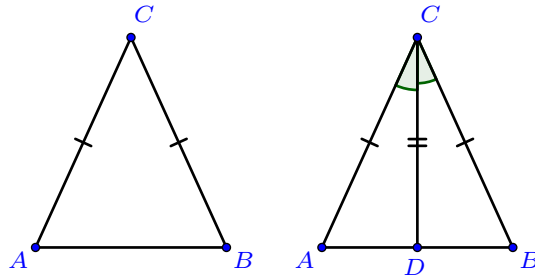


The Isosceles Triangle Theorem

Proofs updated.

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

Fixnote: Below are several different proofs, along with one that is not a proof. Please consider them separately.

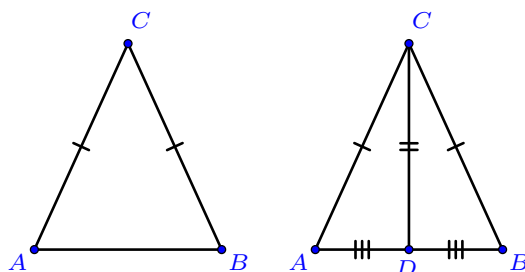


- (a) Beginning with the given figure on the left, Morgan draws \overline{CD} and marks the figure intending that this new segment is a(n) (median/ angle bisector ✓/ perpendicular bisector/ altitude).
- (b) Based on the marked figure, Morgan claims that the $\triangle ACD \cong \triangle \boxed{BCD}$ by (SAS ✓/ SSS/ SSA/ ASA/ HL).
- (c) 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.

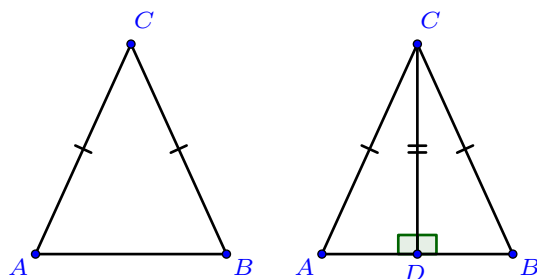
Learning outcomes:
Author(s): Brad Findell

The Isosceles Triangle Theorem



- 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).
- Based on the marked figure, Deja claims that the $\triangle ACD \cong \triangle BCD$ by (SAS/ SSS ✓/ SSA/ ASA/ HL).
- Finally, Deja concludes that $\angle A \cong \angle B$, as they are corresponding parts of congruent triangles.

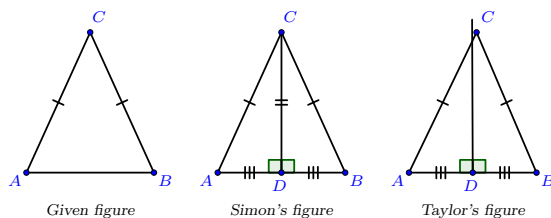
Problem 3 Prove that the base angles of an isosceles triangle are congruent.



- 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 $\triangle ACD \cong \triangle BCD$ by (SAS/ SSS/ SSA/ ASA/ HL ✓).
- Finally, Deja concludes that $\angle A \cong \angle B$, as they are corresponding parts of congruent triangles.

The Isosceles Triangle Theorem

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



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 other properties of isosceles triangles or perpendicular bisectors, the figure should allow for that possibility.

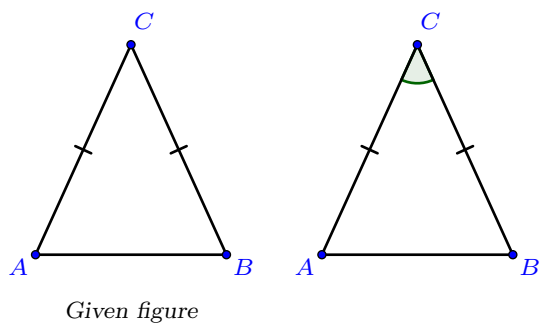
Fixnote: Taylor's claim needs some work, as is the case for the choices below.

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.



The Isosceles Triangle Theorem

- (a) 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).
 - (b) Based on the marked figure, Lissy claims that the $\triangle ACB \cong \triangle \boxed{BCA}$ by (SAS ✓/ SSS/ SSA/ ASA/ HL).
 - (c) Finally, Lissy concludes that $\angle A \cong \angle \boxed{B}$, as they are corresponding parts of congruent triangles.
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