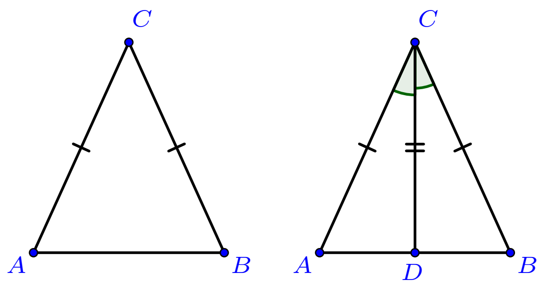
The Isosceles Triangle Theorem

Proofs.

Problem 1 *Prove that the base angles of an isosceles triangle are congruent.*

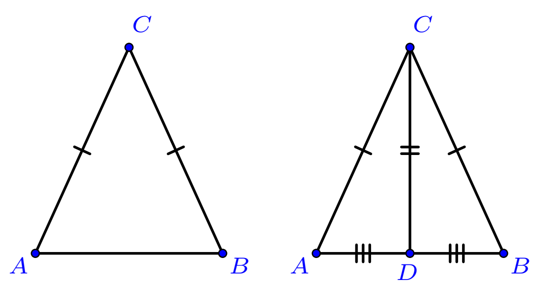


Beginning with the given figure on the left, Morgan draws $\overline{CD}$ *and marks the figure intending that this new segment is a(n) (median / angle bisector ✓/ perpendicular bisector / altitude).*

Based on the marked figure, Morgan claims that the $\triangle ACD \cong \triangle\boxed{BCD}$ *by (SAS ✓/ SSS / SSA / ASA / HL).*

Finally, Morgan concludes that $\angle A \cong \angle\boxed{B}$*, as they are corresponding parts of congruent triangles.*

Problem 2 *Prove that the base angles of an isosceles triangle are congruent.*



Beginning with the given figure on the left, Deja draws $\overline{CD}$ *and marks the figure intending that this new segment is a(n) (median ✓/ angle bisector / perpendicular bisector / altitude).*

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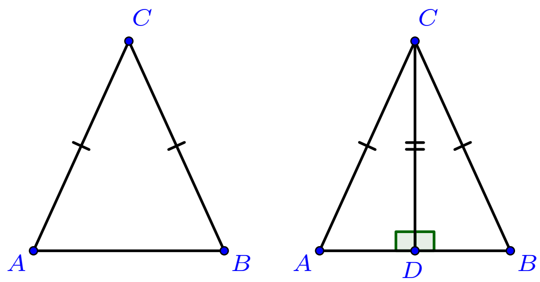
Based on the marked figure, Deja claims that the $\triangle ACD \cong \triangle \boxed{BCD}$ *by (SAS / SSS ✓/ SSA/ ASA/ HL).*

Finally, Deja concludes that $\angle A \cong \angle \boxed{B}$*, as they are corresponding parts of congruent triangles.*

Problem 3 *Prove that the base angles of an isosceles triangle are congruent.*

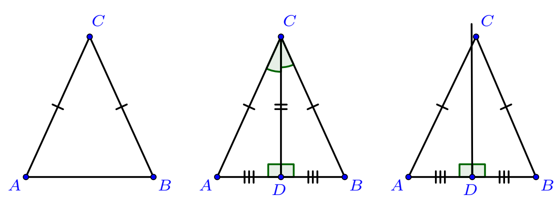


Beginning with the given figure on the left, Elle draws $\overline{CD}$ *and marks the figure intending that this new segment is a(n) (median/ angle bisector/ perpendicular bisector/ altitude ✓).*

Based on the marked figure, Deja claims that the $\triangle ACD \cong \triangle \boxed{BCD}$ *by (SAS / SSS/ SSA/ ASA/ HL ✓).*

Finally, Deja concludes that $\angle A \cong \angle \boxed{B}$*, as they are corresponding parts of congruent triangles.*

Problem 4 *Simon and Taylor are trying to prove that the base angles of an isosceles triangle are congruent.*



Given figure *Simon's figure* *Taylor's figure*

Beginning with the given figure on the left, Simon draws $\overline{CD}$ *and marks the second figure intending that this new segment is a perpendicular bisector of* $\overline{AB}$*.*

Taylor claims that a perpendicular bisector of a side of a triangle usually misses the opposite vertex. So without using properties of isosceles triangles, the figure must allow for that possibility.

Choose the best response to their argument:

Multiple Choice:

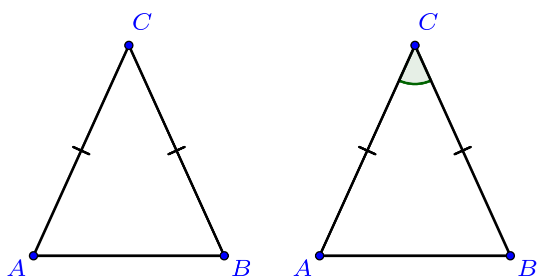
(a) *Simon is correct, and* $\triangle ACD \cong \triangle BCD$ *by SAS.*

(b) *Simon is correct, and* $\triangle ACD \cong \triangle BCD$ *by SSS*

(c) *Taylor is correct, and the perpendicular bisector cannot be used to complete this proof.* ✓

(d) *Neither of them are correct.*

Problem 5 *Prove that the base angles of an isosceles triangle are congruent.*



Given figure

Examining the given figure on the left, Lissy notices symmetry in the triangle and claims that the triangle is congruent to itself by a (translation/ reflection ✓/ rotation).

Based on the marked figure, Lissy claims that the $\triangle ACB \cong \triangle \boxed{BCA}$ *by (SAS ✓/ SSS/ SSA/ ASA/ HL).*

Finally, Lissy concludes that $\angle A \cong \angle \boxed{B}$*, as they are corresponding parts of congruent triangles.*