

GEOMETRY

Exam 4

Based on Chapter 4 (pages 214 - 291) in your textbook.

Student's Name _____ Student Number _____

Street _____ City _____ State _____ Zip Code _____

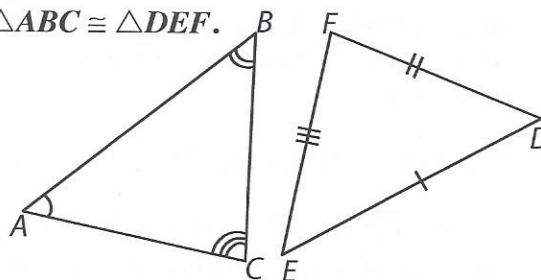
BE SURE YOU FULLY UNDERSTAND ALL CHECKPOINT PROBLEMS FROM THIS CHAPTER BEFORE YOU COMPLETE THIS EXAM. **SHOW AS MUCH WORK AS POSSIBLE.**

Items 1-4: Use the diagram at the right. Assume $\triangle ABC \cong \triangle DEF$.

1. Complete the list of corresponding sides and angles.

$\overline{AB} \cong$ _____, $\overline{BC} \cong$ _____, $\overline{AC} \cong$ _____

$\angle A \cong$ _____, $\angle B \cong$ _____, $\angle C \cong$ _____



2. Finish marking the diagram by adding congruence marks to the sides of $\triangle ABC$ and angles of $\triangle DEF$.
3. Circle the following congruence statement that is **not** true.

$\triangle BCA \cong \triangle EFD$

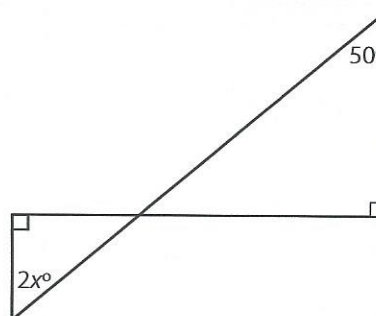
$\triangle CBA \cong \triangle FED$

$\triangle BAC \cong \triangle EFD$

$\triangle CAB \cong \triangle FDE$

4. If $m\angle A = 40^\circ$ and $m\angle E = 60^\circ$, then $m\angle C =$ _____.

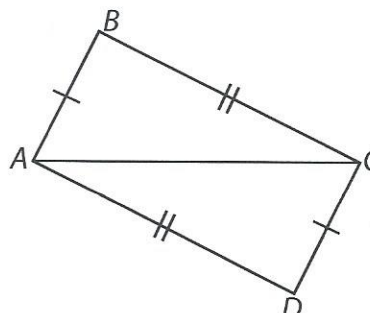
5. Based on the diagram on the right, $x =$ _____.
Briefly explain your reasoning.



6. Complete the following statement for the diagram to the right.

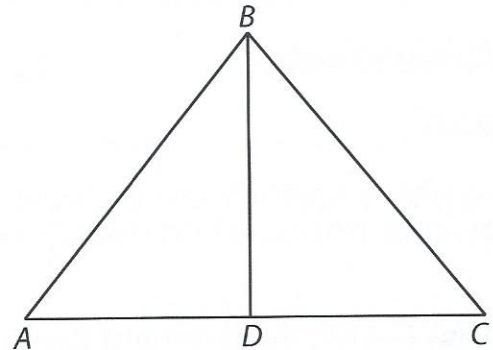
$\triangle ABC \cong \triangle$ _____

Make sure you list the corresponding vertices in the correct order.



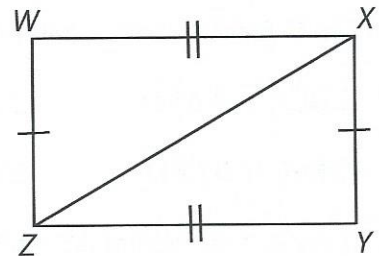
Items 7-11: Using the diagram on the right and the given information, complete the following statements by writing one of the following:

AAS ASA HL SAS SSS



7. If $\overline{AB} \cong \overline{CB}$ and $\overline{BD}$ bisects $\angle ABC$, then $\triangle ABD \cong \triangle CBD$ by _____.
8. If $\angle ADB \cong \angle CDB$ and $\angle A \cong \angle C$, then $\triangle ABD \cong \triangle CBD$ by _____.
9. $\overline{BD}$ is an altitude and $\overline{AB} \cong \overline{CB}$, then $\triangle ABD \cong \triangle CBD$ by _____.
Then $\angle A \cong \angle C$ because corresponding parts of $\cong$ $\triangle$ s are $\cong$.
10. If $\angle ABD \cong \angle CBD$ and $\overline{BD} \perp \overline{AC}$, then $\triangle ABD \cong \triangle CBD$ by _____.
11. If $\overline{AB} \cong \overline{CB}$ and $\overline{BD}$ bisects $\overline{AC}$, then $\triangle ABD \cong \triangle CBD$ by _____.
And $\angle ADB \cong \angle CDB$ since corresponding parts of $\cong$ $\triangle$ s are $\cong$, so $\overline{BD} \perp \overline{AC}$ by Theorem 3.8.

12. Finish the proof that $\angle WZX \cong \angle YXZ$ by filling in the missing statements and reasons.



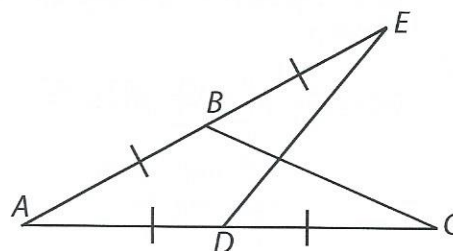
Statements	Reasons
1. $\overline{WZ} \cong \overline{YX}$	1. _____
2. _____	2. Given
3. _____	3. Reflexive Property of Segment Congruence
4. $\triangle WXZ \cong \triangle YZX$	4. _____
5. _____	5. Corresponding parts of $\cong$ $\triangle$ s are $\cong$.

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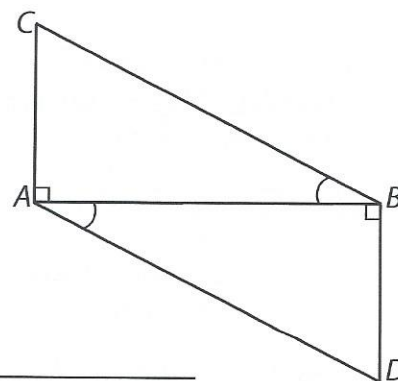
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13. Finish the proof that $\overline{BC} \cong \overline{DE}$
by filling in the missing statements and reasons.



Statements	Reasons
1. $\overline{AB} \cong \overline{AD}$	1. _____
2. _____	2. Reflexive Property of Angle Congruence
3. $\overline{AC} \cong \overline{AE}$	3. Given
4. _____	4. _____
5. $\overline{BC} \cong \overline{DE}$	5. _____

14. Write a proof that $\overline{AC} \cong \overline{BD}$.



Statements	Reasons
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

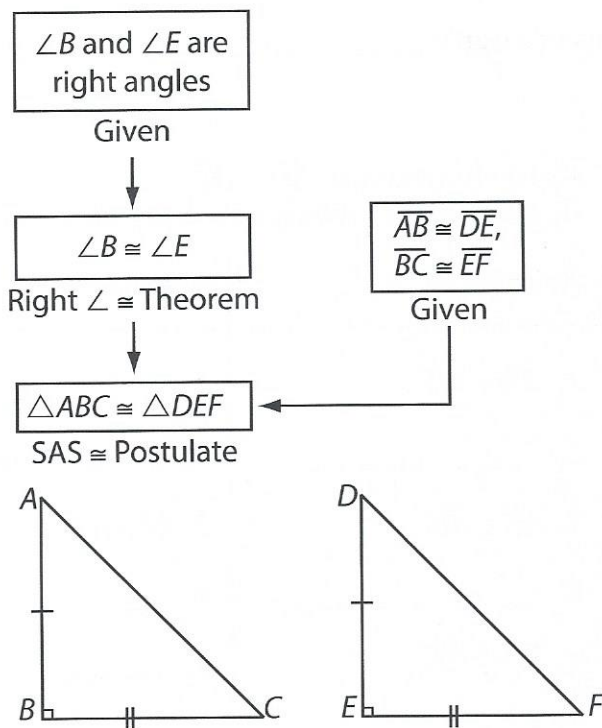
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15. Study the flow proof to the right for a Leg-Leg (LL) Congruence Theorem.

GIVEN: $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$,

$\angle B$ and $\angle E$ are
right angles

PROVE: $\triangle ABC \cong \triangle DEF$

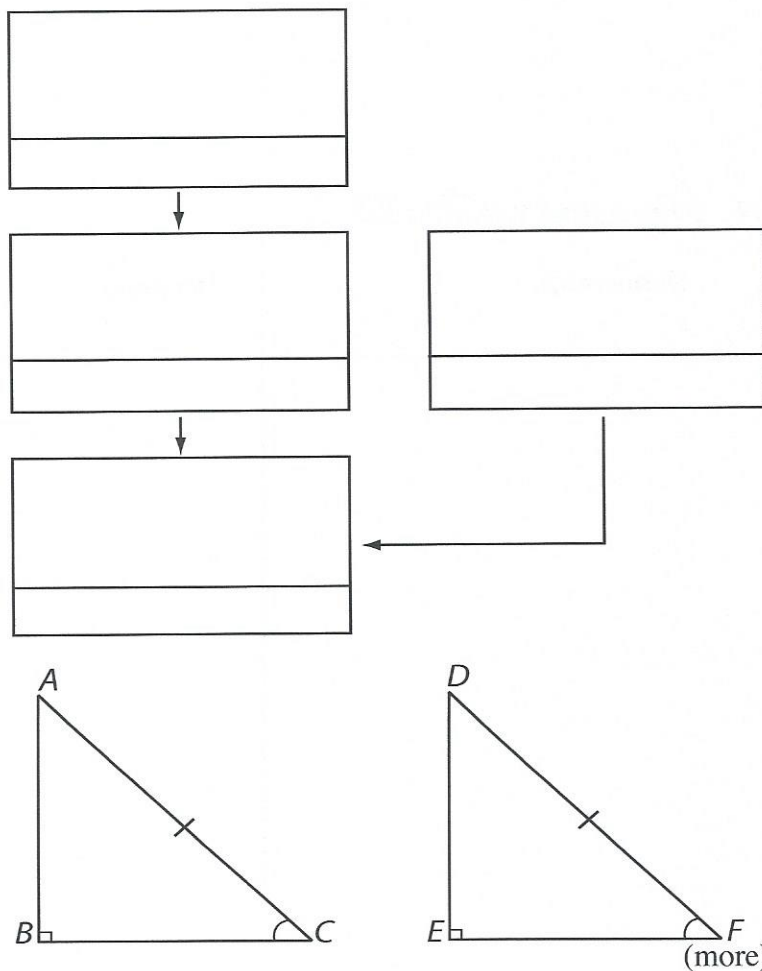


Complete the following flow
proof for a Hypotenuse-Angle
Congruence Theorem.

GIVEN: $\overline{AC} \cong \overline{DF}$, $\angle C \cong \angle F$,

$\angle B$ and $\angle E$ are
right angles

PROVE: $\triangle ABC \cong \triangle DEF$



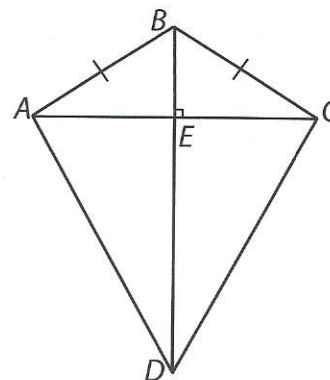
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GIVEN: $\overline{AC} \perp \overline{BD}$ and $\overline{AB} \cong \overline{CB}$

PROVE: $\overline{AD} \cong \overline{CD}$

PLAN: Prove right $\triangle ABE \cong \triangle CBE$. Then use congruent corresponding parts $\overline{AE}$ and $\overline{CE}$ to show right $\triangle AED \cong \triangle CED$. $\overline{AD}$ and $\overline{CD}$ will then be congruent corresponding parts.



16. Based on the diagram, finish the following proof that $\overline{AD} \cong \overline{CD}$

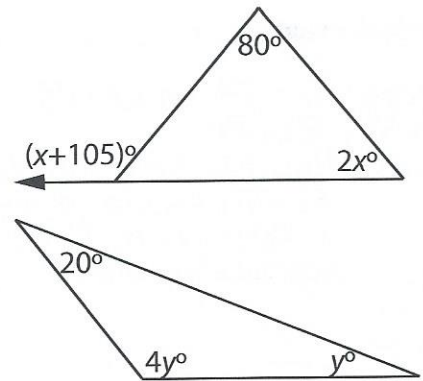
Statements	Reasons
1. $\overline{AC} \perp \overline{BD}$	1. _____
2. $\angle AEB$ and $\angle CEB$ are rt. angles	2. _____
3. $\triangle AEB$ and $\triangle CEB$ are rt. $\triangle$ s	3. _____
4. _____	4. Given
5. _____	5. Reflexive Property of Segment Congruence
6. $\triangle ABE \cong \triangle CBE$	6. _____
7. _____	7. Corresponding parts of $\cong$ Triangles are $\cong$
8. _____	8. Definition of Perpendicular Lines
9. _____	9. Definition of a Right Triangle
10. $\overline{DE} \cong \overline{DE}$	10. _____
11. _____	11. LL Congruence Theorem (see item 15)
12. $\overline{AD} \cong \overline{CD}$	12. _____

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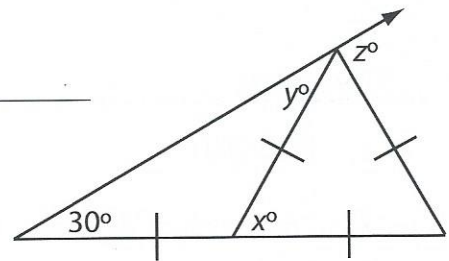
17. Based on the diagrams to the right, solve for x and y .

$x = \underline{\hspace{2cm}}$ $y = \underline{\hspace{2cm}}$



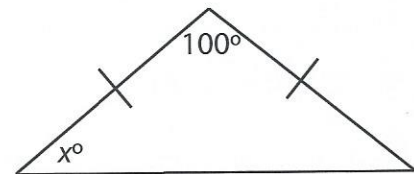
18. Based on the diagram to the right, solve for x , y , and z .

$x = \underline{\hspace{2cm}}$ $y = \underline{\hspace{2cm}}$ $z = \underline{\hspace{2cm}}$



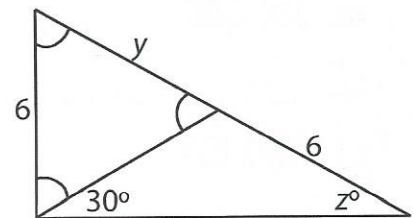
19. Based on the diagram to the right, solve for x .

$x = \underline{\hspace{2cm}}$



20. Based on the diagram to the right, solve for y and z .

$y = \underline{\hspace{2cm}}$ $z = \underline{\hspace{2cm}}$

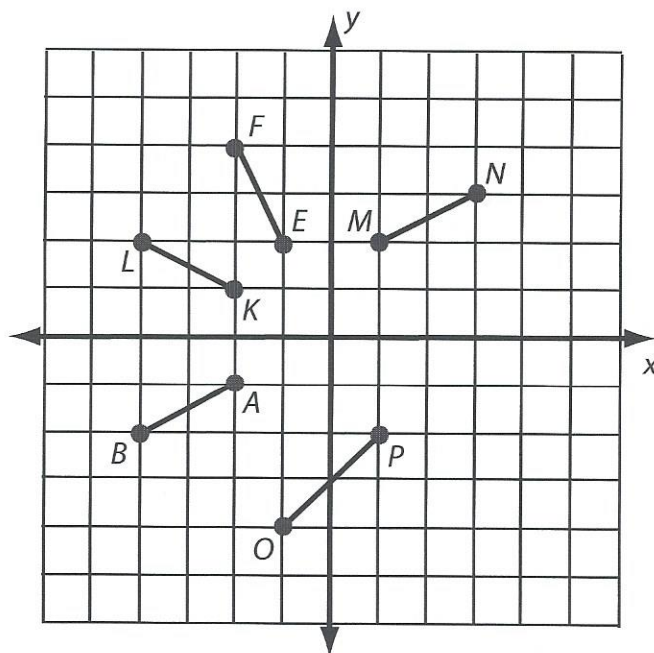


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21. The reflection of $\overline{AB}$ in the x -axis is _____.
22. Draw $\overline{CD}$ as the reflection of $\overline{AB}$ in the y -axis.
23. The 90° clockwise rotation of $\overline{AB}$ about the origin is _____.
24. Draw $\overline{GH}$ as the 180° rotation of $\overline{AB}$ about the origin.
25. Draw $\overline{IJ}$ as an image of $\overline{AB}$ using the following translation
 $(x, y) \rightarrow (x + 5, y - 2)$
26. Complete the translation of $\overline{AB}$ into image $\overline{NM}$:
 $(x, y) \rightarrow (x \text{ _____}, y \text{ _____})$
27. Is $\overline{OP}$ a congruence transformation of $\overline{AB}$? If not, explain why.



FILL IN YOUR NAME AND THE OTHER REQUIRED INFORMATION ON EACH PAGE OF THE EXAM AND MAIL THE EXAM TO AMERICAN SCHOOL.

