1. **Right Angle Proof**

Given: <1 is a right angle; <2 is a right angle

Prove: <1 and <2 are congruent

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| <1 is a right angle; <2 is a right angle   |  |
| m<1 = 90; m<2 = 90    |  |
| m<1 = m<2   |  |
| <1 and <2 are congruent |  |



1. **Exterior Angle Theorem Proof**

Given: ∠4 is an exterior angle

Prove: m∠ 4 = m∠2 + m∠3

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| 1. ∠4 is an exterior angle
 | Given  |
| 1. ∠ 4 and ∠ 1 form a linear pair
 |  |
|  |  |
| 1. m∠4 + m∠1 = 180
 |  |
|  | Triangle sum theorem  |
|  | Substitution |
| 1. m∠ 4 = m∠2 + m∠3
 |  |

1. **Vertical Angles Proof**



|  |  |
| --- | --- |
| **Statements** | **Reasons** |
|  |  |
|  |  |
|  |  |
|  |  |

1. **Parallel Sides Proof**

Word Bank:





1. **Bisecting Lines Proof**



|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| 1. WY and XZ bisect each other at P
 |  |
| 1. $\overbar{WP }≅\overbar{YP}; \overbar{XP}≅\overbar{ZP}$
 |  |
| 1.
 |  |
| 1. $∆WPX ≅ ∆YPZ$
 |  |

1. **Complementary Angles Proof**
2. **Alternate Interior Angles Proof**



Given: $l∥m$

Prove: $∠1≅∠3$

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
|  | Given |
| 1. $∠1≅∠6$
 |  |
|  |  |
| 1. $∠1≅∠3$
 |  |



1. **Alternate Interior Angles Proof**

Given: $l∥m$

Prove: $∠2≅∠4$

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| 1. $l∥m$
 | Given |
| 1. and are supplementary
 | Same – Side Interior Angles  |
| 1.
 |  |
| 1. and are a linear pair
 |  |
| 1. and are supplementary
 | Linear Pair Theorem  |
| 1.
 |  |
| 1.
 |  |
| 1. $∠2≅∠4$
 |  |

1. **Properties to Know:**

\*You must know how to use these properties in a proof and be able to give an example for each.

|  |  |
| --- | --- |
| **Property** | **Example** |
| Substitution Property | If a = b, then you may replace b with a in any expression |
| Reflexive Property  | a = a |
| Transitive Property  | If a = b and b = c, then a = c |
| Addition Property of Equality  | If a = b, then a + c = b + c |
| Subtraction Property of Equality  | If a = b, then a – c = b – c |

1. **Definitions, Theorems, and Postulates to know:**

|  |  |  |
| --- | --- | --- |
| **Definitions**  | **Theorems** | **Postulates**  |
| Definition of Congruence | Pythagorean Theorem | SSS |
| Definition of Bisect  | Vertical Angles  | SAS |
| Definition of Supplementary Angles | Alternate Interior Angles | HL |
| Definition of Complementary Angles | Complementary Angles | AAS |
|  | Right Angle Theorem  | ASA |
|  | Linear Pair  | Segment Addition Postulate |
|  | Triangle Sum Theorem  |  |

1. **CPCTC stands for:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Mid – Segment Theorem**

**13. Solve for x and y**

1. **Solve for x and y**



X = \_\_\_\_\_\_\_\_\_

Y = \_\_\_\_\_\_\_\_\_



X = \_\_\_\_\_\_\_\_\_

Y = \_\_\_\_\_\_\_\_\_

1. **Solve for x**

**15. Solve for the missing length.**



RQ = \_\_\_\_\_\_\_\_

