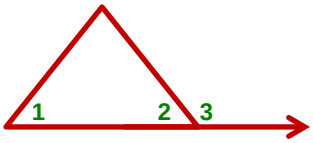
Geometry 1-2 Name _____KEY_____

Assignment Period _____ Date _____

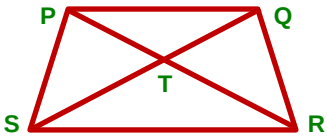
Geometric Proofs #1 – Segments and Angles

Given: $m\angle 1 + m\angle 3 = 180^o$ **Prove**: $\angle 1 \cong \angle 2$



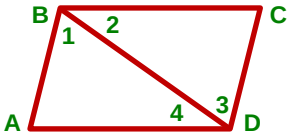
Step	Statement	Step	Reason
1)	$m\angle 1 + m\angle 3 = 180^o$	1)	Given
2)	$\angle 2$ and $\angle 3$ are supplementary	2)	Two angles forming a linear pair are supplementary
3)	$m\angle 2 + m\angle 3 = 180^o$	3)	Definition of Supplementary Angles
4)	$m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$	4)	Substitution Property (from steps 1 and 3)
5)	$m\angle 1 = m\angle 2$	5)	Subtraction Property
6)	$\angle 1 \cong \angle 2$	6)	Two angles with equal measures are congruent

Given: $PT = QT$ **and** $TR = TS$ **Prove**: $PR = QS$



Step	Statement	Step	Reason
1)	$PT = QT, \quad TR = TS$	1)	Given
2)	$PT + TR = PR$	2)	Segment Addition Postulate
3)	$QT + TS = QS$	3)	Segment Addition Postulate
4)	$PT + TS = PR$	4)	Substitution Property (from steps 1 and 2)
5)	$PT + TS = QS$	5)	Substitution Property (from steps 1 and 3)
6)	$PR = QS$	6)	Substitution Property (from steps 4 and 5)

Given: $m\angle 1 = m\angle 3$ **and** $m\angle 2 = m\angle 4$ **Prove**: $m\angle ABC = m\angle ADC$



Step	Statement	Step	Reason
1)	$m\angle 1 = m\angle 3, \quad m\angle 2 = m\angle 4$	1)	Given
2)	$m\angle 1 + m\angle 2 = m\angle ABC$	2)	Angle Addition Postulate
3)	$m\angle 3 + m\angle 4 = m\angle ADC$	3)	Angle Addition Postulate
4)	$m\angle 1 + m\angle 4 = m\angle ABC$	4)	Substitution Property (from steps 1 and 2)
5)	$m\angle 1 + m\angle 4 = m\angle ADC$	5)	Substitution Property (from steps 1 and 3)
6)	$m\angle ABC = m\angle ADC$	6)	Substitution Property (from steps 4 and 5)