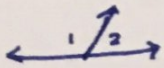
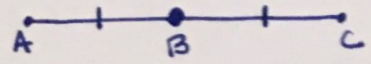
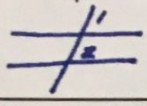
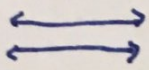
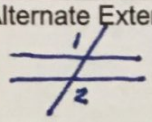
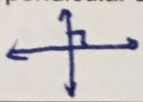
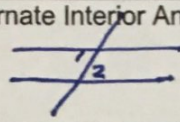
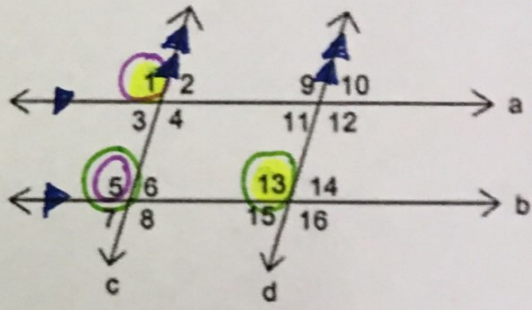
GUIDED NOTES: Proofs with Lines and Triangles

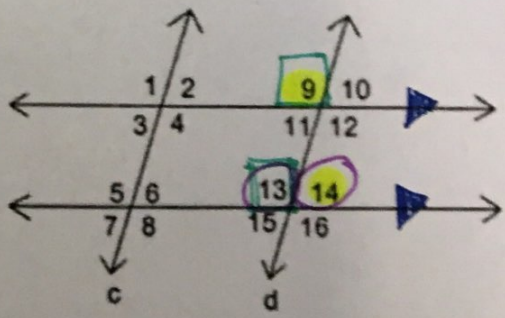
What can we use to prove?		
Def. of Vertical Angles  $\angle 1 \cong \angle 2$	Linear Pair Postulate  $\angle 1 + \angle 2 = 180°$	Def. of Midpoint 
Def. of Supplementary Angles 2 angles add to 180°	Corresponding Angle Postulate  $\angle 1 \cong \angle 2$	Def. of Bisect cut in half
Def. of Parallel Lines  never intersect	Alternate Exterior Angle Theorem  $\angle 1 \cong \angle 2$	Substitution Property "plugging in" something that is equal
Def. of Perpendicular Lines  Form right ∠'s	Alternate Interior Angle Theorem  $\angle 1 \cong \angle 2$	Angle Addition Postulate sum any angles
Reflexive Property (AB = AB) equal to itself	Transitive Property (a = b, b = c, then a = c) 2 things equal to the same part, they will also be equal	Segment Addition Postulate sum any segments

EX1. Given: a || b and c || d
Prove: ∠1 ≅ ∠13



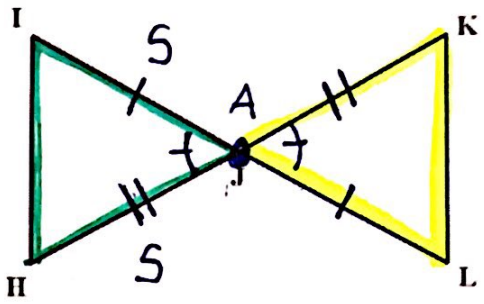
Statement:	Reason:
1. a // b and c // d	1. Given
2. $\angle 1 \cong \angle 5$	2. Def. Corresponding Angles
3. $\angle 5 \cong \angle 13$	3. Def. Corresponding Angles
4. $\angle 1 \cong \angle 13$	4. Transitive Prop.

EX2. Given a || b
Prove: m∠9 + m∠14 = 180°



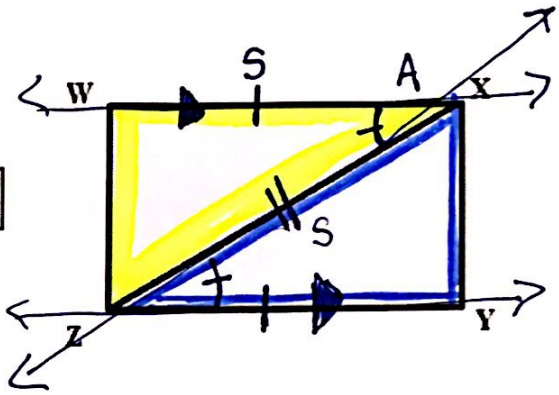
Statement:	Reason:
1. a // b	1. Given
2. $\angle 9 \cong \angle 13$	2. Def. Corresponding ∠'s
3. $m\angle 13 + m\angle 14 = 180°$	3. Linear Pair Postulate
4. $m\angle 9 + m\angle 14 = 180°$	4. Substitution Property

EX3. Given: J is the midpoint of IL.
J is the midpoint of HK.
Prove: $\Delta IJH \cong \Delta LJK$



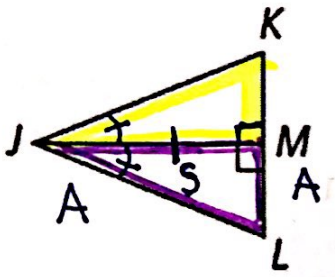
Statement:	Reason:
1. J is the midpoint of IL and HK	1. Given
2. $IJ \cong LJ$	2. Def. midpoint
3. $HJ \cong KJ$	3. Def. midpoint
4. $\angle IJH \cong \angle LJK$	4. Def. vertical $\angle$'s
5. $\Delta IJH \cong \Delta LJK$	5. SAS

EX4. Given: WX || YZ, WX ≅ YZ
Prove: $\Delta WXZ \cong \Delta YZX$



Statement:	Reason:
1. $WX \parallel YZ$, $WX \cong YZ$	1. Given
2. $XZ \cong ZX$	2. Reflexive Prop.
3. $\angle WXZ \cong \angle YZX$	3. Def. Alt. Int. $\angle$'s
4. $\Delta WXZ \cong \Delta YZX$	4. SAS

EX5. Given: $\overline{JM}$ bisects $\angle J$ - cut in half
$\overline{JM} \perp \overline{KL}$
Prove: $\Delta JMK \cong \Delta JML$



Statement:	Reason:
1. $\overline{JM}$ bisects $\angle J$ $\overline{JM} \perp \overline{KL}$	1. Given
2. $\angle KJM \cong \angle LJM$	2. Def. bisect
3. $\angle LMJ$ and $\angle KMJ$ are 90°	3. Def. Perpendicular Lines
4. $\angle LMJ \cong \angle KMJ$	4. Def. congruent
5. $\overline{JM} \cong \overline{JM}$	5. Reflexive Prop.
6. $\Delta JMK \cong \Delta JML$	6. ASA