Practice 4-2

Triangle Congruence by SSS and SAS

Decide whether you can use the SSS or SAS Postulate to prove the triangles congruent. If so, write the congruence statement, and identify the postulate. If not, write not possible.

1. [Diagram of Triangle ABC]
2. [Diagram of Triangle EHK]
3. [Diagram of Triangle EPQ]
4. [Diagram of Triangle SWX]
5. [Diagram of Triangle ZAY]
6. [Diagram of Triangle CHG]
7. [Diagram of Triangle MJK]
8. [Diagram of Triangle NQP]
9. [Diagram of Triangle STU]

Draw a triangle. Label the vertices A, B, and C.

10. What angle is between \( \overline{BC} \) and \( \overline{AC} \)?
11. What sides include \( \angle B \)?
12. What angles include \( \overline{AB} \)?
13. What side is included between \( \angle A \) and \( \angle C \)?

14. Developing Proof Supply the reasons in this proof.
   Given: \( \overline{AB} \cong \overline{DC} \), \( \angle BAC \equiv \angle DCA \)
   Prove: \( \triangle ABC \cong \triangle DCA \)

   **Statements**
   1. \( \overline{AB} \cong \overline{DC} \), \( \angle BAC \equiv \angle DCA \)
   2. \( \overline{AC} \cong \overline{CA} \)
   3. \( \triangle ABC \cong \triangle DCA \)

   **Reasons**
   a. ?
   b. ?
   c. ?

15. Write a proof.
   Given: \( EF \cong FG \), \( DF \cong FH \)
   Prove: \( \triangle DFE \cong \triangle HFG \)
Practice 4-3

Triangle Congruence by ASA and AAS

Tell whether the ASA Postulate or the AAS Theorem can be applied directly to prove the triangles congruent. If the triangles cannot be proved congruent, write not possible.

1. \( \triangle LRQ \)
2. \( \triangle TUS \)
3. \( \triangle WXZ \)
4. \( \triangle BCD \)
5. \( \triangle GHJ \)
6. \( \triangle NPR \)
7. \( \triangle UVW \)
8. \( \triangle ZAB \)
9. \( \triangle HDG \)

10. Write a two-column proof.
    Given: \( \angle K \equiv \angle M, KL \equiv ML \)
    Prove: \( \triangle JKL \equiv \triangle PML \)

11. Write a flow proof.
    Given: \( \angle Q \equiv \angle S, \angle TRS \equiv \angle RTQ \)
    Prove: \( \triangle QRT \equiv \triangle STR \)

What else must you know to prove the triangles congruent for the reason shown?

12. ASA

13. AAS

14. ASA

Geometry Chapter 4
Lesson 4-3 Practice
Practice 4-4

Using Congruent Triangles: CPCTC

Explain how you can use SSS, SAS, ASA, or AAS with CPCTC to prove each statement true.

1. $\angle A \cong \angle C$

2. $HF \cong FG$

3. $\angle K \cong \angle P$

4. $\angle QST \cong \angle SQR$

5. $\angle U \cong \angle W$

6. $ZA \cong AC$

7. $FG \cong DG$

8. $JK \cong KL$

9. $\angle N \cong \angle Q$

Write a Plan for Proof.

10. Given: $BD \perp AB$, $BD \perp DE$, $BC \cong CD$
Prove: $\angle A \cong \angle E$

11. Given: $FJ \cong GH$, $\angle JFH \cong \angle GHF$
Prove: $FG \cong JH$
Practice 8-3

Proving Triangles Similar

Explain why the triangles are similar. Write a similarity statement for each pair.

1. \( \triangle AQB \) and \( \triangle PRQ \)
2. \( \triangle PQL \) and \( \triangle AMW \)
3. \( \triangle QAB \) and \( \triangle MBP \)
4. \( \triangle MJN \) and \( \triangle CAM \)
5. \( \triangle AXB \) and \( \triangle CXB \)
6. \( \triangle AXC \) and \( \triangle BYZ \)

Algebra Find the value of \( x \).

7. \( \triangle 6 \) and \( \triangle 5 \)
8. \( \triangle 8 \) and \( \triangle 10 \)
9. \( \triangle 12 \) and \( \triangle 10 \)
10. \( \triangle 12 \) and \( \triangle 15 \)
11. \( \triangle 4 \) and \( \triangle 3 \)
12. \( \triangle 42 \) and \( \triangle 12 \)

13. Natasha places a mirror on the ground 24 ft from the base of an oak tree. She walks backward until she can see the top of the tree in the middle of the mirror. At that point, Natasha’s eyes are 5.5 ft above the ground, and her feet are 4 ft from the image in the mirror. Find the height of the oak tree.