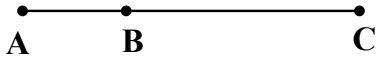
2 - 7

Proving Segment Relationships

Segment Addition Postulate

If A, B, and C are collinear and B is between A and C, then AB + BC = AC



HOW to COMPLETE a PROOF

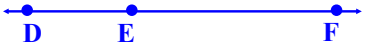
1) Define / Convert all given information into a equation that can be manipulated. Do this by using the Definitions of your vocab.

GIVEN: *A is the midpoint of BC*

CONCLUSION: BA = CA **Definition of a Midpoint**

2) Use provided picture to create equations that can be used. Do this by using Postulates and Theorems

Given:



Conclusion: DE + EF = DF **Segment Addition Postulate**

3) Use equations that are given and that you have created to create new equations. Do this by using Properties.

Given: Angle 1 + Angle 2 = 180

Angle 1 = 60

Conclusion:

60 + Angle 2 = 180 - Substitution Property

Angle 2 = 120 - Subtraction Property

PROOF with SEGMENT ADDITION

Given: PQ = RS
Prove: PR = QS

Always restate Given first

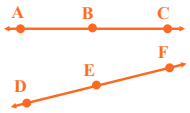
Look at picture to find information that might help lead towards proof

Use given statements and created statements to manipulate equations

When two different segments are equal to the same value, the two segments are equal

STATEMENTS	REASONS
1) PQ = RS	1) Given
2) PQ + QR = PR	2) Segment Addition Postulate
3) QR + RS = QS	3) Segment Addition Postulate
4) RS + QR = PR	4) Substitution
5) PR = QS	5) Substitution

EXAMPLE



Given: *AC = DF*
B is the midpoint of AC
E is the midpoint of EF

Prove: *BC = EF*

STATEMENTS	REASONS