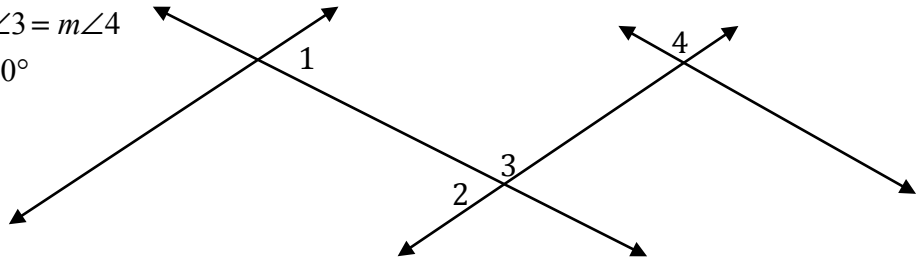
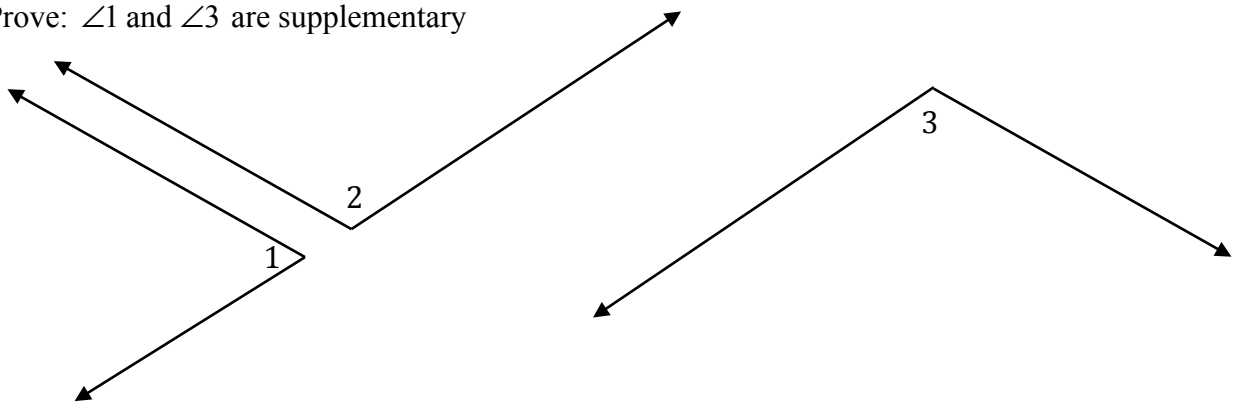
2.6 – Geometric Proofs (Day 2)

EX 1) Given: $m\angle 1 = m\angle 2,\ m\angle 3 = m\angle 4$
Prove: $m\angle 1 + m\angle 4 = 180°$



Statement	Reason
1. $m\angle 1 = m\angle 2$	1. Given
2. $m\angle 3 = m\angle 4$	2. Given
3. $m\angle 2 + m\angle 3 = 180°$	3. Linear Pair Postulate
4. $m\angle 1 + m\angle 4 = 180°$	4. Substitution Property

EX 2) Given: $m\angle 2 = m\angle 3$, $\angle 1$ and $\angle 2$ are supplementary
Prove: $\angle 1$ and $\angle 3$ are supplementary



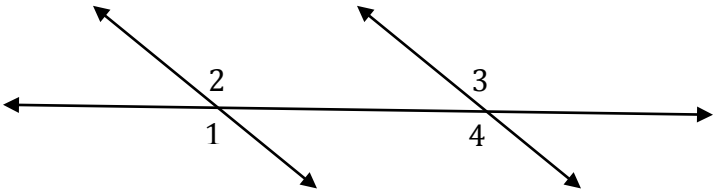
Statement	Reason
1. $\angle 1$ and $\angle 2$ are supplementary	1. Given
2. $m\angle 1 + m\angle 2 = 180°$	2. Definition of Supplementary $\angle$s
3. $m\angle 2 = m\angle 3$	3. Given
4. $m\angle 1 + m\angle 3 = 180°$	4. Substitution Property
5. $\angle 1$ and $\angle 3$ are supplementary	5. Definition of Supplementary $\angle$s

2.6 – Geometric Proofs (Day 2)

EX 3) Given: $\angle 1$ and $\angle 2$ are right angles
Prove: $\angle 1 \cong \angle 2$

STATEMENTS	REASONS
1. $\angle 1$ and $\angle 2$ are right $\angle$s	1. Given
2. $m\angle 1 = 90°$, $m\angle 2 = 90°$	2. Definition of right $\angle$s
3. $m\angle 1 = m\angle 2$	3. Transitive / Substitution Property
4. $\angle 1 \cong \angle 2$	4. Definition of $\cong$ $\angle$s

EX 4) Given: $\angle 1 \cong \angle 3$
Prove: $\angle 2 \cong \angle 4$



STATEMENTS	REASONS
1. $\angle 1 \cong \angle 3$	1. Given
2. $\angle 1$ and $\angle 2$ are vertical $\angle$s, $\angle 3$ and $\angle 4$ are vertical $\angle$s	2. Definition of vertical $\angle$s
3. $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$	3. Vertical $\angle$s Theorem
4. $\angle 1 \cong \angle 4$	4. Transitive / Substitution Property
5. $\angle 2 \cong \angle 4$	5. Transitive / Substitution Property

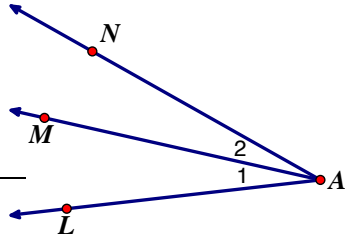
2.6 – Geometric Proofs (Day 2)

EX 5) Given that $\overline{AB} \cong \overline{CD}$, prove that $\overline{AC} \cong \overline{BD}$.

STATEMENTS	REASONS
1. $\overline{AB} \cong \overline{CD}$	1. Given
2. $AB = CD$	2. Definition of $\cong$ segments
3. $BC = BC$	3. Reflexive Property
4. $AB + BC = AC,\ BC + CD = BD$	4. Segment Addition Postulate
5. $CD + BC = AC$ $(\text{or } BC + AB = BD)$	5. Substitution Property
6. $AC = BD$	6. Transitive Property
7. $\overline{AC} \cong \overline{BD}$	7. Definition of $\cong$ segments

EX 6) Given: $m\angle LAN = 30°,\ m\angle 1 = 15°$

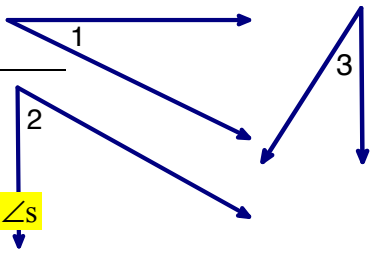
Prove: $\overrightarrow{AM}$ bisects $\angle LAN$



STATEMENTS	REASONS
1. $m\angle LAN = 30°$	1. Given
2. $m\angle LAN = m\angle 1 + m\angle 2$	2. $\angle$ Addition Postulate
3. $m\angle 1 = 15°$	3. Given
4. $30° = 15° + m\angle 2$	4. Substitution Property
5. $m\angle 2 = 15°$	5. Subtraction Property
6. $m\angle 1 = m\angle 2$	6. Transitive / Substitution Property
7. $\angle 1 \cong \angle 2$	7. Definition of $\cong$ $\angle$s
8. $\overrightarrow{AM}$ bisects $\angle LAN$	8. Definition of $\angle$ bisector

2.6 – Geometric Proofs (Day 2)

EX 7) Given: $\angle 1$ and $\angle 2$ are complementary, $\angle 2$ and $\angle 3$ are complementary
Prove: $\angle 1 \cong \angle 3$



STATEMENTS	REASONS
1. $\angle 1$ and $\angle 2$ are complementary $\angle 2$ and $\angle 3$ are complementary	1. Given
2. $m\angle 1 + m\angle 2 = 90°$ $m\angle 2 + m\angle 3 = 90°$	2. Definition of Complementary $\angle$s
3. $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	3. Transitive / Substitution Property
4. $m\angle 2 = m\angle 2$	4. Reflexive Property
5. $m\angle 1 = m\angle 3$	5. Subtraction Property
6. $\angle 1 \cong \angle 3$	6. Definition of $\cong$ $\angle$s

HW: 2-6 Practice #8, 13, 20-22, 30 & complete remaining proofs (if applicable)