4-4 Using Corresponding Parts of Congruent Triangles

Vocabulary

Review

Underline the correct word(s) to complete each sentence.

1. The *Reflexive* Property of Congruence states that any geometric figure is congruent / similar to itself.
2. The *Reflexive* Property of Equality states that any quantity is equal to / greater than / less than itself.
3. Circle the expressions that illustrate the *Reflexive* Property of Equality.

$a = a$ | If $AB = 2$, then $2 = AB$.

$3(x + y) = 3x + 3y$ | $5 + c = 5 + c$

4. Circle the expressions that illustrate the *Reflexive* Property of Congruence.

If $\angle A \cong \angle B$, then $\angle B \cong \angle A$. | If $\overline{CD} \cong \overline{LM}$ and $\overline{LM} \cong \overline{XY}$, then $\overline{CD} \cong \overline{XY}$.

$\angle ABC \cong \angle ABC$ | $\overline{CD} \cong \overline{CD}$

Vocabulary Builder

proof (noun) **proof**

Related Word: prove (verb)

Definition: A **proof** is convincing evidence that a statement or theory is true.

Math Usage: A **proof** is a convincing argument that uses deductive reasoning.

Use Your Vocabulary

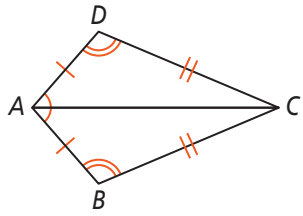
Complete each statement with *proof* or *prove*.

5. In geometry, a ? uses definitions, postulates, and theorems to prove theorems. _____
6. No one can ? how our universe started. _____
7. He can ? when he bought the computer because he has a receipt. _____

8. Complete the steps in the *proof*.

Given: $\overline{AB} \cong \overline{AD}$, $\overline{BC} \cong \overline{DC}$, $\angle D \cong \angle B$, $\angle DAC \cong \angle BAC$

Prove: $\triangle ABC \cong \triangle ADC$

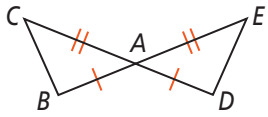


Statements	Reasons
1) $\overline{AB} \cong$ ____ $\overline{BC} \cong$ ____	1) Given
2) $\overline{AC} \cong$ ____	2) Reflexive Property of $\cong$
3) $\angle D \cong$ ____ $\angle DAC \cong$ ____	3) Given
4) $\angle DCA \cong$ ____	4) Third Angles Theorem
5) $\triangle ABC \cong$ ____	5) Definition of $\cong$ triangles

Problem 1 Proving Parts of Triangles Congruent

Got It? **Given:** $\overline{BA} \cong \overline{DA}$, $\overline{CA} \cong \overline{EA}$

Prove: $\angle C \cong \angle E$



9. Name four ways you can use congruent parts of two triangles to prove that the triangles are congruent.

____ ____

____ ____

10. To prove triangles are congruent when you know two pairs of congruent corresponding sides, you can use ____ or ____.

Underline the correct word to complete the sentence.

11. The *Given* states and the diagram shows that there are one / two / three pairs of congruent sides.

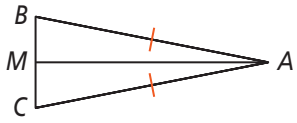
12. Give a reason for each statement of the proof.

Statements	Reasons
1) $\overline{BA} \cong \overline{DA}$	1) _____
2) $\overline{CA} \cong \overline{EA}$	2) _____
3) $\angle CAB \cong \angle EAD$	3) _____
4) $\triangle CAB \cong \triangle EAD$	4) _____
5) $\angle C \cong \angle E$	5) _____

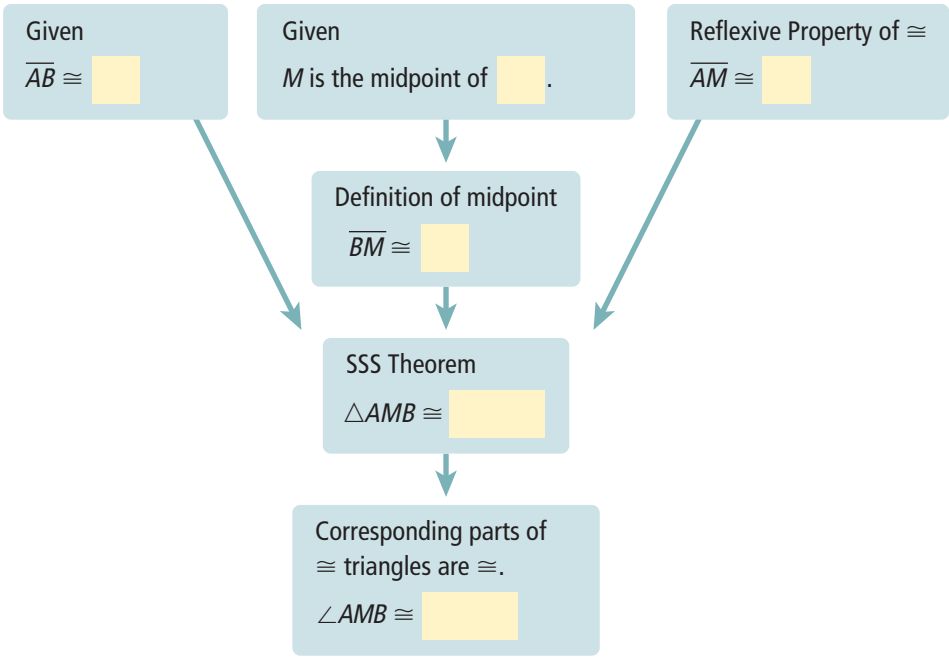
Problem 2 Proving Triangle Parts Congruent to Measure Distance

Got It? Given: $\overline{AB} \cong \overline{AC}$, M is the midpoint of $\overline{BC}$

Prove: $\angle AMB \cong \angle AMC$

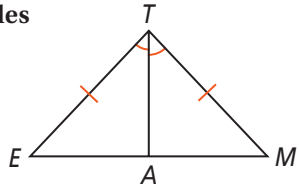


13. Use the flow chart to complete the proof.



Lesson Check • Do you know HOW?

Name the postulate or theorem that you can use to show the triangles are congruent. Then explain why $\overline{EA} \cong \overline{MA}$.



14. Circle the angles that are marked congruent.

$\angle E$ $\angle ETA$ $\angle M$ $\angle EAT$ $\angle MTA$

15. Circle the sides that are marked congruent.

$\overline{ET}$ $\overline{MT}$ $\overline{EA}$ $\overline{MA}$ $\overline{AT}$

16. Circle the sides that are congruent by the Reflexive Property of Congruence.

$\overline{ET}$ and $\overline{MT}$ $\overline{EA}$ and $\overline{MA}$ $\overline{AT}$ and $\overline{AT}$

17. Underline the correct postulate or theorem to complete the sentence.

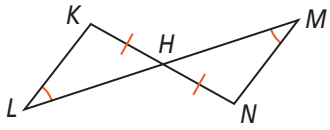
$\triangle EAT \cong \triangle MAT$ by SAS / AAS / ASA / SSS .

18. Now explain why $\overline{EA} \cong \overline{MA}$.

_____

Lesson Check • Do you UNDERSTAND?

Error Analysis **Find and correct the error(s) in the proof.**



Given: $\overline{KH} \cong \overline{NH}$, $\angle L \cong \angle M$ **Prove:** H is the midpoint of $\overline{LM}$.

Proof: $\overline{KH} \cong \overline{NH}$ because it is given. $\angle L \cong \angle M$ because it is given. $\angle KHL \cong \angle NHM$ because vertical angles are congruent. So, $\triangle KHL \cong \triangle MHN$ by ASA Postulate. Since corresponding parts of congruent triangles are congruent, $\overline{LH} \cong \overline{MH}$. By the definition of midpoint, H is the midpoint of $\overline{LM}$.

Place a ✓ in the box if the statement is correct. Place an ✗ if it is incorrect.

☐ **19.** $\angle KHL \cong \angle NHM$ because vertical angels are congruent.

☐ **20.** $\triangle KHL \cong \triangle MHN$ by ASA Postulate.

Underline the correct word to complete each sentence.

21. When you name congruent triangles, you must name corresponding vertices in a different / the same order.

22. To use the ASA Postulate, you need two pairs of congruent angles and a pair of included / nonincluded congruent sides.

23. To use the AAS Theorem, you need two pairs of congruent angles and a pair of included / nonincluded congruent sides.

24. Identify the error(s) in the proof.

_____

_____

_____

25. Correct the error(s) in the proof.

_____

Math Success

Check off the vocabulary words that you understand.

☐ congruent ☐ corresponding ☐ proof

Rate how well you can *use congruent triangles*.

Need to review 0 2 4 6 8 10 Now I get it!