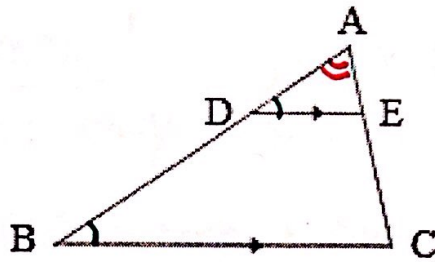


TRIANGLE PROPORTIONALITY THEOREM PROOF

"If a line parallel to a side of a triangle intersects the other two sides, then it divides those sides proportionally."



Given: $\overline{DE} \parallel \overline{BC}$

Prove: $\frac{AD}{DB} = \frac{AE}{EC}$

Statements	Reasons
1. $DE \parallel BC$	Given
2. $\angle D \cong \angle B$	Corresponding Angles Theorem
3. $\angle A \cong \angle A$	Reflexive Property
4. $\triangle ABC \sim \triangle ADE$	AA Postulate
5. $\frac{AD}{AB} = \frac{AE}{AC}$	Corresponding Sides of Similar Δ 's are Proportional
6. $AB = AD + DB$ $AC = AE + EC$	Segment Addition
7. $\frac{AD}{AD + DB} = \frac{AE}{AE + EC}$	Substitution Property (#5, 6)
8. $AD(AE + EC) = AE(AD + DB)$	Cross Multiply (#7)
9. $AD \cdot AE + AD \cdot EC = AE \cdot AD + AE \cdot DB$ $AD \cdot AE$ $AE \cdot AD$	Distributive Property (#8)
10. $\frac{AD}{DB} = \frac{AE}{EC}$	Subtraction Property (#9)