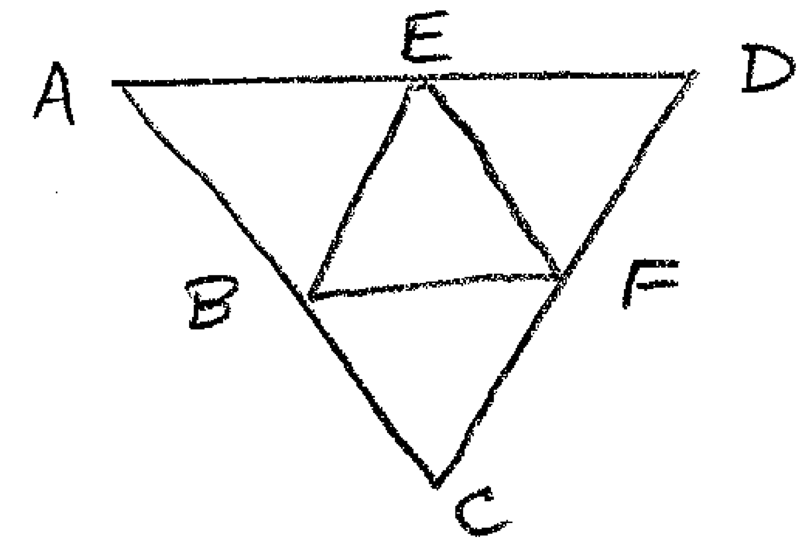
Mr. Hansen
Geom. HW due 9/25/08

§2.7 #4, 7, 8, 9, 14, 18; §2.8 #4, 7, 8, 10, 11

§2.7

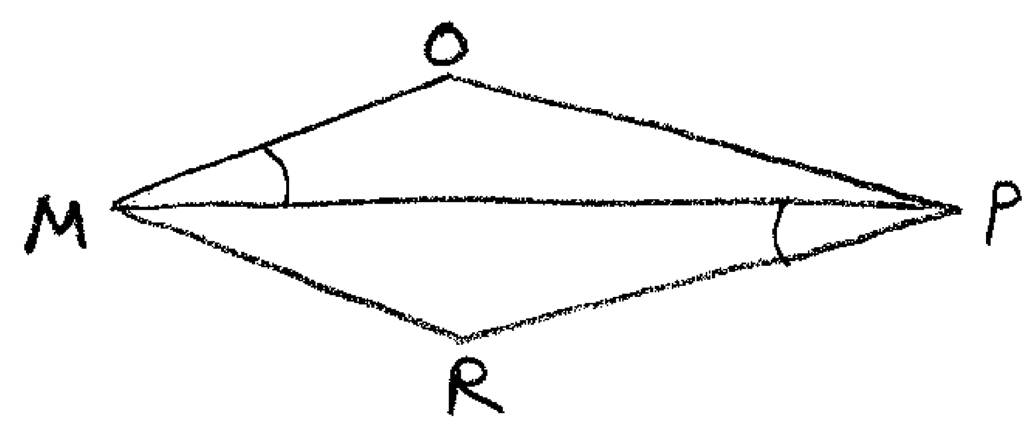
4. Given: $BC + BE = AD$
$BE = EF$
Prove: $BC + EF = AD$



1. $BC + BE = AD$	1. G
2. $BE = EF$	2. G
3. $BC + EF = AD$	3. Subst. (2, 1)

$\square$

7. Given: $\angle OMP \cong \angle RPM$
$\overrightarrow{MP}$ bis. $\angle OMR$
$\overrightarrow{PM}$ bis. $\angle OPR$
Prove: $\angle OMR \cong \angle OPR$



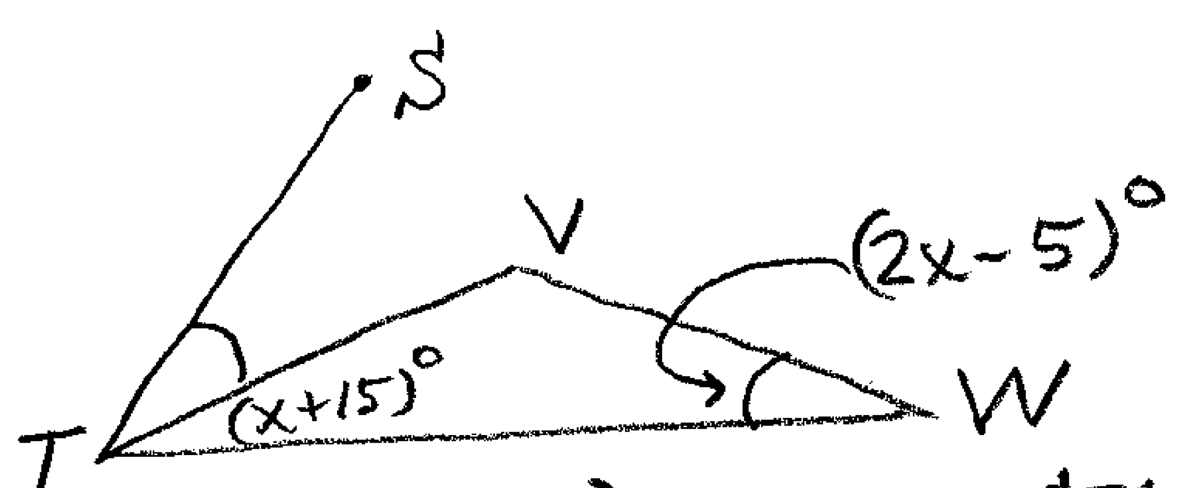
1. $\angle OMP \cong \angle RPM$	1. G
2. $\overrightarrow{MP}$ bis. $\angle OMR$	2. G
3. $\overrightarrow{PM}$ bis. $\angle OPR$	3. G
4. $\angle OMR \cong \angle OPR$	4. Mult. Prop.

$\square$

8. Let x = measure of unknown $\angle$
$90 - x$ = " " " $\angle$'s comp.

$90 - x = 24 + 2x$
$66 = 3x$
$22 = x \implies 90 - x = 68$

9.



Since $\overrightarrow{TV}$ bis. $\angle STW$ (given), $\angle STV \cong \angle VTW$.
$\therefore x + 15 = 2x - 5$
$20 = x \implies m\angle STW = 2(x+15) = 2(20+15) = 70$

14. Let x = measure of the unknown $\angle$

$90-x$ = " " " " $\angle$'s comp.

$180-x$ = " " " " $\angle$'s supp.

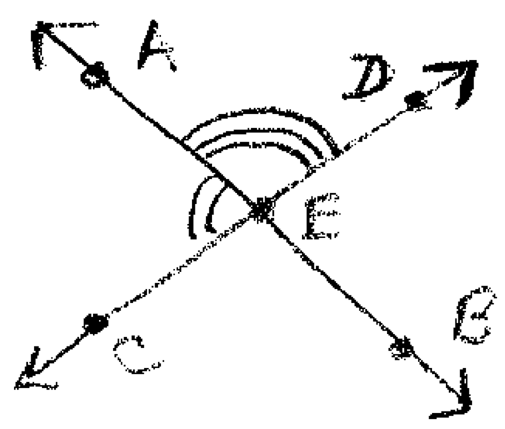
$$\tfrac{1}{2}(180-x)+(90-x)=120$$

$$90-\tfrac{1}{2}x+90-x=120$$

$$-\tfrac{3}{2}x=-60$$

$$x=-\tfrac{2}{3}(-60)=40 \Rightarrow 90-x=50$$

18.



Suppose (BWOC) that $m\angle DEB=80$. Then $m\angle AEC=80$ also, since $\angle AEC\cong\angle DEB$ (both are supps. of $\angle AED$).

Let $m\angle AEC=2x$, $m\angle AED=3x$ (wlog).

$$\therefore 2x+3x=180$$

$$5x=180$$

$$x=36$$

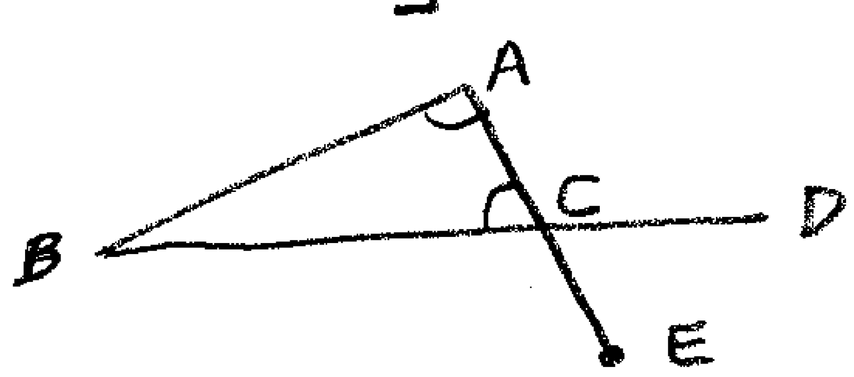
$$m\angle AEC=2x=2(36)=72 \quad (\rightarrow\leftarrow).$$

[This contradicts the conclusion above that $m\angle AEC=80$.]

§2.8

4. Given: $\angle A\cong\angle ACB$

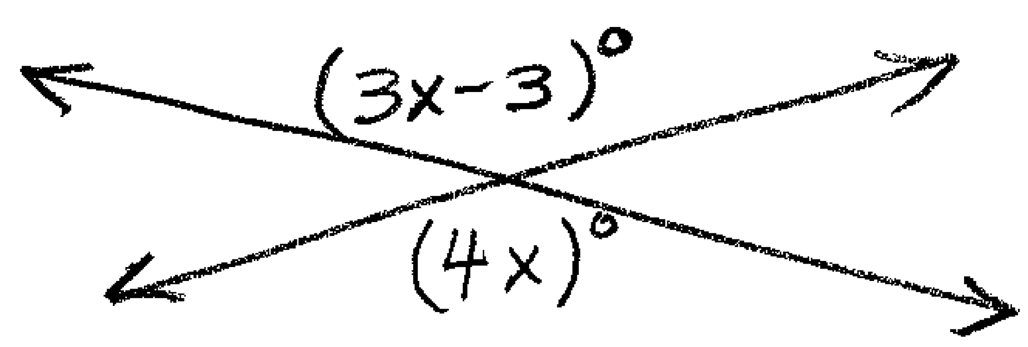
Prove: $\angle A\cong\angle DCE$



1. $\angle A\cong\angle ACB$	1. G
2. $\angle ACB\cong\angle DCE$	2. Vert. $\angle$s
3. $\angle A\cong\angle DCE$	3. Transitive (1,2)

□

7.

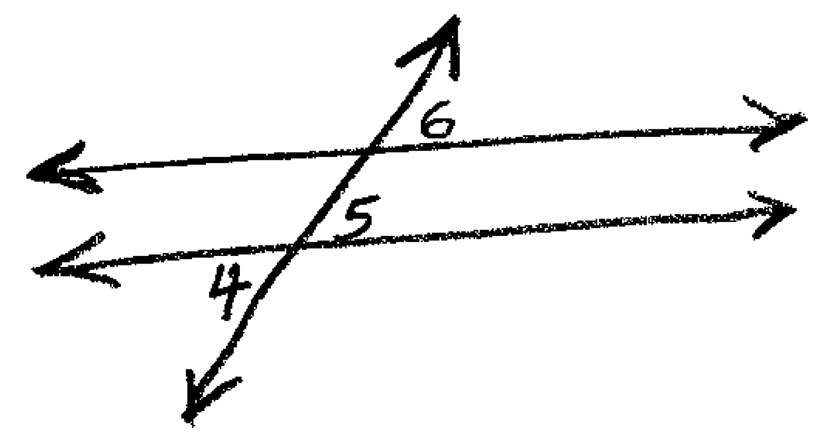


Vert. $\angle$s would require
$$3x-3=4x$$
$$-x=3$$
$$x=-3$$

However, if $x=-3$, then the upper and lower $\angle$s are both -12°, which is impossible in our class. [Note: Negative angles are permitted in precalculus and calculus, but not in our plane geometry class.]

MH
p.3 (sheet 2)

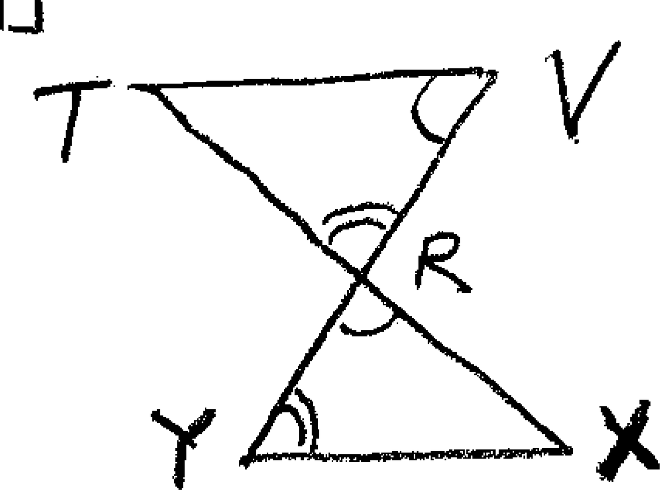
8. Given: $\angle 4 \cong \angle 6$
Prove: $\angle 5 \cong \angle 6$



1. $\angle 4 \cong \angle 6$	1. G
2. $\angle 4 \cong \angle 5$	2. Vert. $\angle$s
3. $\angle 5 \cong \angle 6$	3. Transitive (1,2) [or you could say "Subst."]

□

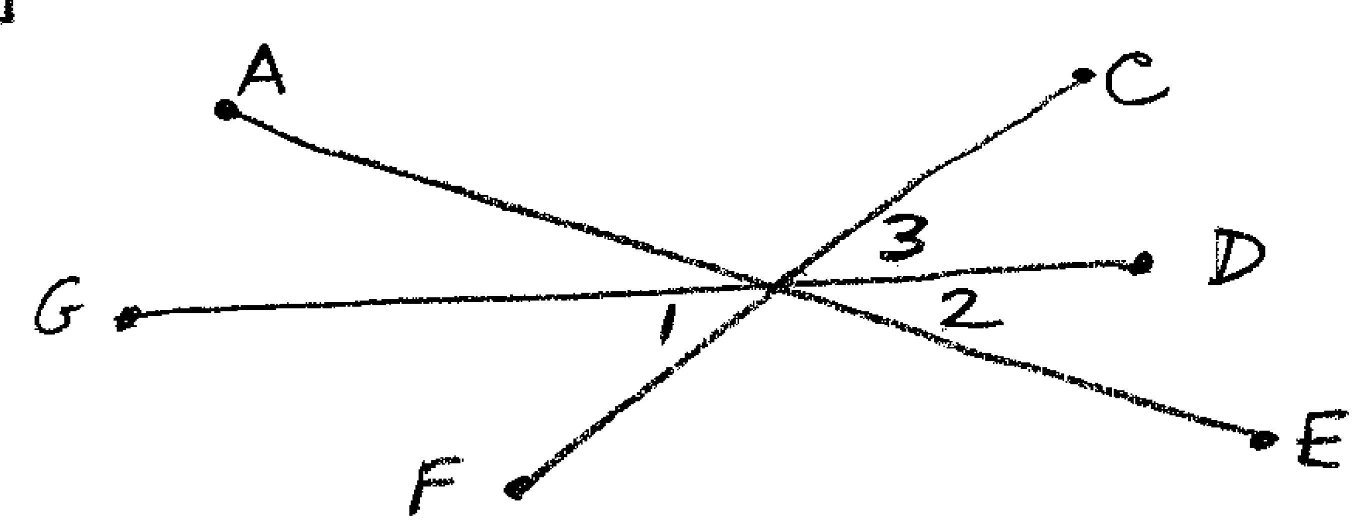
10. Given: $\angle V \cong \angle YRX$
$\angle Y \cong \angle TRV$
Prove: $\angle V \cong \angle Y$



1. $\angle V \cong \angle YRX$	1. G
2. $\angle YRX \cong \angle TRV$	2. Vert. $\angle$s
3. $\angle TRV \cong \angle Y$	3. G
4. $\angle V \cong \angle Y$	4. Trans. (1,2,3)

□

11. Given: $\overleftrightarrow{GD}$ bis. $\angle CBE$
Prove: $\angle 1 \cong \angle 2$



1. $\overleftrightarrow{GD}$ bis. $\angle CBE$	1. G
2. $\angle 2 \cong \angle 3$	2. Def. $\angle$ bis.
3. $\angle 3 \cong \angle 1$	3. Vert. $\angle$s
4. $\angle 2 \cong \angle 1$	4. Trans. (2,3)
5. $\angle 1 \cong \angle 2$	5. Symmetric Prop. $\cong$

□

Or, you can omit step 5 if you write
4. $\angle 1 \cong \angle 2$ 4. Subst. (2,3)