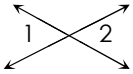
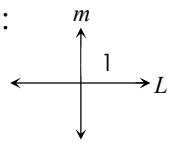
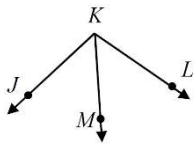
PRACTICE!

Justify each statement below using a property of equality, property of congruence, definition, postulate, or theorem.

1. If $\angle C$ is a right angle, then $m\angle C = 90°$	**1.**
2. If $\angle X$ is supplementary to $\angle Y$ and $\angle X$ is supplementary to $\angle Z$, then $\angle Y \cong \angle Z$.	**2.**
3. If  then, $\angle 1 \cong \angle 2$	**3.**
4. If $m\angle P + m\angle Q = 90°$, then $\angle P$ and $\angle Q$ are complementary.	**4.**
5. If $\angle M$ and $\angle N$ form a right angle, then then $\angle M$ and $\angle N$ are complementary.	**5.**
6. Given:  If $l \perp m$, then $\angle 1$ is a right angle.	**6.**
7. If $\angle W$ and $\angle X$ are supplementary, then $m\angle W + m\angle X = 180°$.	**7.**
8. If $\angle L$ is complementary to $\angle M$ and $\angle N$ is complementary to $\angle M$, then $\angle L \cong \angle N$.	**8.**
9. If $\angle A$ and $\angle B$ form a linear pair, then then $\angle A$ and $\angle B$ are supplementary.	**9.**
10. If $\angle N$ and $\angle P$ are complementary, then $m\angle N + m\angle P = 90°$.	**10.**
11. Given the diagram to the right: $m\angle JKM + m\angle MKL = m\angle JKL$ 	**11.**
12. If $m\angle R = m\angle S$, then $\angle R \cong \angle S$.	**12.**

REASONS BANK

Properties of Equality:

Addition Property
Subtraction Property
Multiplication Property
Division Property
Distributive Property
Substitution Property
Reflexive Property
Symmetric Property
Transitive Property

Properties of Congruence:

Reflexive Property
Symmetric Property
Transitive Property

Definitions:

Definition of Congruence
Definition of a Right Angle
Definition of Complementary Angles
Definition of Supplementary Angles
Definition of an Angle Bisector
Definition of Perpendicular

Postulates:

Angle Addition Postulate

Theorems:

Vertical Angles Theorem
Complement Theorem
Linear Pair (Supplement) Theorem
Congruent Complements Theorem
Congruent Supplements Theorem

ANGLE PROOFS GUIDE

Directions: Use the reasons below to complete proofs 1-6. Cross them off as you use them for each proof.

1

- Definition of a Right Angle
- Definition of Complementary Angles
- Given
- Transitive Property
- Angle Addition Postulate

2

- Linear Pair (Supplement) Theorem
- Substitution
- Given
- Definition of Supplementary Angles
- Definition of Congruence
- Definition of Supplementary Angles
- Given

3

- Given
- Congruent Complements Theorem
- Complement Theorem
- Given
- Definition of Complementary Angles

4

- Definition of Angle Bisector
- Given
- Given
- Transitive Property
- Definition of Angle Bisector

5

- Angle Addition Postulate
- Given
- Substitution
- Definition of Congruence
- Angle Addition Postulate
- Transitive Property
- Definition of Congruence

6

- Definition of Congruence
- Transitive Property
- Subtraction Property
- Definition of Complementary Angles
- Definition of Congruence
- Substitution
- Definition of Complementary Angles
- Given
- Vertical Angles Theorem
- Given

ANGLE PROOFS GUIDE

Directions: Use the reasons below to complete proofs 1-6. Cross them off as you use them for each proof.

1

- Definition of a Right Angle
- Definition of Complementary Angles
- Given
- Transitive Property
- Angle Addition Postulate

2

- Linear Pair (Supplement) Theorem
- Substitution
- Given
- Definition of Supplementary Angles
- Definition of Congruence
- Definition of Supplementary Angles
- Given

3

- Given
- Congruent Complements Theorem
- Complement Theorem
- Given
- Definition of Complementary Angles

4

- Definition of Angle Bisector
- Given
- Given
- Transitive Property
- Definition of Angle Bisector

5

- Angle Addition Postulate
- Given
- Substitution
- Definition of Congruence
- Angle Addition Postulate
- Transitive Property
- Definition of Congruence

6

- Definition of Congruence
- Transitive Property
- Subtraction Property
- Definition of Complementary Angles
- Definition of Congruence
- Substitution
- Definition of Complementary Angles
- Given
- Vertical Angles Theorem
- Given

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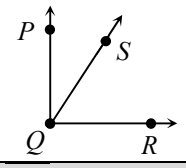
ANGLE Proofs

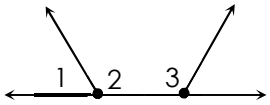
Complete the proofs below by giving the missing statements and reasons.

1 **Given:** $\angle PQR$ is a right angle
Prove: $\angle PQS$ and $\angle SQR$ are complementary



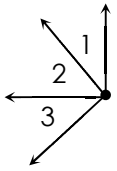
Statements	Reasons
1. $\angle PQR$ is a right angle	**1.**
2. $m\angle PQR = 90°$	**2.**
3. $m\angle PQS + m\angle SQR = m\angle PQR$	**3.**
4. $m\angle PQS + m\angle SQR = 90°$	**4.**
5. $\angle PQS$ and $\angle SQR$ are complementary	**5.**

2 **Given:** $\angle 2 \cong \angle 3$; $\angle 1$ and $\angle 2$ form a linear pair
Prove: $\angle 1$ and $\angle 3$ are supplementary



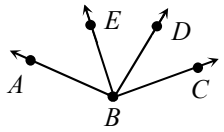
Statements	Reasons
1. $\angle 2 \cong \angle 3$	**1.**
2. $m\angle 2 = m\angle 3$	**2.**
3. $\angle 1$ and $\angle 2$ form a linear pair	**3.**
4. $\angle 1$ and $\angle 2$ are supplementary	**4.**
5. $m\angle 1 + m\angle 2 = 180°$	**5.**
6. $m\angle 1 + m\angle 3 = 180°$	**6.**
7. $\angle 1$ and $\angle 3$ are supplementary	**7.**

3 **Given:** $\angle 1$ and $\angle 2$ form a right angle; $m\angle 1 + m\angle 3 = 90°$
Prove: $\angle 2 \cong \angle 3$



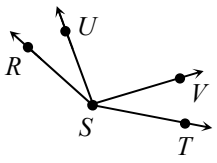
Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a right angle	**1.**
2. $\angle 1$ and $\angle 2$ are complementary	**2.**
3. $m\angle 1 + m\angle 3 = 90°$	**3.**
4. $\angle 1$ and $\angle 3$ are complementary	**4.**
5. $\angle 2 \cong \angle 3$	**5.**

4 **Given:** $\overrightarrow{BE}$ bisects $\angle ABD$; $\overrightarrow{BD}$ bisects $\angle EBC$
Prove: $\angle ABE \cong \angle DBC$



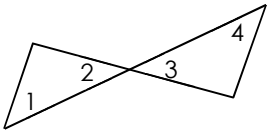
Statements	Reasons
1. $\overrightarrow{BE}$ bisects $\angle ABD$	**1.**
2. $\angle ABE \cong \angle EBD$	**2.**
3. $\overrightarrow{BD}$ bisects $\angle EBC$	**3.**
4. $\angle EBD \cong \angle DBC$	**4.**
5. $\angle ABE \cong \angle DBC$	**5.**

5 **Given:** $\angle RSU \cong \angle VST$
Prove: $\angle RSV \cong \angle UST$



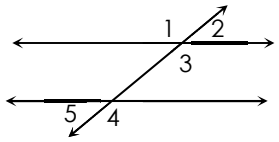
Statements	Reasons
1. $\angle RSU \cong \angle VST$	**1.**
2. $m\angle RSU = m\angle VST$	**2.**
3. $m\angle RSU + m\angle USV = m\angle RSV$	**3.**
4. $m\angle VST + m\angle USV = m\angle UST$	**4.**
5. $m\angle RSU + m\angle USV = m\angle UST$	**5.**
6. $m\angle RSV = m\angle UST$	**6.**
7. $\angle RSV \cong \angle UST$	**7.**

6 **Given:** $\angle 1$ and $\angle 2$ are complementary, $\angle 3$ and $\angle 4$ are complementary
Prove: $\angle 1 \cong \angle 4$



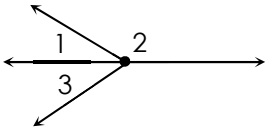
Statements	Reasons
1. $\angle 1$ and $\angle 2$ are complementary	**1.**
2. $\angle 3$ and $\angle 4$ are complementary	**2.**
3. $m\angle 1 + m\angle 2 = 90°$	**3.**
4. $m\angle 3 + m\angle 4 = 90°$	**4.**
5. $\angle 2 \cong \angle 3$	**5.**
6. $m\angle 2 = m\angle 3$	**6.**
7. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	**7.**
8. $m\angle 1 + m\angle 3 = m\angle 3 + m\angle 4$	**8.**
9. $m\angle 1 = m\angle 4$	**9.**
10. $\angle 1 \cong \angle 4$	**10.**

7 **Given:** $\angle 1 \cong \angle 4$; $\angle 4$ and $\angle 5$ form a linear pair
Prove: $\angle 1$ and $\angle 5$ are supplementary



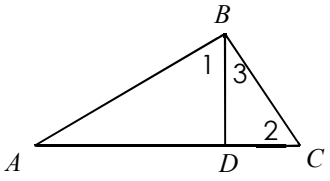
Statements	Reasons
1. $\angle 1 \cong \angle 4$	**1.**
2.	**2.** Definition of Congruence
3.	**3.** Given
4. $\angle 4$ and $\angle 5$ are supplementary	**4.**
5.	**5.** Definition of Supplementary Angles
6.	**6.** Substitution
7. $\angle 1$ and $\angle 5$ are supplementary	**7.**

8 **Given:** $\angle 1$ and $\angle 2$ form a linear pair; $m\angle 2 + m\angle 3 = 180°$
Prove: $\angle 1 \cong \angle 3$



Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a linear pair	**1.**
2.	**2.** Linear Pair (Supplement) Theorem
3.	**3.** Given
4.	**4.** Definition of Supplementary Angles
5. $\angle 1 \cong \angle 3$	**5.**

9 **Given:** $\overline{AB} \perp \overline{BC}$, $\angle 2$ and $\angle 3$ are complementary
Prove: $\angle 1 \cong \angle 2$



Statements	Reasons
1. $\overline{AB} \perp \overline{BC}$	**1.**
2. $\angle ABC$ is a right angle	**2.**
3.	**3.** Definition of a Right Angle
4. $m\angle 1 + m\angle 3 = m\angle ABC$	**4.**
5. $m\angle 1 + m\angle 3 = 90°$	**5.**
6.	**6.** Definition of Complementary Angles
7.	**7.** Given
8. $\angle 1 \cong \angle 2$	**8.**