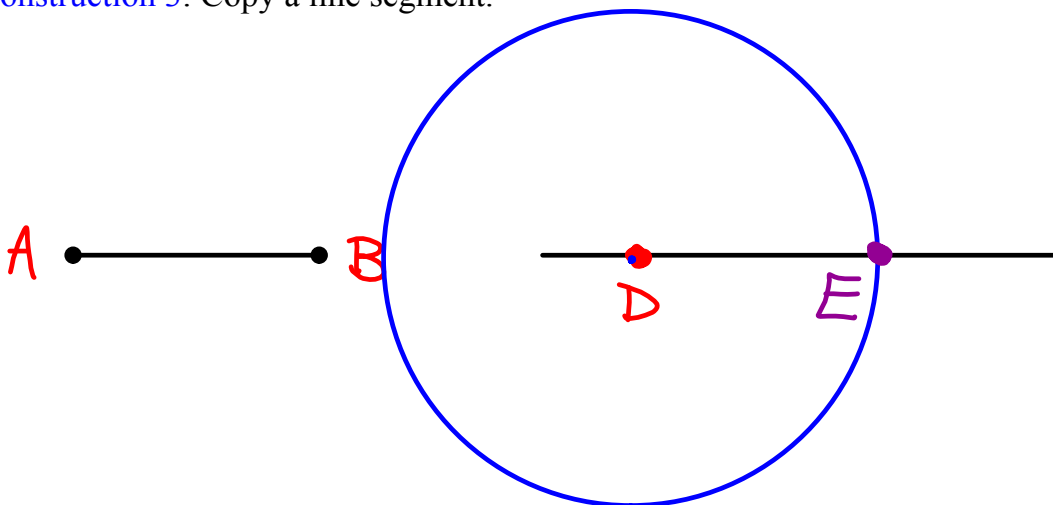
### 4.7 – Constructions

Construction 1: Bisect a line segment.

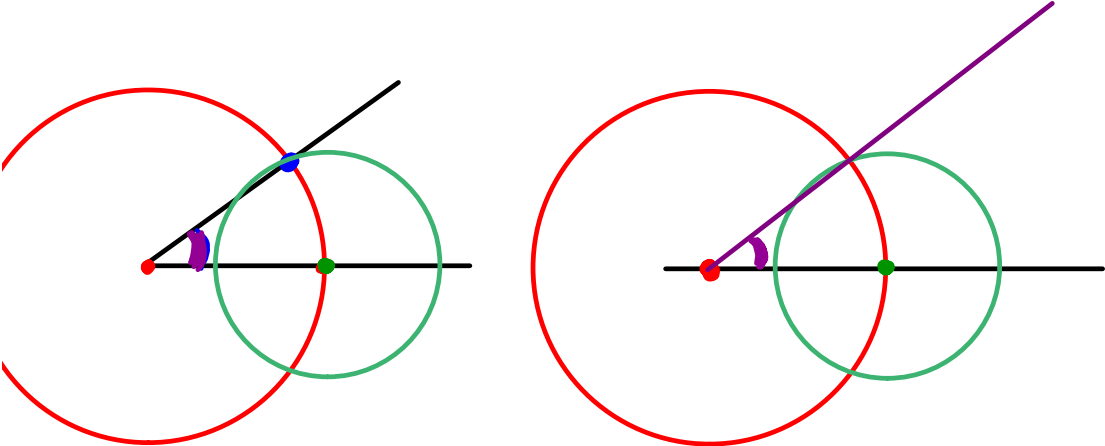
Construction 2: Bisect an angle.

Construction 3: Copy a line segment.

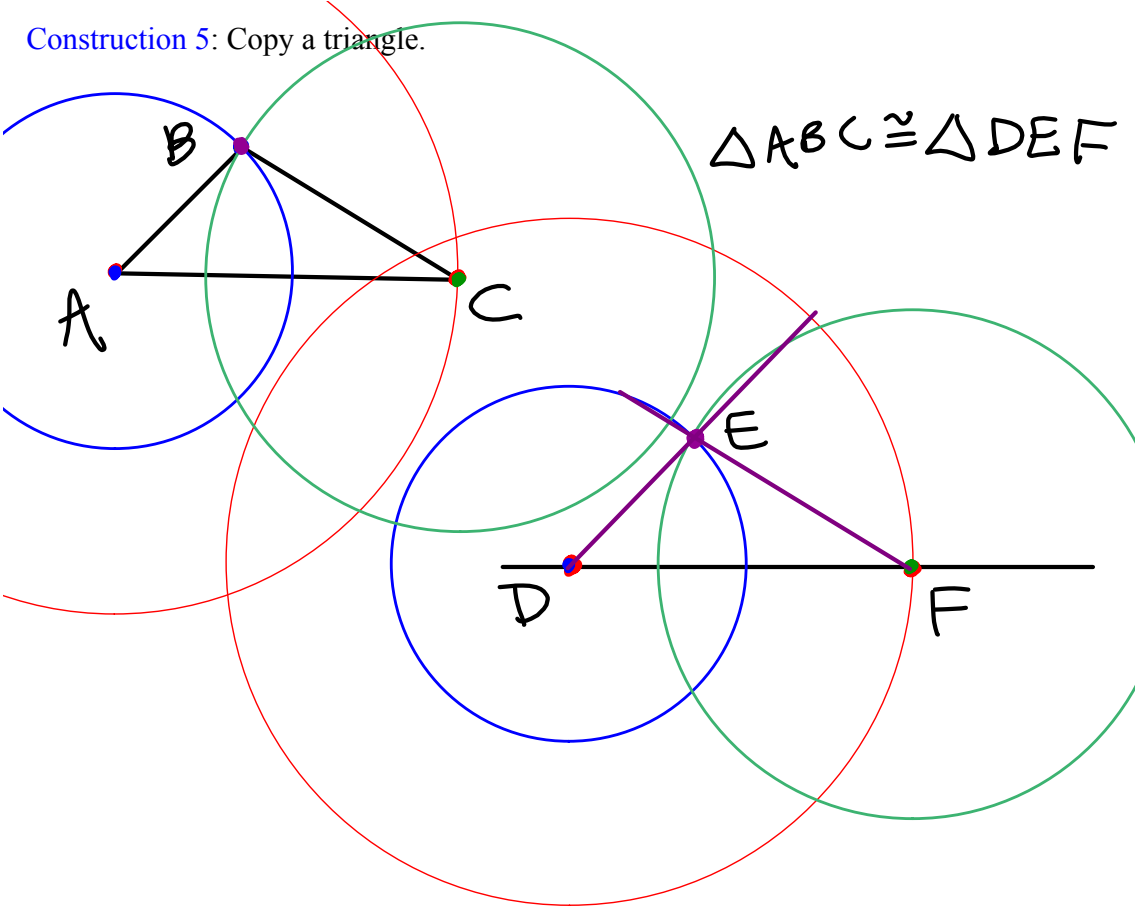
$AB = DE$



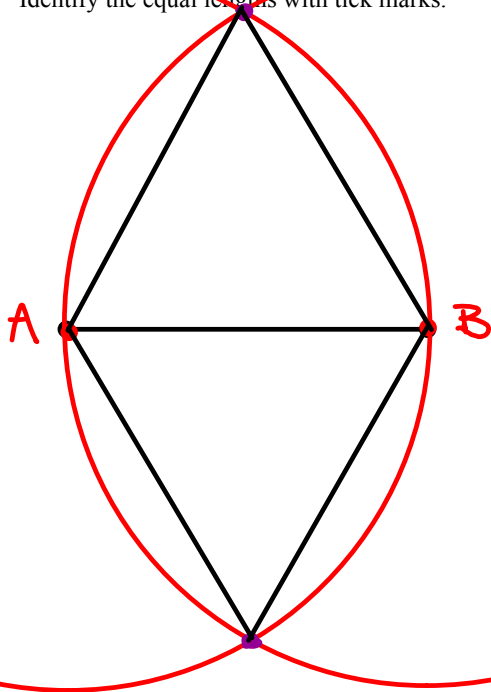
Construction 4: Copy an angle.



Construction 5: Copy a triangle.



22. Draw line segment AB and construct two triangles ACB and ADB so that  $AC=CB=AD=DB$ . Identify the equal lengths with tick marks.



23. What kind of triangles are  $\triangle ACB$  and  $\triangle ADB$ ?

24. Why is  $\angle 1 = \angle 2$  and  $\angle 3 = \angle 4$ ?

25. Why is  $\angle 1 + \angle 3 = \angle 2 + \angle 4$ ?

26. Why is  $\angle CAD = \angle CBD$ ?

27. Why must  $\triangle ACB$  and  $\triangle ADB$  be congruent?

28. Why is  $\angle 1 = \angle 3$  and  $\angle 2 = \angle 4$ ?

29. How is  $AB$  related to  $\angle CAD$  and  $\angle CBD$ ?