Speak **L**ike **A** **M**athematician:

proof:

two-column proof:

theorem:

Properties of Segment and Angle Congruence

Reflexive: segment AB ≅ _____ ∠A ≅ _____

Symmetric: If segment AB ≅ segment CD, then _____.

Transitive: If ∠A ≅ ∠B and ∠B ≅ ∠C, then _____.

Example 1 – Name the Property

a) If UV = KL and KL = 6, then UV = 6.

b) If m∠1 = m∠2, then m∠2 = m∠1.

c) ∠DEF ≅ ∠DEF

d) If ½·m∠G = 45°, then m∠G = 90°.

e) If ∠PQR ≅ ∠XYZ and ∠XYZ ≅ ∠LMN, then ∠PQR ≅ ∠LMN.

f) If 5x = 2x + 18, then 3x = 18.

Example 2 – Complete Each Statement

a) Reflexive Property of Congruence: ∠KLM ≅ _____

b) Substitution: If PQ = 3 and PR = PQ + QR, then PR = _____

c) Subtraction POE: If 14x + 5 = 33, then 14x = _____

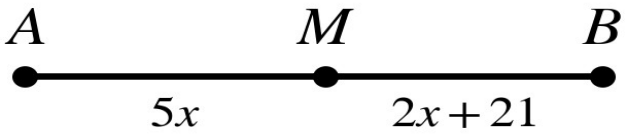
d) Transitive POE: If AB = CD and CD = EF, then _____

e) Symmetric Property of Congruence: If ∠TUV ≅ ∠WXY, then _____

f) Division POE: If 6·m∠A = 120°, then m∠A = _____

Example 3 – Prove It: Midpoint

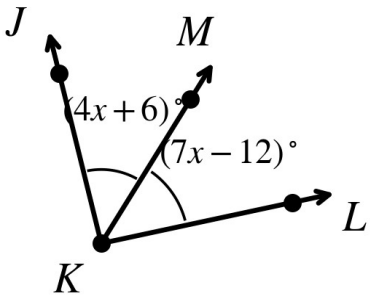
Given: M is the midpoint of segment AB. Prove: x = 7.



Statements	Reasons
1. M is the midpoint of segment AB	**1.** Given
2.	**2.**
3.	**3.**
4.	**4.**
5.	**5.**

Example 4 – Prove It: Angle Bisector

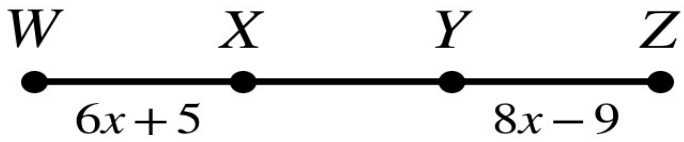
Given: Ray KM bisects ∠JKL. Prove: x = 6.



Statements	Reasons
1. Ray KM bisects ∠JKL	**1.** Given
2.	**2.**
3.	**3.**
4.	**4.**
5.	**5.**
6.	**6.**

Example 5 – Prove It: Double Midpoint

Given: X is the midpoint of segment WY, and Y is the midpoint of segment XZ. Prove: x = 7.



Statements	Reasons
1. X is the midpoint of WY; Y is the midpoint of XZ	**1.** Given
2.	**2.**
3.	**3.**
4.	**4.**
5.	**5.**
6.	**6.**