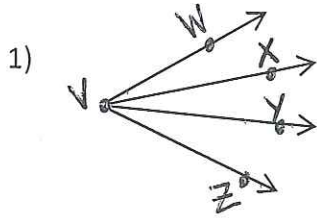## 2.8 Two-Column Proof Practice

For each proof below, use the pieces in the Proof Bank to help you fill in the 2 column proof provided. Each piece in the Proof Bank is only used once!

1)

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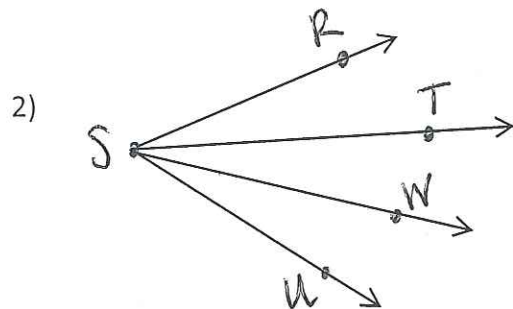Prove: $\angle WVX \cong \angle YVZ$

Statements	Reason
1) $\overrightarrow{VX}$ bisects $\angle WVY$, $\overrightarrow{VY}$ bisects $\angle XVZ$	1)
2) $\angle XVY \cong \angle YVZ$	2)
3)	3) Definition of Angle Bisector
4)	4)

Proof Bank

Definition of Angle Bisector

$\angle WVX \cong \angle XVY$

Given

Transitive Property

$\angle WVX \cong \angle YVZ$

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2)

Given: $m\angle RSW = m\angle TSU$

Prove: $m\angle RST = m\angle WSU$

Proof Bank

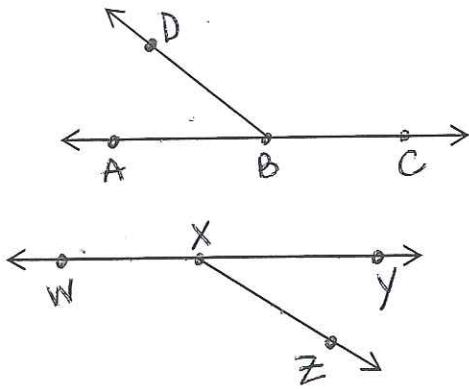$m\angle RST + m\angle TSW = m\angle TSW + m\angle WSU$

Subtraction Property

Angle Addition Postulate

$m\angle RST = m\angle WSU$

Angle Addition Postulate

$m\angle RSW = m\angle TSU$

Statements	Reasons
1)	1) Given
2) $m\angle RST + m\angle TSW = m\angle RSW$	2)
3) $m\angle TSW + m\angle WSU = m\angle TSU$	3)
4)	4) Substitution
5) $m\angle RST + m\angle TSW - m\angle TSW = m\angle TSW - m\angle TSW + m\angle WSU$	5)
7)	7) Substitution

3)

Proof Bank

Subtraction Property

Given

$m\angle YXZ + m\angle WXZ = 180$

Definition of Congruence

Substitution

$m\angle YXZ + m\angle DBC = m\angle YXZ + m\angle WXZ$

$m\angle ABD + m\angle DBC = 180$

$m\angle ABD = m\angle YXZ$

Substitution

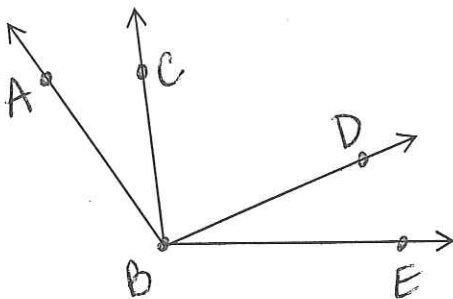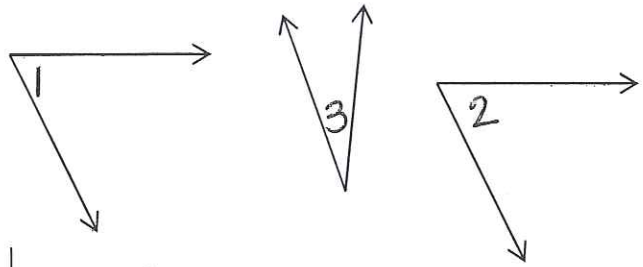| Statements	Reasons
1) $\angle ABD \cong \angle YXZ$ $\angle ABD$ and $\angle CBD$ form a linear pair $\angle YXZ$ and $\angle WXZ$ form a linear pair	1)
2)	2) Definition of Congruence
3)	3) Definition of Linear Pair
4)	4) Definition of Linear Pair
5) $m\angle ABD + m\angle DBC = m\angle YXZ + m\angle WXZ$	5)
6)	6) Substitution
7) $m\angle YXZ - m\angle YXZ + m\angle DBC = m\angle YXZ - m\angle YXZ + m\angle WXZ$	7)
8) $m\angle DBC = m\angle WXZ$	8)
9) $\angle DBC \cong \angle WXZ$	9)

For each of the following proofs, fill in the missing Statements or Reasons. You are not given the missing pieces this time!!

4) Given: $\angle ABC \cong \angle DBE$
   Prove: $\angle ABD \cong \angle CBE$

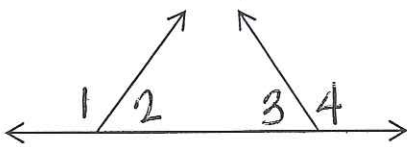| Statements	Reasons
1) $\angle ABC \cong \angle DBE$	1)
2) $m\angle ABC = m\angle DBE$	2)
3) $m\angle ABC + m\angle CBD = m\angle ABD$	3)
4) $m\angle CBD + m\angle DBE = m\angle CBE$	4)
5) $m\angle DBE + m\angle CBD = m\angle ABD$	5)
6) $m\angle CBE = m\angle ABD$	6)
7) $\angle ABD \cong \angle CBE$	7)

5) Given: ∠1 and ∠3 are complementary angles
   ∠2 and ∠3 are complementary angles

Statements	Reasons
1)	1) Given
2)	2) Definition of Complementary Angles
3)	3) Definition of Complementary Angles
4)	4) Substitution
5)	5) Subtraction
6)	6) Substitution
7)	7) Definition of Congruence

6) Given: ∠1 and ∠2 are supplementary angles
   ∠3 and ∠4 are supplementary angles
   ∠1 ≅ ∠4
   Prove: ∠2 ≅ ∠3

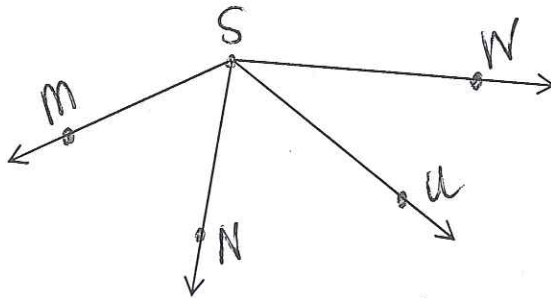| Statements	Reasons
1) ∠1 and ∠2 are supplementary angles ∠3 and ∠4 are supplementary angles ∠1 ≅ ∠4	1)
2) $m\angle 1 = m\angle 4$	2)
3) $m\angle 1 + m\angle 2 = 180$	3)
4) $m\angle 3 + m\angle 4 = 180$	4)
5) $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	5)
6) $m\angle 4 + m\angle 2 = m\angle 3 + m\angle 4$	6)
7) $m\angle 4 - m\angle 4 + m\angle 2 = m\angle 3 + m\angle 4 - m\angle 4$	7)
8) $m\angle 2 = m\angle 3$	8)
9) ∠2 ≅ ∠3	9)

For each of the following proofs, write your own 2-Column Proof.

7) Given: ∠QPS ≅ ∠TPR
   Prove: ∠QPR ≅ ∠TPS
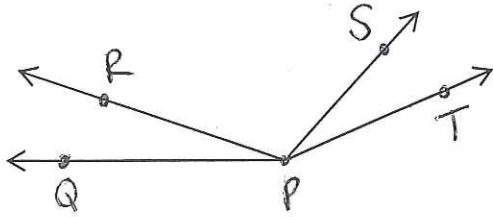
Statements	Reasons
1)	1)
2)	2)
3)	3)
4)	4)
5)	5)
6)	6)
7)	7)
8)	8)

8) Given: $\overrightarrow{SN}$ bisects ∠MSU, $\overrightarrow{SU}$ bisects ∠NSW
   Prove: ∠MSN ≅ ∠USW

Statements	Reasons
1)	1)
2)	2)
3)	3)
4)	4)