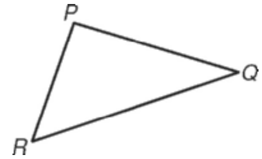
Name ______________________________ Date ______________ Class______________

LESSON 4-4

Practice A

Triangle Congruence: SSS and SAS

Name the included angle for each pair of sides.

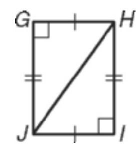


1. $\overline{PQ}$ and $\overline{PR}$ ________
2. $\overline{RQ}$ and $\overline{PR}$ ________
3. $\overline{PQ}$ and $\overline{RQ}$ ________

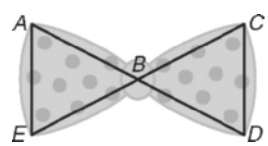
Write SSS (Side-Side-Side Congruence) or SAS (Side-Angle-Side Congruence) next to the correct postulate.

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

GHIJ **is a rectangle. A rectangle is a four-sided figure with four right angles and congruent opposite sides. For Exercises 6 and 7, fill in the blanks to show that $\triangle GHJ \cong \triangle IJH$ in two different ways.**



6. It is given that ________ and ________ are right angles and that $\overline{GH} \cong \overline{JI}$ and $\overline{GJ} \cong \overline{HI}$. All right angles are congruent. So $\triangle GHJ \cong \triangle IJH$ by ________.
7. It is given that $\overline{GH} \cong$ ________ and $\overline{GJ} \cong$ ________. By the Reflexive Property of $\cong$, $\overline{JH} \cong$ ________. So $\triangle GHJ \cong \triangle IJH$ by ________.
8. U.S. President Harry Truman and British Prime Minister Winston Churchill both wore polka-dot bow ties while in office. A well-tied bow tie resembles two congruent triangles. Use the phrases from the word bank to complete this two-column proof.



$\angle ABE \cong \angle DBC$,
SAS,
$\overline{BA} \cong \overline{BD}$,
$\overline{BE} \cong \overline{BC}$

Given: $\overline{BA} \cong \overline{BD}, \overline{BE} \cong \overline{BC}$

Prove: $\triangle ABE \cong \triangle DBC$

Proof:

Statements	Reasons
1. a. ____________________	1. Given
2. b. ____________________	2. Vert. $\angle$s Thm.
3. $\triangle ABE \cong \triangle DBC$	3. c. ____________________

7. C

Reading Strategies

1. $\angle O$ does because they both have two arcs.
2. It is side $\overline{NO}$ because both sides have three tick marks.
3. $\angle OMN$
4. $\angle N$
5. $\overline{NO}$
6. $\overline{OM}$
7. $\triangle MNP \cong \triangle TRS$
8. Corresponding angles of congruent triangles have the same measure, and the order of the letters indicates which angles are congruent.

LESSON 4-4

Practice A

1. $\angle P$
2. $\angle R$
3. $\angle Q$
4. SSS
5. SAS
6. $\angle G$; $\angle I$; SAS
7. $\overline{JI}$; $\overline{HI}$; $\overline{JH}$; SSS
8.

Statements	Reasons
1. a. $\overline{BA} \cong \overline{BD}, \overline{BE} \cong \overline{BC}$	1. Given
2. b. $\angle ABE \cong \angle DBC$	2. Vert. ∡s Thm.
3. $\triangle ABE \cong \triangle DBC$	3. c. SAS

Practice B

1. neither
2. SAS
3. neither
4. SSS
5. 1.8
6. 17
7. Possible answer:

Statements	Reasons
1. C is the midpoint of $\overline{AD}$ and $\overline{BE}$.	1. Given
2. $AC = CD$, $BC = CE$	2. Def. of mdpt.
3. $\overline{AC} \cong \overline{CD}$, $\overline{BC} \cong \overline{CE}$	3. Def. of ≅ segs.
4. $\angle ACB \cong \angle DCE$	4. Vert. ∡s Thm.
5. $\triangle ABC \cong \triangle DEC$	5. SAS

Practice C

1. any side length
2. lengths of two adjacent sides
3. any angle measure and any side length
4. any angle measure and the lengths of two adjacent sides
5. Yes; possible answer: The diagonal is the hypotenuse of an isosceles right triangle. The length of one side can be found by using the Pythagorean Theorem, and knowing one side is enough to draw a specific square.
6. 540 ft^2
7. Possible answer: It is given that $\overline{BA} \cong \overline{BC}$ and $\overline{BE} \cong \overline{BF}$, so by the definition of congruent segments, $BA = BC$ and $BE = BF$. Adding these together gives $BA + BE = BC + BF$, and from the figure and the Segment Addition Postulate, $AE = BA + BE$ and $CF = BC + BF$. It is clear by the Transitive Property that $AE = CF$, hence $\overline{AE} \cong \overline{CF}$ by the definition of ≅ segments. It is given that $\overline{GF} \cong \overline{DE}$ and the Reflexive Property shows that $\overline{FE} \cong \overline{FE}$. So by the Common Segments Theorem, $\overline{GE} \cong \overline{DF}$. The final pair of sides is given congruent, so $\triangle AEG \cong \triangle CFD$ by the Side-Side-Side Congruence Postulate.

Reteach

1. It is given that $\overline{JK} \cong \overline{LK}$ and that $\overline{JM} \cong \overline{LM}$. By the Reflex. Prop. of ≅, $\overline{KM} \cong \overline{KM}$. So $\triangle JKM \cong \triangle LKM$ by SSS.
2. It is given that $\overline{AB} \cong \overline{CD}$ and that $\overline{AD} \cong \overline{CB}$. By the Reflex. Prop. of ≅, $\overline{AC} \cong \overline{AC}$. So $\triangle ABC \cong \triangle CDA$ by SSS.
3. It is given that $\overline{ZW} \cong \overline{XW}$ and that $\angle ZWY \cong \angle XWY$. By the Reflex. Prop. of ≅, $\overline{WY} \cong \overline{WY}$. So $\triangle WXY \cong \triangle WZY$ by SAS.
4. $BD = FH = 6$, so $\overline{BD} \cong \overline{FH}$ by def. of ≅ segs. $BC = FG = 8$, so $\overline{BC} \cong \overline{FG}$ by def. of ≅ segs. $CD = GH = 9$, so $\overline{CD} \cong \overline{GH}$ by