

Commonly Used Reasons in Proofs

- Right
- \perp lines right angles
 - All right angles are
 - DEFN: Right angle measures 90°
 - Right angles \rightarrow Right Δ 's
- OR A triangle with 1 right angle is a right Δ
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- Complementary/
Supplementary
- DEFN: 2 angles whose measures add to 90° complementary angles
 - DEFN: 2 angles whose measures add to 180° supplementary angles
 - DEFN: 2 Adjacent angles whose noncommon sides form opposite rays Linear pair
 - Linear pair supplementary angles
 - Linear pair right angles
 - Linear pair \perp
 - Angles complementary to the same angle are
 - Angles complementary to the same angle are
 - Angles supplementary to the same angle are
 - Angles supplementary to the same angle are
- OR Complements of the same angle are
OR Complements of the same angle are
OR Supplements of the same angle are
OR Supplements of the same angle are
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- Bisectors
- Segment bisector midpoint
 - Angle bisector angles
 - \perp bisector right angles
 - Midpoint segments
 - DEFN: A median is a segment from a vertex to the midpoint of the opposite side
 - DEFN: A midsegment is a segment whose endpoints are the midpoints of two sides in a Δ
- OR Segment bisector segments
AND \perp bisector midpoint
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- Segments measure
 - Angles measure
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- Vertical
- DEFN: Non-adjacent angles formed by intersecting lines are vertical
 - Vertical angles are
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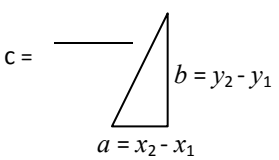
- Properties
- Reflexive property of equality/congruence
 - Symmetric property of equality/congruence
 - Transitive property of equality/congruence
 - Substitution property of equality
 - Addition property of equality
 - Subtraction property of equality
- Note: Algebraic Proofs may also contain:*

 - Addition
 - Simplification
- Multiplication property of equality
 - Division property of equality
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- Sum of parts
- Segment addition postulate
 - Angle addition postulate
 - Common Segment Theorem (*remember to state reflexive piece*)
 - Halves of congruent angles are congruent
 - Halves of congruent segments are congruent

lines	<ul style="list-style-type: none"> • lines corresponding s • lines alternate interior s • lines alternate exterior s • lines supplementary same side interior s • Midsegment of a Δ $\frac{1}{2}$ the length of the side it is parallel to
lines	<ul style="list-style-type: none"> • A line to 1 of 2 lines to the other • 2 lines to the same line lines • DEFN: An altitude is from a vertex to the opposite side
congruence	<ul style="list-style-type: none"> • SSS SSS • SAS SAS • ASA ASA • AAS AAS • Rt HL Rt HL
Isosceles Triangles	<ul style="list-style-type: none"> • If two 's of a triangle are the sides opposite them are • If two sides of a triangle are the 's opposite them are

Algebraic tools used in Coordinate Proofs:

	Purpose & Implication(s)	Concept	Formula
Slope Formula	<ul style="list-style-type: none"> • Prove lines/segments are parallel: $m_1 = m_2$ → establish corr/alt int/ alt ext angles are congruent • Prove lines/segments are perpendicular: $m_1 \cdot m_2 = -1$ → get right angles/altitudes 	—	$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$
Distance Formula	Find the lengths of segments → conclude congruent segments or sides	Pythagorean Theorem hypotenuse length = distance 	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Midpoint Formula	Find the coordinates of the midpoint of a segment → Use midpoint OR → Establish a midsegment	(Avg x values, Avg y values)	$m_{dpt} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$