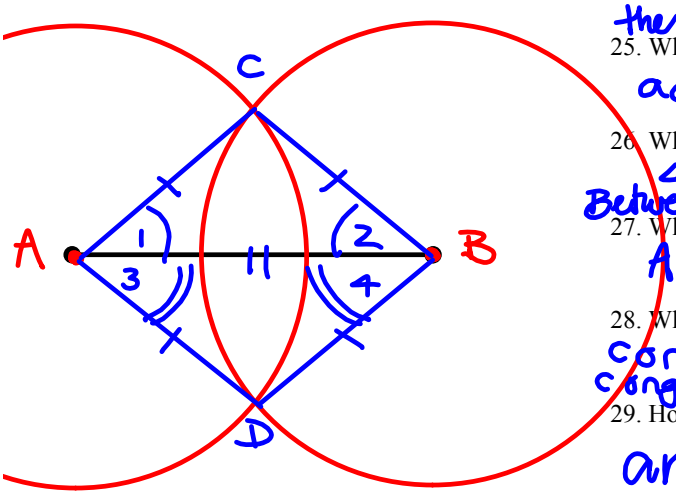
HW #4 - Due Fri, Dec 4
Ch 4 Review Problems pp.176-180 #7-36, 48,51,52

Khan Academy exercises: "Congruence"

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

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 ΔACB and ΔADB?
isosceles AC=BC & AD=BD

24. Why is ∠1=∠2 and ∠3=∠4?
∠1+∠3=∠2+∠3 If 2 sides of a triangle are equal then the sides opposite them are equal.

25. Why is ∠1+∠3=∠2+∠4?
addition (& substitution)

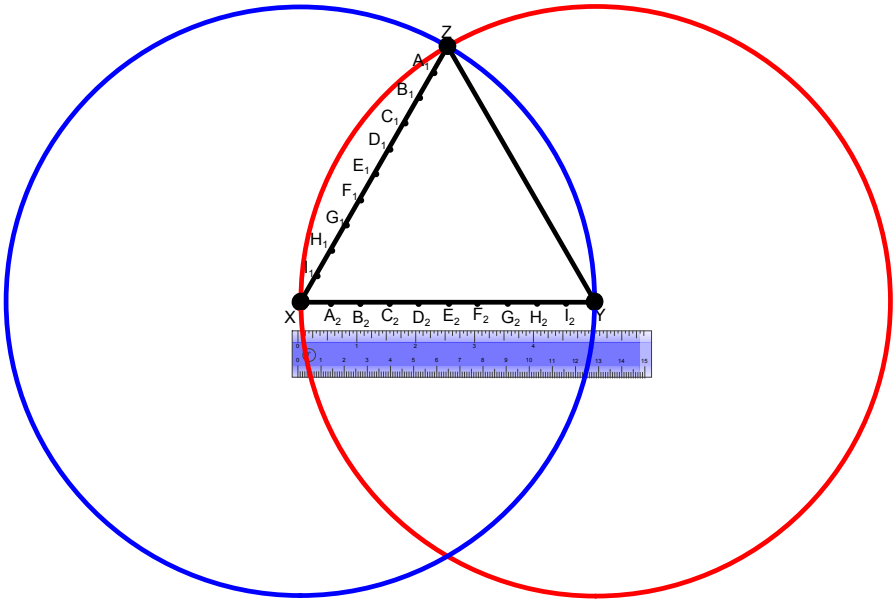
26. Why is ∠CAD=∠CBD?
∠CAD = ∠1+∠3 & ∠CBD = ∠2+∠4 Betweenness of Rays Theorem (& substitution)

27. Why must ΔACB and ΔADB be congruent?
AB=AB SSS congruence

28. Why is ∠1=∠3 and ∠2=∠4?
corresponding parts of congruent triangles are equal

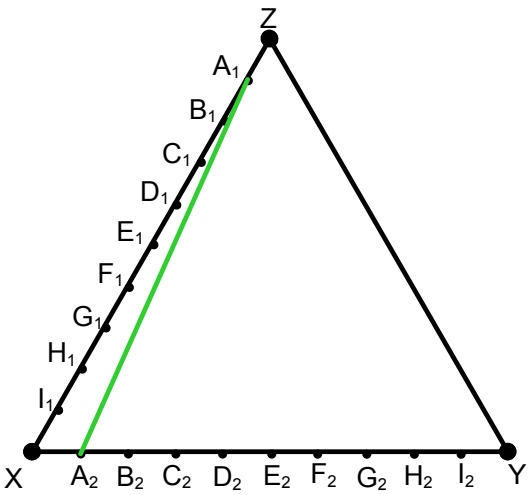
29. How is AB related to ∠CAD and ∠CBD?
angle bisector

30. Use your ruler to draw a horizontal line segment 5 inches long in the center of a sheet of paper. Label it XY. Construct equilateral triangle XYZ having XY as its base. Use your ruler to mark points on XY 0.5 inch apart; do the same on XZ. Label the points as shown.

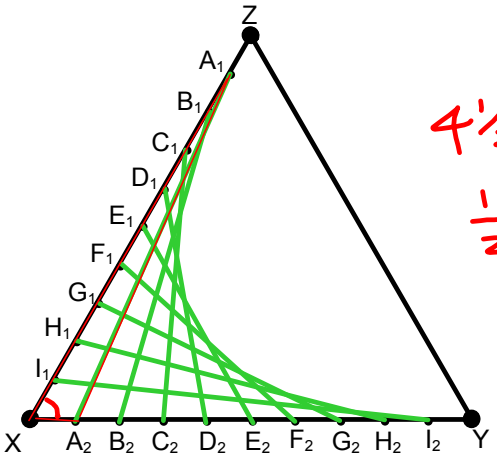


Use your straightedge to draw line segments between the points labeled with the same letter (A_1A_2, B_1B_2, etc.)

31. Something appears to be in the figure that isn't really there. What is it?



Parabola
(graph of a
quadratic polynomial)



The finished figure contains many pairs of congruent triangles.

32. To which triangle is ΔXA_1A_2 congruent?

ΔXI_2I_1

33. How do you know that these triangles are congruent?

$\angle A_1XI_2 = \angle I_2XA_1$

$4\frac{1}{2} = XA_1 = XI_2$ } because we measured them!

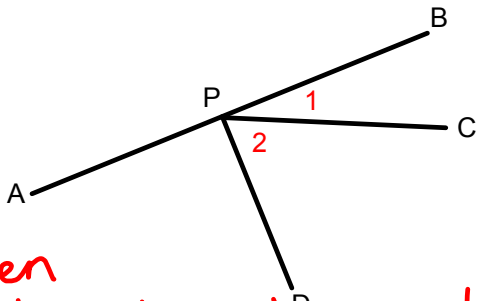
$\frac{1}{2} = XA_2 = XI_1$ }

SAS congruence

3.7 #44

Given: $\angle 1$ and $\angle 2$ are complementary;
PB-PC-PD.

Prove: AB $\perp$ PD.

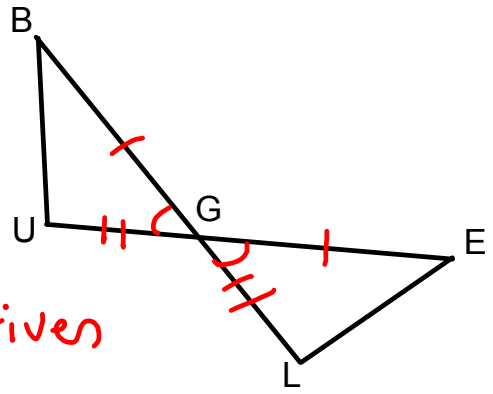


Statements	Reasons
1. $\angle 1$ and $\angle 2$ are complementary	Given
2. $\angle 1 + \angle 2 =$ 90°	complementary $\angle$'s sum to 90°
3. PB-PC-PD	Given
4. $\angle BPD = \angle 1 + \angle 2$	Betweenness of Ray Theorem
$\angle BPD = \angle BPC + \angle CPD$	Substitution (#2 & 4)
5. $\angle BPD = 90°$	Right $\angle$'s measure 90°
6. $\angle BPD$ is a right angle	lines meeting @ right $\angle$'s are perpendicular
7. AB $\perp$ PD	

4.4 #31

Given: ∠BGU and ∠EGL are vertical angles;
BG=GE and UG=GL

Prove: BU=LE



Proof:

1. ∠BGU & ∠EGL are vertical ∠s — vertical angles are equal
2. BG=GE, UG=GL — Given
3. ∠BGU = ∠EGL
4. △BGU ≅ △EGL — SAS congruence
5. BU = LE — corresponding parts of congruent △s are equal

5.1 – Properties of Inequality

Algebraic Axioms/Postulate

The "Three Possibilities" Property: either a>b, a=b, or a<b

The Transitive Property: If a>b and b>c, then a>c

The Addition Property: If a>b, then a+c>b+c

The Subtraction Property: If a>b, then a-c>b-c

The Multiplication Property: If a>b and c>0, then ac>bc

The Division Property: If a>b and c>0, then a/c>b/c

The Addition Theorem of Inequality: If a>b and c>d, then a+c>b+d

Proof:

Statements	**Reasons**
1. a>b	Given
2. a+c>b+c	addition axiom of inequality
3. c>d	Given
4. b+c>b+d	addition axiom of inequality
5. a+c>b+d	transitive property of inequality

The "Whole Greater than Part" Theorem: If a>0, b>0, and a+b=c, then c>a and c>b

Proof:

Statements	**Reasons**
1. a>0 and b>0	
2. a+b>b and a+b>a	
3. a+b=c	
4. c>b and c>a