4-2 Triangle Congruence by SSS and SAS

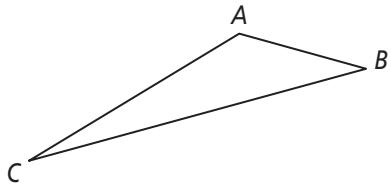
UNIT 4

ASSIGNMENT #8

Vocabulary

Review

1. Use the diagram at the right. Find each.



included angle between $\overline{AB}$ and $\overline{CA}$

included side between $\angle A$ and $\angle C$

included angle between $\overline{BC}$ and $\overline{CA}$

included side between $\angle B$ and $\angle C$

included angle between $\overline{BC}$ and $\overline{AB}$

included side between $\angle B$ and $\angle A$

Vocabulary Builder

postulate (noun) PAHS chuh lit

Definition: A **postulate** is a statement that is accepted as true without being proven true.

Main Idea: In geometry, you use what you know to be true to prove new things true. The statements that you accept as true without proof are called **postulates** or axioms.

Use Your Vocabulary

2. Underline the correct word to complete the sentence.

You can use properties, *postulates*, and previously proven theorems as reasons / statements in a proof.

3. **Multiple Choice** What is a *postulate*?

(A) a convincing argument using deductive reasoning

(B) a conjecture or statement that you can prove true

(C) a statement accepted as true without being proven true

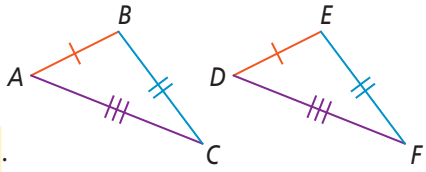
(D) a conclusion reached by using inductive reasoning

take note

Postulate 4–1 Side-Side-Side (SSS) Postulate

Postulate 4-1 Side-Side-Side (SSS) Postulate

If the three sides of one triangle are congruent to the three sides of another triangle, then the two triangles are congruent.

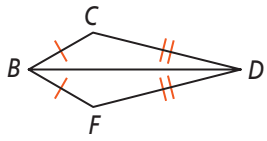


4. Use the figures at the right to complete the sentence.

If $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\overline{AC} \cong$ ____, then $\triangle ABC \cong \triangle$ ____.

Problem 1 Using SSS

Got It? Given: $\overline{BC} \cong \overline{BF}$, $\overline{CD} \cong \overline{FD}$
Prove: $\triangle BCD \cong \triangle BFD$



5. You know two pairs of sides that are congruent. What else do you need to prove the triangles congruent by SSS?

_____

6. The triangles share side ____.

7. Complete the steps of the proof.

Statement	Reason
1) $\overline{BC} \cong$ ____	1) Given
2) $\overline{CD} \cong$ ____	2) Given
3) $\overline{BD} \cong$ ____	3) Reflexive Property of $\cong$
4) $\triangle BCD \cong$ ____	4) SSS

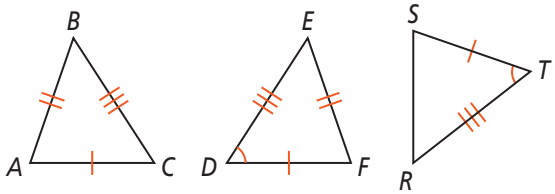
take note

Postulate 4–2 Side-Angle-Side (SAS) Postulate

Postulate 4–2 Side-Angle-Side (SAS) Postulate

If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then the two triangles are congruent.

Use the figures below to complete each statement.

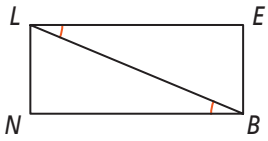


8. $\triangle DEF \cong$ ____ by SAS.

9. $\triangle ABC \cong$ ____ by SSS.

Problem 2 Using SAS

Got It? **What other information do you need to prove $\triangle LEB \cong \triangle BNL$ by SAS?**



10. Circle the angles that are marked congruent in the diagram.

$\angle EBL$ $\angle ELB$ $\angle NBL$ $\angle NLB$

11. Circle the sides that form the angles that are marked congruent in the diagram.

$\overline{BE}$ $\overline{BL}$ $\overline{BN}$ $\overline{LB}$ $\overline{LE}$ $\overline{LN}$

12. Complete each congruence statements.

$\overline{LB} \cong$ ____ $\angle BLE \cong$ ____

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

13. Proving $\triangle LEB \cong \triangle BNL$ by SAS requires one / two pair(s) of congruent sides and one / two pair(s) of congruent angles.

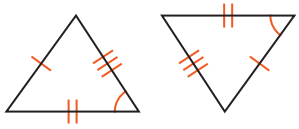
14. The diagram shows congruency of zero / one / two pair(s) of congruent sides and zero / one / two pair(s) of congruent angles.

15. To prove the triangles congruent by SAS, you still need zero / one / two pair(s) of congruent sides and zero / one / two pair(s) of congruent angles .

16. To prove the triangles congruent, you need to prove ____ and ____ congruent.

Problem 3 Identifying Congruent Triangles

Got It? **Would you use SSS or SAS to prove the triangles below congruent? Explain.**



Complete each statement with *SSS* or *SAS*.

17. Use ___?___ if you have three pairs of sides congruent. ____

18. Use ___?___ if you have two pairs of sides and the included angle congruent. ____

Write T for *true* or F for *false*.

____ **19.** The diagram shows congruence of three sides.

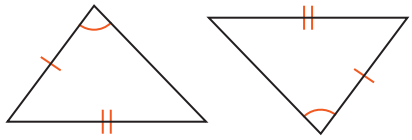
____ **20.** In the triangle on the left, the marked angle is the included angle of the side with two marks and the side with three marks.

____ **21.** In the triangle on the right, the marked angle is the included angle of the side with two marks and the side with three marks.

22. Would you use SSS or SAS to prove the triangles congruent? Explain.

Lesson Check • Do you UNDERSTAND?

Error Analysis **Your friend thinks that the triangles below are congruent by SAS. Is your friend correct? Explain.**



23. Are two pairs of corresponding sides congruent? Yes / No

24. Is there a pair of congruent angles? Yes / No

25. Are the congruent angles the included angles between the corresponding congruent sides? Yes / No

26. Are the triangles congruent by SAS? Explain.

Math Success

Check off the vocabulary words that you understand.

☐ congruent ☐ corresponding

Rate how well you can *use SSS and SAS to prove triangles congruent*.