Acc Geo

Practice 2.8 Day #1

Name Key

Write a two-column proof for each of the following.

1. Theorem: If two angles are supplementary to the same angle then they are congruent.

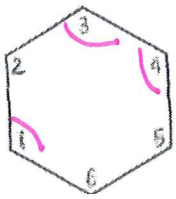
Given: $\angle 3$ and $\angle 4$ are supplementary; $\angle 3$ and $\angle 5$ are supplementary

Prove: $\angle 4 \cong \angle 5$

1.) $\angle 3$ and $\angle 4$ are suppl. $\angle 3$ and $\angle 5$ are suppl.	1. given
2.) $\angle 3 + \angle 4 = 180°$ $\boxed{\angle 3 + \angle 5} = 180°$	2.) def of suppl.
3.) $\angle 3 + \angle 4 = \angle 3 + \angle 5$	3.) substitution
4.) $\angle 4 \cong \angle 5$	4.) subtraction

2. Given: $m\angle 3 = 120^o$; $\angle 1 \cong \angle 4$; $\angle 3 \cong \angle 4$

Prove: $m\angle 1 = 120^o$

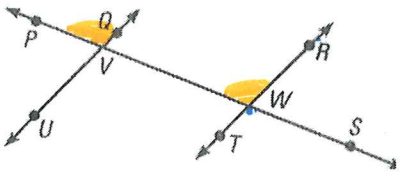


1. $\angle 3 = 120°$ $\angle 1 \cong \angle 4$ $\angle 3 \cong \angle 4$	1. given
2.) $\angle 1 \cong \angle 3$	2.) transitive or Substitution
3.) $\angle 1 = 120°$	3.) transitive or Substitution

Write a two column proof for the following.

3. Given: $\angle QVW$ and $\angle RWV$ are supplementary

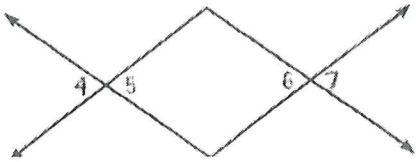
Prove: $\angle QVP \cong \angle RWV$



1. $\angle QVW$ and $\angle RWV$ are suppl.	1. given
2. $\angle QVW + \angle RWV = 180°$	2. def of suppl.
3.) $\angle QVW + \angle QVP = 180$	3.) Linear Pairs are Suppl.
4.) $\angle QVW + \angle RWV = \angle QVW + \angle QVP$ $-\angle QVW$ $-\angle QVW$	4.) substitution
5.) $\angle RWV \cong \angle QVP$	5.) subtraction

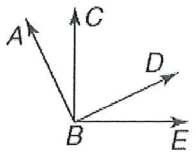
4. Given: $\angle 5 \cong \angle 6$

Prove: $\angle 4 \cong \angle 7$



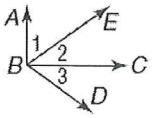
1. $\angle 5 \cong \angle 6$	1. given
2) $\angle 4 \cong \angle 5$ $\angle 6 \cong \angle 7$	2.) Vertical $\angle$s are $\cong$ NOT def of
3.) $\angle 4 \cong \angle 7$	3.) substitution

5. **Given:** $\angle ABC$ and $\angle CBD$ are complementary. $\angle DBE$ and $\angle CBD$ form a right angle.
Prove: $\angle ABC \cong \angle DBE$



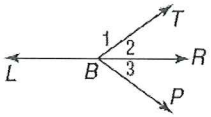
1. <ABC and <CBD are compl <DBE and <CBD are compl.	1. given
2. <ABC + <CBD = 90° <DBE + <CBD = 90°	2. def of compl
3. <ABC + <CBD = <DBE + <CBD	3. substitution
4. <ABC ≅ <DBE	4. subtraction

6. **Given:** $\overline{AB} \perp \overline{BC}$; $\angle 1$ and $\angle 3$ are complementary.
Prove: $\angle 2 \cong \angle 3$



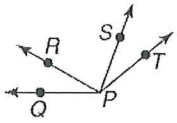
Statements	Reasons
a. $\overline{AB} \perp \overline{BC}$	a. given
b. <ABC is a RT angle	b. Definition of ⊥
c. $m\angle ABC = 90$	c. Def. of right angle
d. $m\angle ABC = m\angle 1 + m\angle 2$	d. angle addition
e. $90 = m\angle 1 + m\angle 2$	e. Substitution
f. $\angle 1$ and $\angle 2$ are compl.	f. def of compl.
g. <1 and <3 are compl.	g. Given
h. $\angle 2 \cong \angle 3$	h. ∠s compl to the same ∠ or ≅ ∠s are congruent

7. **Given:** $\angle 1$ and $\angle 2$ form a linear pair. $m\angle 1 + m\angle 3 = 180$
Prove: $\angle 2 \cong \angle 3$



1.) <1 and <2 form a linear pair <1 + <3 = 180°	1.) given
2.) <1 + <2 = 180	2.) linear pairs are suppl.
3.) <1 + <3 = <1 + <2	3.) substitution
4.) <3 ≅ <2	4.) subtraction

8. Copy and complete the following proof.
Given: $\angle QPS \cong \angle TPR$
Prove: $\angle QPR \cong \angle TPS$
Proof:



Statements	Reasons
a. <QPS ≅ <TPR	a. Given
b. $m\angle QPS = m\angle TPR$	b. def of ≅
c. $m\angle QPS = m\angle QPR + m\angle RPS$ $m\angle TPR = m\angle TPS + m\angle RPS$	c. < addition
d. <QPR + <RPS = <TPS + <RPS	d. Substitution
e. m< QPR = m< TPS	e. subtraction
f. <QPR ≅ <TPS	f. def of ≅