

Angles Proofs Notes

Example 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 supplementary
 $\angle 3$ and $\angle 5$ are supplementary

2. $\angle 3 + \angle 4 = 180$
 $\angle 3 + \angle 5 = 180$

3. $\cancel{\angle 3} + \angle 4 = \cancel{\angle 3} + \angle 5$

4. $\angle 4 \cong \angle 5$

1. Given

2. Definition of Supplementary

3. Subst. or Trans.

4. Subtraction

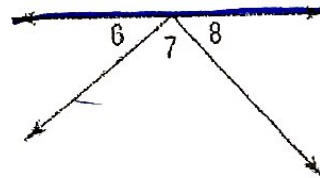
After the given

① Convert any vocab words to an equation

② Look at the pic. + see if there's any obvious relationships

③ Look at the above steps.

Prove: If $\angle 6$ and $\angle 8$ are complementary, then $\angle 7$ is a right angle.



1. $\angle 6$ and $\angle 8$ are complementary

2. $\angle 6 + \angle 8 = 90$

3. $\cancel{\angle 6} + \angle 7 + \cancel{\angle 8} = 180$

4. $90 + \angle 7 = 180$

5. $\angle 7 = 90$

6. $\angle 7$ is a Rt. \angle

1. Given

2. Def. of comp.

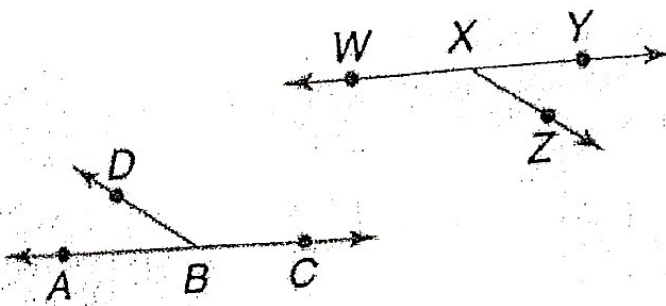
3. Def. of straight Angle.
~~Definition of Supplementary with Angle Addition~~

4. Subst.

5. Subtr.

6. Definition of a right angle

Given: $\angle ABD \cong \angle YXZ$
 Prove: $\angle CBD \cong \angle WXZ$



1. $\angle ABD \cong \angle YXZ$

1. Given

$$\begin{aligned} 2. \quad & \angle ABD + \angle DBC = 180 \\ & \angle WXZ + \angle YXZ = 180 \end{aligned}$$

2. L.P. supp.

$$3. \quad \angle ABD + \angle CBD = \angle YXZ + \angle WXZ$$

3. Trans. or Subst.

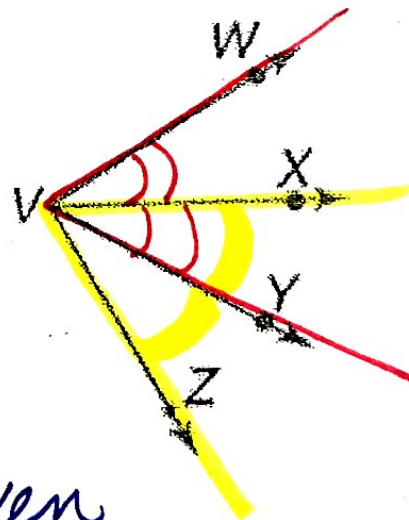
$$4. \quad \begin{array}{r} \angle YXZ + \angle CBD = \angle YXZ + \angle WXZ \\ - \angle YXZ \qquad \qquad - \angle YXZ \\ \hline \angle CBD \cong \angle WXZ \end{array}$$

4. Subst.

$$5. \quad \angle CBD \cong \angle WXZ$$

5. Subtr.

Given: \vec{VX} bisects $\angle WVY$.
 \vec{VY} bisects $\angle XVZ$.
 Prove: $\angle WVX \cong \angle YVZ$



1. \vec{VX} bisects $\angle WVY$
 \vec{VY} bisects $\angle XVZ$

1. Given

$$\begin{aligned} 2. \quad & \angle WVX \cong \angle XVY \\ & \angle XVY \cong \angle YVZ \end{aligned}$$

2. Def. of \angle bisector

$$3. \quad \angle WVX \cong \angle YVZ$$

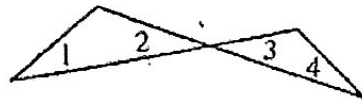
3. Trans. or Subst.

Angle Proof Homework #1

1.

Given: $\angle 1 = \angle 2$
 $\angle 3 = \angle 4$

Prove: $\angle 1 = \angle 4$



1. _____

1. Given

2. _____

2. _____

3. _____

3. substitution

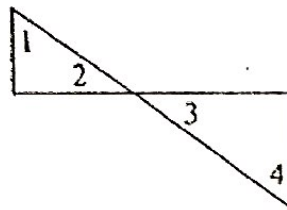
4. _____

4. _____

2.

Given: $\angle 1$ and $\angle 2$ are complements.
 $\angle 3$ and $\angle 4$ are complements.

Prove: $\angle 1 = \angle 4$



1. _____

1. Given

2. _____

2. def of _____

3. _____

3. Substitution

4. _____

4. Vertical angles are _____

5. _____

5. Substitution

6. _____

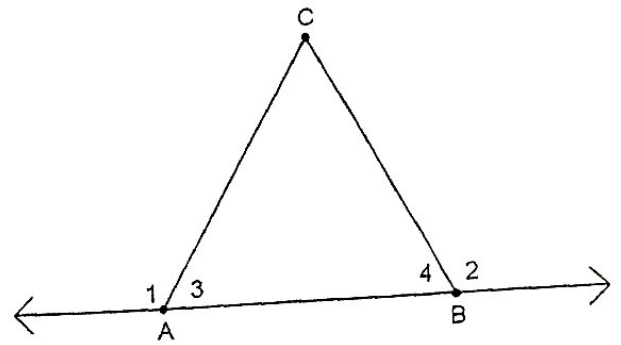
6. Subtraction

Name: _____

Geometry Proofs Worksheet A

1. Given: $\angle 3 \cong \angle 4$

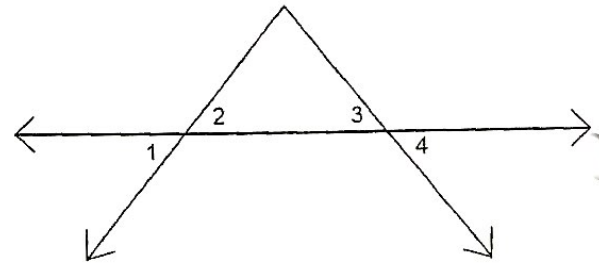
Prove: $\angle 1 \cong \angle 2$



1. _____	1. _____
2. $\angle 1 + \angle 3 = 180$ $\angle 4 + \angle 2 = 180$	2. _____
3. $\angle 1 + \angle 3 = \angle 4 + \angle 2$	3. _____
4. $\angle 1 + \angle 3 = \angle 3 + \angle 2$	4. _____
5. _____	5. _____

2. Given: $\angle 1 \cong \angle 4$

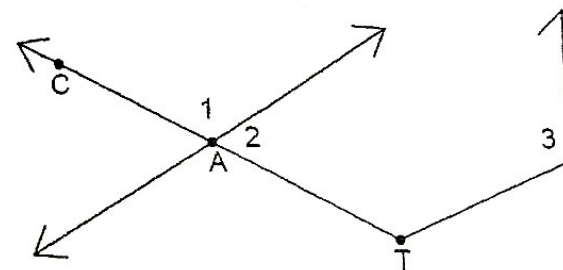
Prove: $\angle 2 \cong \angle 3$



1. _____	1. _____
2. $\angle 1 \cong \angle 2$ $\angle 4 \cong \angle 3$	2. _____
3. _____	3. _____

3. Given: $\angle 1 \cong \angle 3$

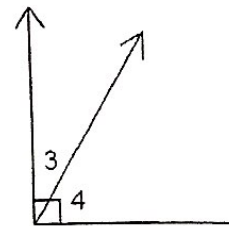
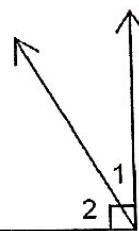
Prove: $\angle 2$ is supplementary to $\angle 3$



1. _____	1. _____
2. $\angle 1 + \angle 2 = 180$	2. _____
3. $\angle ______ + \angle 2 = 180$	3. _____
4. _____	4. _____

Given: $\angle 1 \cong \angle 3$

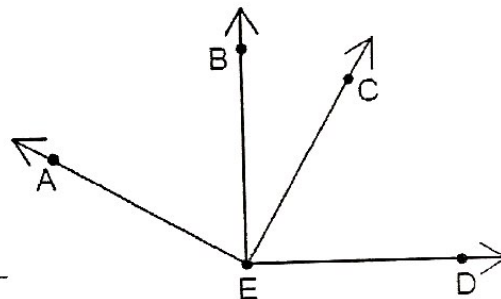
4. Prove: $\angle 2 \cong \angle 4$



1. _____	1. _____
2. $\angle 1 + \angle 2 = 90$ $\angle 3 + \angle 4 = 90$	2. _____
3. $\angle 1 + \angle 2 = \angle 3 + \angle 4$	3. _____
4. $\angle 1 + \angle 2 = \angle 1 + \angle 4$	4. _____
5. _____	5. _____

5. Given: $\angle AEC$ is a right angle
 $\angle BED$ is a right angle

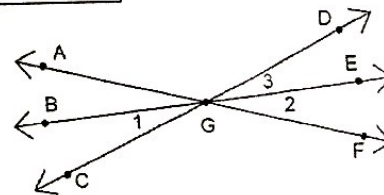
Prove: $\angle AEB \cong \angle DEC$



1. _____	1. _____
2. $\angle AEC = 90$ $\angle BED = 90$	2. _____
3. $\angle AEC = \angle AEB + \angle BEC$ $\angle BED = \angle DEC + \angle BEC$	3. _____
4. $\angle AEC = \angle BED$	4. _____
5. $\angle AEB + \angle BEC = \angle DEC + \angle BEC$	5. _____
6. _____	6. _____

6. Given: \overrightarrow{GE} bisects $\angle DGF$

Prove: $\angle 1 \cong \angle 2$

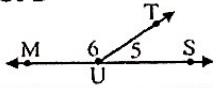


1. _____	1. _____
2. $\angle 2 \cong \angle 3$	2. _____
3. $\angle 1 \cong \angle 3$	3. _____
4. _____	4. _____

Name: _____

Geometry Proofs Worksheet B

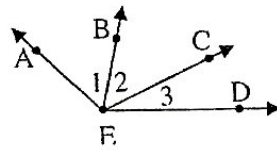
1. Given: $m\angle 5 = 47^\circ$
 Prove: $m\angle 6 = 133^\circ$



1. _____
 2. $\angle 5 + \angle 6 = 180$
 3. _____ + $\angle 6 = 180$
 4. $\angle 6 = 133$

1. _____
 2. _____
 3. Substitution
 4. _____

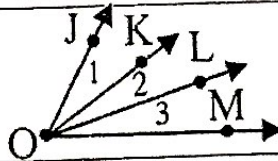
2. Given: $\angle 1$ and $\angle 2$ are complementary
 $\angle 3$ and $\angle 2$ are complementary
 Prove: $m\angle 1 = m\angle 3$



1. _____
 2. $\angle 1 + \angle 2 =$ _____
 $\angle 3 + \angle 2 =$ _____
 3. $\angle 1 + \angle 2 = \angle 3 + \angle 2$
 4. _____

1. _____
 2. _____
 3. _____
 4. _____

3. Given: $m\angle 1 = m\angle 3$
 Prove: $m\angle JOL = m\angle KOM$

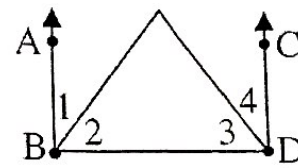


1. _____
 2. \angle _____ = $\angle 1 + \angle 2$
 $\angle KOM = \angle 3 + \angle 2$
 3. $\angle JOL = \angle 3 + \angle 2$
 4. _____

1. _____
 2. _____
 3. _____
 4. _____

4. Given: $\angle ABD$ and $\angle CDB$ are right angles
 $m\angle 2 = m\angle 4$

Prove: $m\angle 1 = m\angle 3$



1. _____

2. $\angle ABD = 90, \angle CDB = 90$

3. $\angle ABD = \angle CDB$

4. $\angle ABD = \angle 1 + \angle 2, \angle CDB = \angle 3 + \angle 4$

5. $\angle 1 + \angle 2 = \angle 3 + \angle 4$

6. $\angle 1 + \angle 2 = \angle 3 + \angle 2$

7. _____

1. _____

2. _____

3. _____

4. _____

5. _____

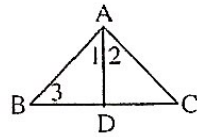
6. _____

7. _____

5. Given: \overline{AD} bisects $\angle BAC$

$\angle 1 \cong \angle 2$

Prove: $\angle 2 \cong \angle 3$



1. _____

2. $\angle 1 \cong \angle 2$

3. _____

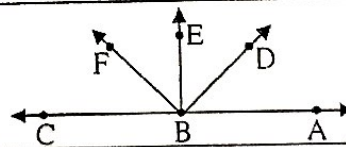
1. _____

2. _____

3. _____

6. Given: $m\angle ABE = m\angle CBE$

Prove: $\angle ABD$ and $\angle DBE$ are complementary



1. $\angle ABE \cong \angle CBE$

2. $\angle ABE + \angle CBE = 180$

3. $\angle ABE + \angle ABE = 180$

4. $2\angle ABE = 180$

5. $\angle ABE = 90$

6. $\angle ABE = \angle ABD + \angle DBE$

7. $90 = \angle ABD + \angle DBE$

8. $\angle ABD$ and $\angle DBE$ are compl.

1. given

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. def. of compl.