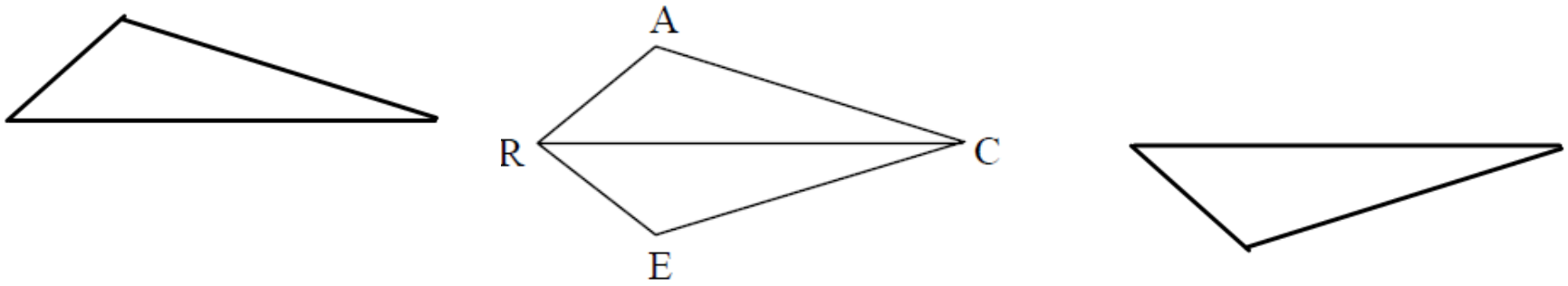
Helpful properties and postulates

- Reflexive property
- Segment and Angle addition postulate
- Addition Property of Equality
- Subtraction Property of Equality
- Transitive and Substitution Property

Reflexive property



When triangles share the same side, the side is congruent to itself.

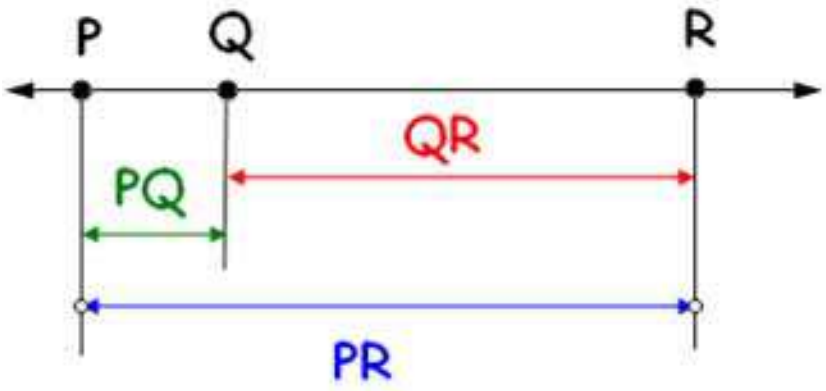
This is called the

REFLEXIVE PROPERTY.

Segment Addition Postulate

- A whole is equal to the sum of all its parts.

The **Postulate** says that if point *Q* is between points *P* and *R* on a line, then ***PQ*** + ***QR*** = ***PR***.



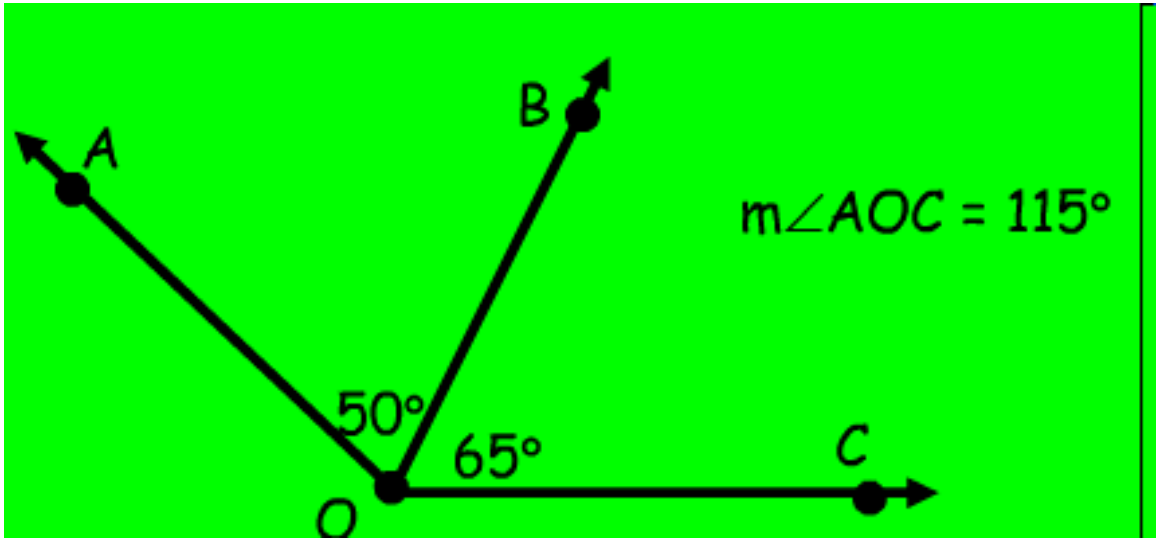
Thus, PQ + QR = PR

NOTE: Notice there is a plus sign on only one side of the equation

Angle Addition Postulate

- A whole is equal to the sum of all its parts.

If B lies on the interior of $\angle AOC$, then $m\angle AOB + m\angle BOC = m\angle AOC$.



Substitution OR Transitive Property of Equality

- Transitive: If a = b and b = c, then a = c
- Ex: Pig=bacon and bacon =fat, then pig=fat!

Substitution: a quantity may be substituted for its equal in any expression

If a statement a = b, is true and

If the statement a + c = 180 is true

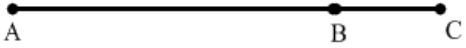
then the statement b + c = 180 is also true

Ex: Levi= awesome math student and Maya= awesome math student, then Levi= Maya! Hmmm… ??? Logical??? HA HA!

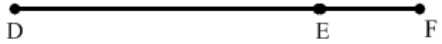
In general: Transitive may be used when the order is the same as the above…
Substitution may be used when any 2 quantities are equal!
When in doubt, use substitution property!

Addition Property of Equality

- Allows you to add congruent (equal) segments
- Allows you to add congruent (equal) angles.



Given: AB=DE; BC=EF



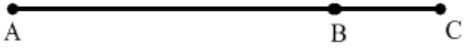
Prove: AC = DF

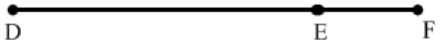
Statements	Reasons
AB = DE; BC = EF	Given
AB+BC=DE+EF	Addition Property of Equality (added equal segments to both sides)
AB+BC=AC; DE+EF=DF	Whole equals the sum of its parts
AC=DF	Substitution Property

NOTE: If there is a plus sign on both sides, then the reason is more likely to be Addition Property

Subtraction Property of Equality

- Allows you to subtract congruent (equal) segments
- Allows you to subtract congruent (equal) angles.





Given: AC=DF; BC=EF **Prove**: AB = DE

Statements	Reasons
AC = DF; BC = EF	Given
AC= AB + BC DF = DE + EF	Whole equals sum of its parts
AB + BC=DE + EF	Substitution property
AB=DE	Subtraction Property of Equality (subtracted equal