Geometry: Please clear your desk except for . . .

1. Assignment #13

2. Determine the truth of the following statement and it's converse.

If 2x-3=7, then x is greater than 0.

Can you write a true biconditional statement from this information? Explain why you can or cannot.

OS: If $\underbrace{2x-3=7}_{H}$, then $\underbrace{x \text{ is greater than } 0}_{C}$.

$2x=10$

$x=5$

$5>0$ $\boxed{\text{True}}$

CS: If $\underbrace{x>0}_{H}$, then $\underbrace{2x-3=7}_{C}$.

$\boxed{\text{False}}$ CE: $x=2$ $2>0$ but $2(2)-3\neq 7$.

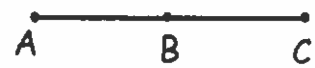
Hyp true $1\neq 7$

Conc. False

Can you write a true biconditional statement from this information? Explain why you can or cannot.

You cannot write one because both the OS and CS must be true.

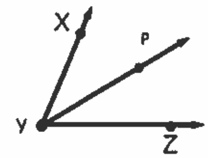
Old: The Midpoint Theorem



If B is the midpoint of $\overline{AC}$ then

$AB = \frac{1}{2}AC$, $BC = \frac{1}{2}AC$, and $AB = BC$.

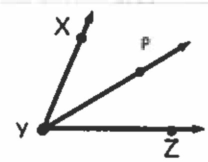
New: Angle Bisector Theorem (#1)



If $\overrightarrow{YP}$ is the bisector of $\angle XYZ$, then

$$m\angle XYP = m\angle PYZ, m\angle XYP = \frac{1}{2}m\angle XYZ, m\angle PYZ = \frac{1}{2}m\angle XYZ$$

Angle Bisector Theorem (#1)



Given: $\overrightarrow{YP}$ is the bisector of $\angle XYZ$

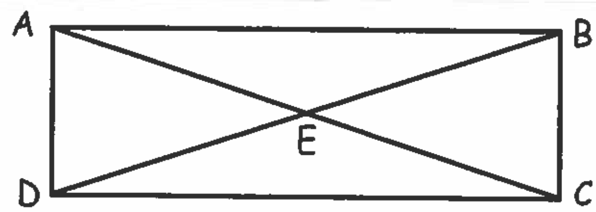
Prove: $m\angle XYP = m\angle PYZ, m\angle XYP = \frac{1}{2}m\angle XYZ, m\angle PYZ = \frac{1}{2}m\angle XYZ$

Statements	Reasons
1. $\overrightarrow{YP}$ is the bisector of $\angle XYZ$	Given
2. $\angle XYP \cong \angle PYZ$	Def. of $\angle$ Bisector
3. $m\angle XYP = m\angle PYZ$	Def. of $\cong \angle$s
4. $m\angle XYP + m\angle PYZ = m\angle XYZ$	$\angle$ Add. Post.
5. $m\angle XYP + m\angle XYP = m\angle XYZ$	Subst. Prop. of = (3→4)
6. $2m\angle XYP = m\angle XYZ$	Dist. Prop.
7. $m\angle XYP = \frac{1}{2}m\angle XYZ$	Div. Prop. of =
8. $m\angle PYZ = \frac{1}{2}m\angle XYZ$	Subst. Prop of = (3→7)

Sample Proof:

Given: AE = DE;
EC = EB

Prove: $\overline{AC} \cong \overline{BD}$



	STATEMENTS	REASONS
1	AE = DE; EC = EB	Given
2	AE + EC = DE + EB	Add. Prop. of (1 + 1)
3	AC = AE + EC; BD = DE + EB	Seg. Add. Post.
4	AC = BD	Trans. Prop. of =
5	$\overline{AC} \cong \overline{BD}$	Def. of ≅ Segments

Assignment #14

Read and Take Notes on p. 43-45.

Complete p. 45-47 CE #1-9 and WE #1-8, 13-14, 19, 21.