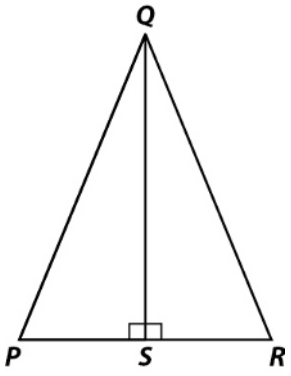
Name _____ Date _____ Class _____

LESSON 5-2

ASA Triangle Congruence

Practice and Problem Solving: A/B

Apply ASA Triangle Congruence to answer Problems 1–3.



1. What additional information do you need in order to conclude that $\triangle PQS \cong \triangle RQS$? Explain your reasoning.

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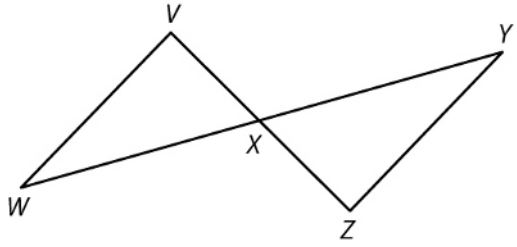
2. Point X is the midpoint of $\overline{VZ}$. Can you conclude that $\triangle VWX$ is congruent to $\triangle ZYX$? If so, explain your answer. If there is not enough information, explain what additional information is needed.



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3. Angle D of $\triangle DEF$ is congruent to $\angle G$ of $\triangle GHJ$. Angle E is congruent to $\angle H$. Side DE is congruent to side HJ. Can you prove that the two triangles are congruent? Explain your answer.

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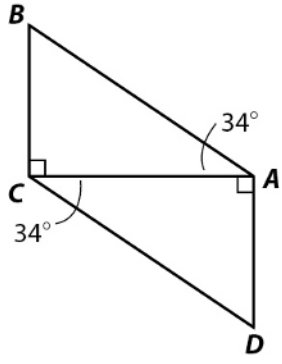
For Problems 4 and 5, use the figure to the right.



4. Complete the proof to prove that $\triangle ABC \cong \triangle CDA$.

Statements	Reasons
1. $\angle ACD \cong \angle$_____	1.
2.	2. Given
3.	3.
4. $\triangle ABC \cong \triangle CDA$	4.

5. Describe a sequence of two rigid motions that maps $\triangle ABC \cong \triangle CDA$.

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LESSON 5-2

Practice and Problem Solving: A/B

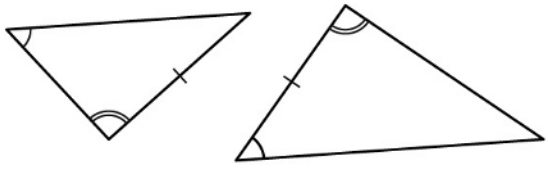
1. $\angle PQS \cong \angle RQS$; if these angles are congruent, then the triangles will be congruent by the ASA Congruence Theorem.
2. There is not enough information. Angle VXW is congruent to $\angle ZXY$ because they are vertical angles. $XV \cong XZ$ because X is the midpoint of VZ. If $\angle XVW \cong \angle XZY$, then the triangles are congruent by ASA.
3. No, side HJ does not correspond to side DE (and is not the included side of angles G and H), so the ASA Theorem does not apply.
4.

Statements	Reasons
1. $\angle ACD \cong \angle CAB$	1. Given
2. $\angle BCA \cong \angle DAC$	2. Given
3. $\overline{AC} \cong \overline{CA}$	3. Reflexive Property of Congruence
4. $\triangle ABC \cong \triangle CDA$	4. ASA Triangle Congruence Theorem

5. Possible answer: Rotate $\triangle ABC$ 180° around point A, and then translate $\triangle ABC$ to the left.

Practice and Problem Solving: C

1. Possible answer: Because MP bisects $\angle NMQ$ and $\angle NPQ$, $\angle NMP \cong \angle QMP$ and $\angle NPM \cong \angle QPM$; also, $MP = MP$. So, the triangles are congruent by the ASA Congruence Theorem. Therefore, by CPCTC, $MN = MQ$.
2. Possible answer:



3. Possible answer: LN bisects $\angle KLM$, so $\angle KLN \cong \angle MLN$. This means that $2x - 18 = x + 6$. Solving for x gives $x = 24$. Substituting the value of x into the expressions for the measures of $\angle KNL$ and $\angle MNL$ gives $m\angle KNL = 90°$ and $m\angle MNL = 90°$. Since $LN = LN$, the triangles are congruent by the ASA Congruence Theorem. So, by CPCTC, $\angle K \cong \angle M$.
4.

Statements	Reasons
1. $\angle QUR \cong \angle SUV$	1. All right angles are congruent
2. $\angle PQU \cong \angle TSU$	2. Given
3. $\angle RQU$ and $\angle PQU$ are supplementary; $\angle VSU$ and $\angle TSU$ are supplementary	3. Linear Pair Theorem
4. $\angle RQU \cong \angle VSU$	4. $\angle PQU \cong \angle TSU$ and Congruent Supplements Theorem
5. $\overline{QU} \cong \overline{SU}$	5. $QU = SU$ and definition of congruence
6. $\angle RUQ \cong \angle VUS$	6. ASA Triangle Congruence Theorem

Practice and Problem Solving: Modified

1. $\overline{XZ}$
2. $\overline{YX}$
3. $\overline{YZ}$
4. AHN
5. $\angle K \cong \angle A$, $KB = AH$, and $\angle B \cong \angle H$, so the triangles are congruent by the ASA Congruence Theorem.
6. Possible answer: Reflect $\triangle KBT$ across a vertical line through T and then translate it downward.