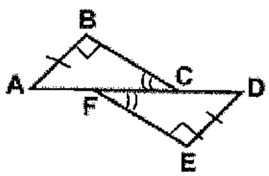
Name: Key

Date: ____________

Given Parallel Lines

1.



Given: $\overline{AFCD}$

$\overline{AB} \perp \overline{BC}$

$\overline{DE} \perp \overline{EF}$

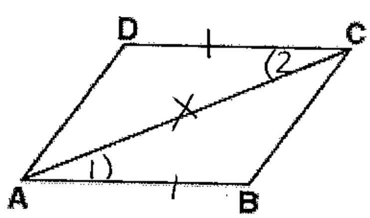
$\overline{BC} \parallel \overline{FE}$

$\overline{AB} \cong \overline{DE}$

Prove: $\overline{AC} \cong \overline{FD}$

STATEMENTS	REASONS
(1) $\overline{AFCD}$	(1) Given
(2) $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$	(2) Given
(3) $\angle B$ and $\angle E$ are right angles.	(3) $\perp$ lines form right $\angle$s
(4) $\angle B \cong \angle E$	(4) All right angles are congruent.
(5) $\overline{BC} \parallel \overline{FE}$	(5) Given
(6) $\angle BCA \cong \angle EFD$	(6) If 2 $\parallel$ lines are cut by a transversal then the alternate interior $\angle$s are $\cong$
(7) $\overline{AB} \cong \overline{DE}$	(7) Given
(8) $\triangle ABC \cong \triangle DEF$	(8) AAS $\cong$ AAS
(9) $\overline{AC} \cong \overline{FD}$	(9) CPCTC

2.



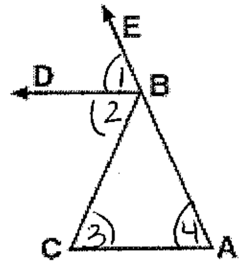
Given: $\overline{AB} \parallel \overline{DC}$

$\overline{AB} \cong \overline{DC}$

Prove: $\overline{AD} \cong \overline{CB}$

S	R
① AB $\parallel$ CD	① Given
② $\angle 1 \cong \angle 2$	② If 2 $\parallel$ lines are cut by a transversal then the alternate interior $\angle$s are $\cong$
③ AB $\cong$ CD	③ Given
④ AC $\cong$ AC	④ Reflexive Property
⑤ $\triangle ACD \cong \triangle CAB$	⑤ SAS $\cong$ SAS
⑥ AD $\cong$ CB	⑥ CPCTC

3.

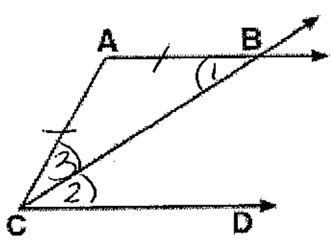


Given: $\overrightarrow{BD}$ bisects $\angle CBE$
$\overrightarrow{BD} \parallel \overline{AC}$

Prove: $\overline{BC} \cong \overline{BA}$

S	R
① $\overrightarrow{BD}$ bisects $\angle CBE$	① Given
② $\angle 1 \cong \angle 2$	② An $\angle$ bisector divides an $\angle$ into 2 $\cong$ $\angle$s
③ $\overrightarrow{BD} \parallel \overline{AC}$	③ Given
④ $\angle 2 \cong \angle 3$	④ If 2 $\parallel$ lines are cut by a transversal then the alternate interior $\angle$s are $\cong$
⑤ $\angle 1 \cong \angle 3$	⑤ Transitive
⑥ $\angle 1 \cong \angle 4$	⑥ If 2 $\parallel$ lines are cut by a transversal then the corresponding $\angle$s are $\cong$
⑦ $\angle 3 \cong \angle 4$	⑦ Transitive
⑧ $BC \cong BA$	⑧ In a Δ if 2 $\angle$s are $\cong$ then the sides opposite them are $\cong$

4.

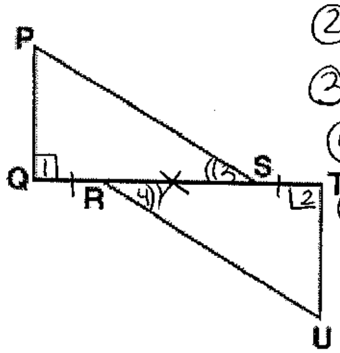


Given: $\overline{AB} \parallel \overline{CD}$
$AC = AB$

Prove: $\overrightarrow{CB}$ bisects $\angle ACD$

S	R
① $AB \parallel CD$	① Given
② $\angle 1 \cong \angle 2$	② If 2 $\parallel$ lines are cut by a transversal then the alternate interior $\angle$s are $\cong$
③ $AC \cong AB$	③ Given
④ $\angle 1 \cong \angle 3$	④ In a Δ if 2 sides are $\cong$ then the $\angle$s opposite them are $\cong$
⑤ $\angle 2 \cong \angle 3$	⑤ Transitive
⑥ $\overrightarrow{CB}$ bisects $\angle ACD$	⑥ An $\angle$ bisector divides an $\angle$ into 2 $\cong$ $\angle$s

5.

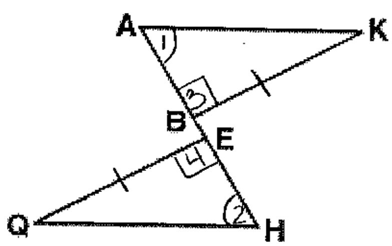


Given: $\overline{PQ} \perp \overline{QT}$
$\overline{UT} \perp \overline{QT}$
$\overline{QR} \cong \overline{ST}$
$\overline{PS} \parallel \overline{RU}$

Prove: $\angle P \cong \angle U$

S	R
① PQ⊥QT, UT⊥QT	① Given
② ∠1 & ∠2 are right ∠s	② ⊥ lines form right ∠s
③ ∠1≅∠2	③ All right ∠s are ≅
④ QR≅TS	④ Given
⑤ RS≅RS	⑤ Reflexive Property
⑥ QR+RS≅TS+RS	⑥ Addition Postulate
⑦ QS=QR+RS TR=TS+RS	⑦ Partition Postulate
⑧ QS≅TR	⑧ Substitution Postulate
⑨ PS∥RU	⑨ Given
⑩ ∠3≅∠4	⑩ If 2 ∥ lines are cut by a transversal then the alternate interior ∠s are ≅
⑪ △PQS≅△UTR	⑪ ASA≅ASA
⑫ ∠P≅∠U	⑫ CPCTC

6.

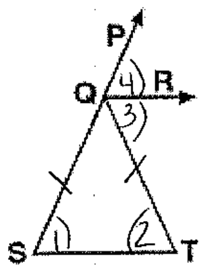


Given: $\overline{AK} \parallel \overline{QH}$
$\overline{KB} \perp \overline{AH}$
$\overline{QE} \perp \overline{AH}$
$KB = QE$

Prove: $AK = QH$

S	R
① AK∥QH	① Given
② ∠1≅∠2	② If 2 ∥ lines are cut by a transversal then the alternate interior ∠s are ≅
③ KB⊥AH, QE⊥AH	③ Given
④ ∠3 & ∠4 are right ∠s	④ ⊥ lines form right ∠s
⑤ ∠3≅∠4	⑤ All right ∠s are ≅
⑥ KB≅QE	⑥ Given
⑦ △ABK≅△HEQ	⑦ AAS≅AAS
⑧ AK≅HQ	⑧ CPCTC

7.

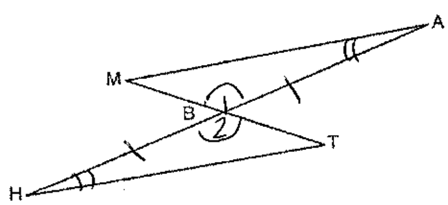


Given: QS = QT
$\overrightarrow{QR} \parallel \overline{ST}$

Prove: $\overrightarrow{QR}$ bisects ∠PQT

S	R
① QS = QT	① Given
② ∠1 ≅ ∠2	② In a Δ if 2 sides are ≅ then the ∠s opposite them are ≅
③ QR ∥ ST	③ Given
④ ∠1 ≅ ∠4	④ If 2 ∥ lines are cut by a transversal then the corresponding ∠s are ≅
⑤ ∠2 ≅ ∠4	⑤ Transitive
⑥ ∠2 ≅ ∠3	⑥ If 2 ∥ lines are cut by a transversal then the alternate interior ∠s are ≅
⑦ ∠4 ≅ ∠3	⑦ Transitive
⑧ QR bisects ∠PQT	⑧ An ∠ bisector divides an ∠ into 2 ≅ ∠s

8. Given: $\overline{MT}$ and $\overline{HA}$ intersect at *B*, $\overline{MA} \parallel \overline{HT}$, and $\overline{MT}$ bisects $\overline{HA}$.



Prove: $\overline{MA} \cong \overline{HT}$

S	R
① MT & HA intersect at B	① Given
② ∠1 ≅ ∠2	② Intersecting lines form ≅ vertical ∠s
③ MA ∥ HT	③ Given
④ ∠A ≅ ∠H or (∠M ≅ ∠T)	④ If 2 ∥ lines are cut b a transversal then the alternate interior ∠s are ≅
⑤ MT bisects HA	⑤ Given
⑥ HB ≅ AB	⑥ A segment bisector divides a segment into 2 ≅ segments
⑦ ΔMAB ≅ ΔTHB	⑦ ASA ≅ ASA or (AAS ≅ AAS)
⑧ MA ≅ TH	⑧ CPCTC