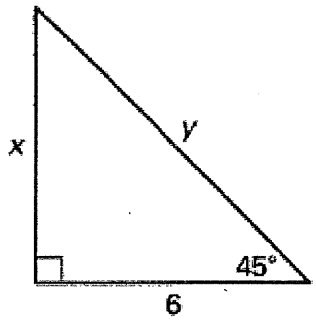
Geometry Fall 2015 Final Exam Review Packet

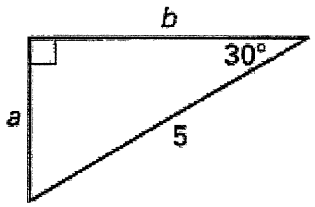
Unit 1: Right Triangles, Simplifying /Operations with Radicals

1. Find the value of each variable. Write answers in simplest radical form.

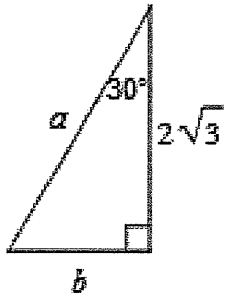
a.



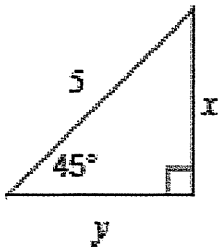
b.



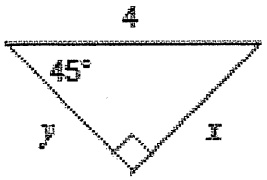
2. Find a and b



3. Find x and y

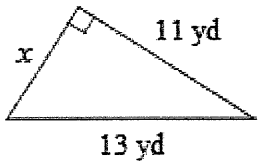


4. **Find x and y**

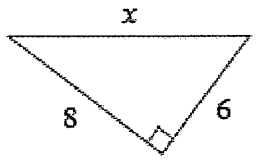


5. **Find the missing side:**

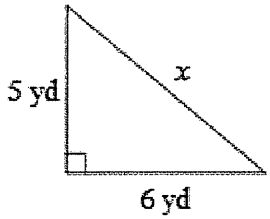
a)



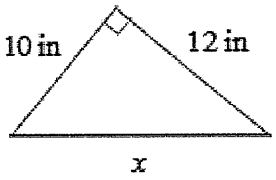
b)



c)



d)



6. $\sqrt{8xy^4} \cdot \sqrt{2x^2y^4}$

A) $4y^4\sqrt{x}$ B) $4xy^4\sqrt{x}$ C) $4xy^8\sqrt{x}$ D) $2xy^4\sqrt{2x}$

7. $6\sqrt{32} - 6\sqrt{162}$

A) $-30\sqrt{2}$ B) $-78\sqrt{2}$ C) $78\sqrt{2}$ D) $30\sqrt{2}$

8. $\sqrt{14x} \cdot \sqrt{14x}$

A) $14x^2$ B) $196x$ C) $14x$ D) $196x^2$

9. $\dfrac{\sqrt{441x^7}}{\sqrt{7x^5}}$

A) $3x^6\sqrt{7}$ B) $3x\sqrt{7}$ C) $x\sqrt{63}$ D) $3x\sqrt{49}$

Solve by Factoring #10-15

10. $7x^2 = 6 - 19x$

Factored Form: _____

Solution: _____

11. $15x^2 = 65x - 20$

Factored Form: _____

Solution: _____

12. $8x^2 = 18$

Factored Form: _____

Solution: _____

13. $12x^2 = 30x$

Factored Form: _____

Solution: _____

14. $12x^2 - 10 = -26x$

Factored Form: _____

Solution: _____

15. $9x^2 - 9 = 72$

Factored Form: _____

Solution: _____

For #16 – 19, solve by completing the square

16. $6x^2 = 10x + 2x + 63 + 3$

17. $6x^2 - 12x - 41 = 1$

18. $x^2 - 13 = 12x - 1$

19. $2x^2 = 16x + 26$

Use quadratic equation and discriminant to solve:

Quadratic Equation: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

20. **Use quadratic formula to solve: $4x^2 = 1x - 6$**

Discriminant_____

Nature of solution: _____

Solution(s) _____

21. **Use quadratic formula to solve: $3x^2 + 1 - x = 5x + 9$**

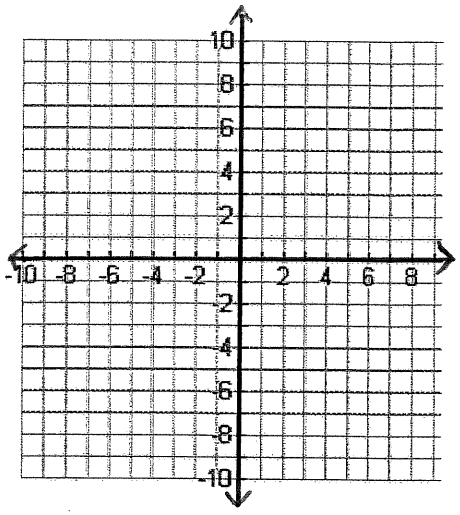
Discriminant_____

Nature of solution: _____

Solution(s) _____

Graph each quadratic function. State the requested information.

22. Graph $y = -2(x + 1)(x - 3)$ Form: _____ Opens: _____



Vertex: _____ a = _____ Max / Min (Circle one)

AOS: _____ x – intercept(s): _____ y – intercept: _____

Domain: _____ Range: _____

Avg. Rate of Change [-2, 1]: _____

End Behavior:

As $x \to \infty, f(x) \to$ _____ Increasing: _____ Positive: _____

As $x \to -\infty, f(x) \to$ _____ Decreasing: _____ Negative: _____

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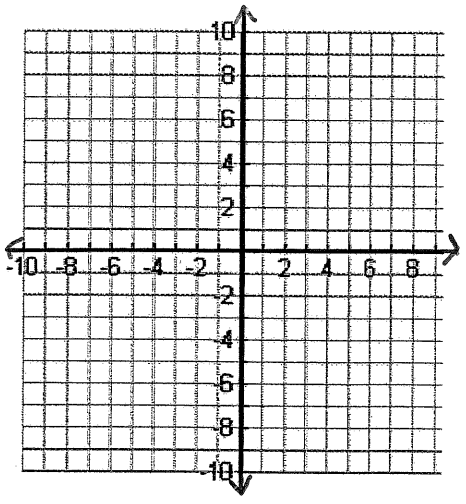
23. Graph $y = x^2 - 6x + 8$ Form: _____ Opens: _____



Vertex: _____ a = _____ Max / Min (Circle one)

AOS: _____ x – intercept(s): _____ y – intercept: _____

Domain: _____ Range: _____

Avg. Rate of Change [3, 5]: _____

End Behavior:

As $x \to \infty, f(x) \to$ _____ Increasing: _____ Positive: _____

As $x \to -\infty, f(x) \to$ _____ Decreasing: _____ Negative: _____

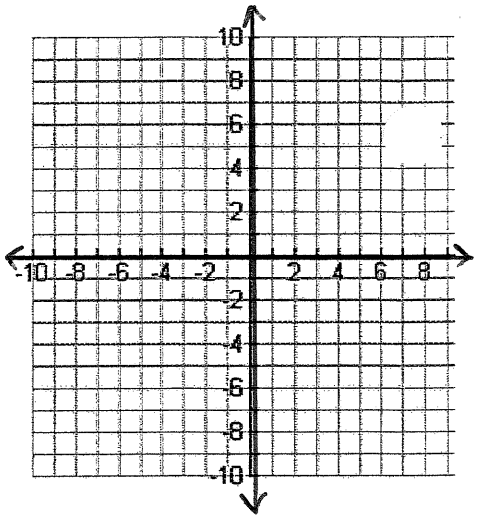
24. Graph $y = -(x-2)^2 + 9$ Form: _____ Opens: _____

Vertex: _____ a = _____ Max / Min (Circle one)

AOS: _____ x – intercept(s): _____ y – intercept: _____

Domain: _____ Range: _____

Avg. Rate of Change [0, 2]: _____



End Behavior:

As $x \to \infty, f(x) \to$ _____ Increasing: _____ Positive: _____

As $x \to -\infty, f(x) \to$ _____ Decreasing: _____ Negative: _____

25. Identify the vertex of $g(x) = (x+14)^2 - 8$.

a. $(-14, -8)$
b. $(-14, 8)$
c. $(14, -8)$
d. $(14, 8)$

26. Write the quadratic function $c(x) = x^2 - 8x - 17$ in vertex form.

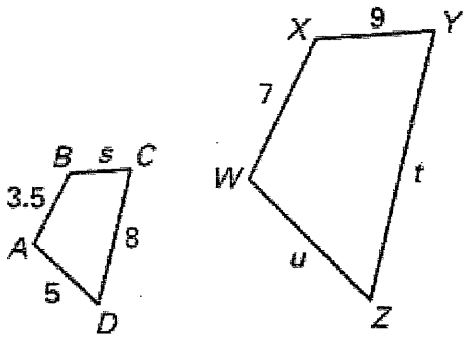
a. $c(x) = (x-4)^2 - 1$
b. $c(x) = (x-4)^2 - 33$
c. $c(x) = (x-6)^2 - 5$
d. $c(x) = (x-6)^2 - 19$

27. Consider $h(x) = x^2 - 6x + 11$. What are its vertex and y-intercept?

a. vertex: $(-3, 38)$, y-intercept: $(0, 11)$
b. vertex: $(3, 2)$, y-intercept: $(0, 11)$
c. vertex: $(-3, -2)$, y-intercept: $(0, 11)$
d. vertex: $(0, 11)$, y-intercept: $(3, 2)$

28. Find the vertex of the quadratic function f(x) = 2(x – 3)(x + 1)

a) (3, -1) b) (-3,-1) c) (1, -8) d) (-1, 0)



29. Given: ABCD ~ $WXYZ$

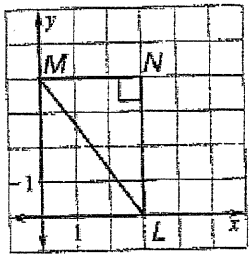
a. Find the ratio of polygon ABCD to WXYZ

b. Find the scale factor of polygon ABCD to WXYZ

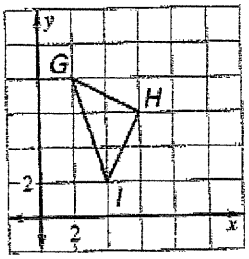
c. Find the value of t

Use the origin as the center of the dilation and the given scale factor to find the coordinates of the vertices of the image of the polygon.

30. $k = 2$

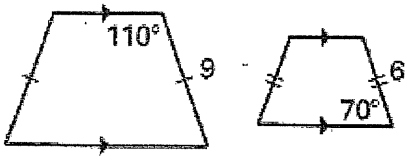


31. $k = \frac{1}{2}$



The two polygons are similar. Find the scale factor. (8.3)

32.



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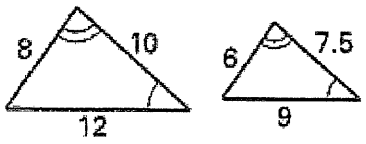
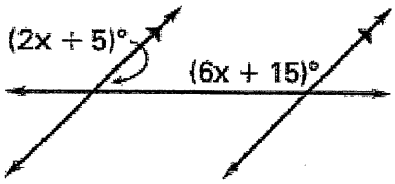


Find the value of x

34.



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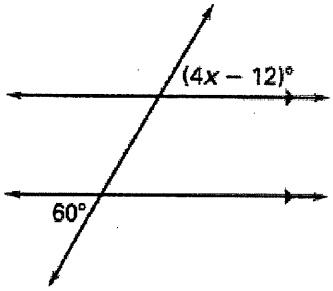

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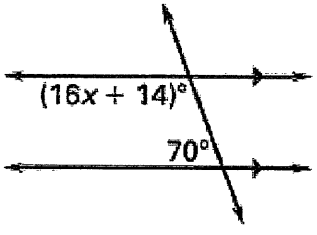


37. Solve each proportion:

a.

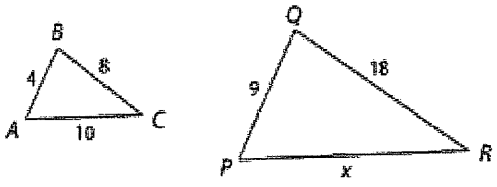
$$\frac{10}{3} = \frac{7}{x}$$

b.

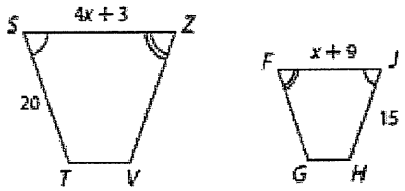
$$\frac{z-1}{3} = \frac{8}{z+1}$$

38. Each pair of polygons is similar. Find the value of x:

a.

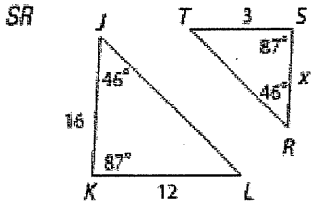


b.

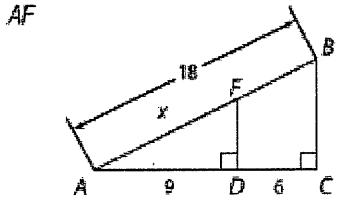


39. Find each measure

a.

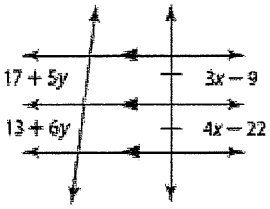


b.

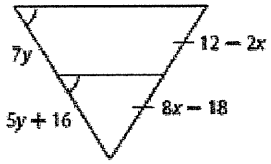


40. Find x and y

a.

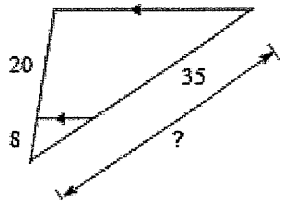


b.

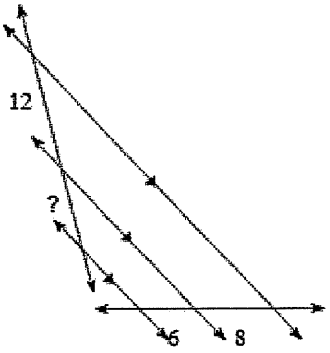


41. Find the missing length:

a.



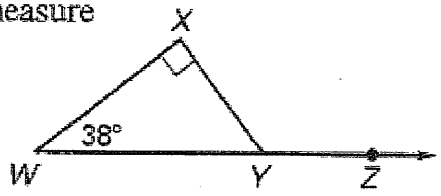
b.



Unit 4: Congruent Triangles: Classify Triangles, Interior, Exterior Angles, Congruence Theorems (SSS, SAS, HL, ASA, AAS), Congruence Proofs, Isosceles Triangles, Equilateral Triangles.

42.

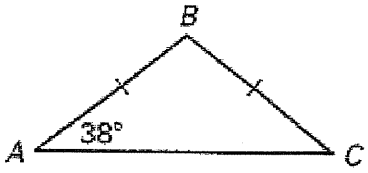
What is the measure of $\angle XYZ$?



(A) 142°
(B) 128°
(C) 118°
(D) 132°
(E) Cannot be determined

43.

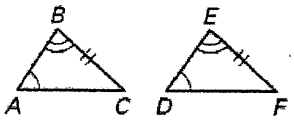
What is the measure of $\angle B$?



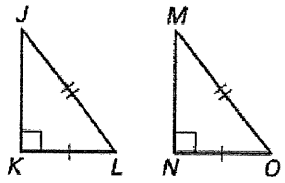
(A) 90°
(B) 38°
(C) 104°
(D) 52°
(E) Cannot be determined

State the theorem used to prove the triangles are congruent. (4.4, 4.6)

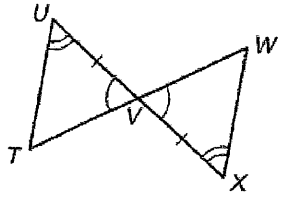
44.



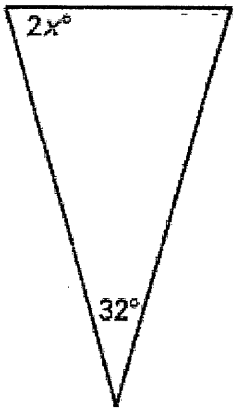
45.



46.

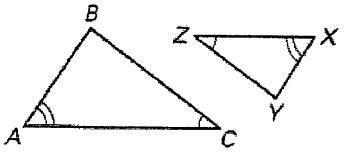


47. In the isosceles triangle below, find the value of x



48.

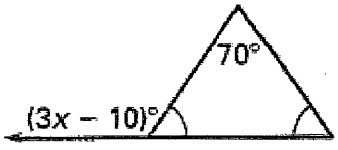
The triangles shown are similar. Which of the following is *not* a correct statement?



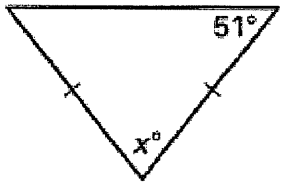
(A) $\frac{AB}{XY} = \frac{BC}{YZ}$
(B) $\triangle ABC \sim \triangle XYZ$
(C) $\frac{BC}{YZ} = \frac{AC}{XY}$
(D) $\frac{CA}{ZX} = \frac{BA}{YX}$
(E) $\frac{AC}{XZ} = \frac{AB}{XY}$

49. Find x:

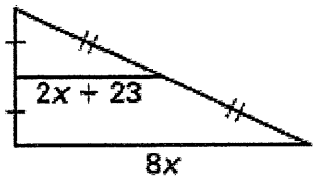
a.



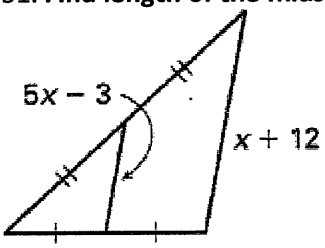
b.



50. **Find length of the midsegment:**



51. **Find length of the midsegment:**

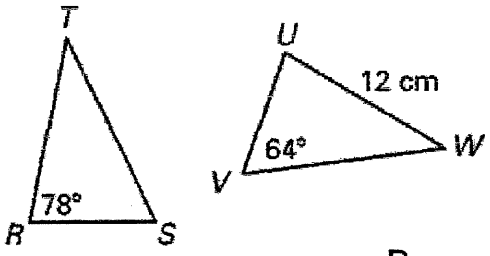


In the diagram, $\triangle RST \cong \triangle UVW$. Complete each statement. (4.2)

52. $m\angle S =$?

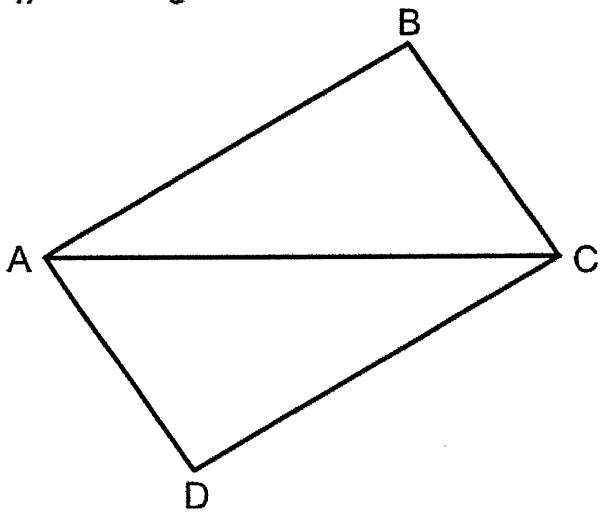
53. $m\angle W =$?

54. $\overline{RT} =$?



Part III: Write a formal proof.

55. Given: $\overline{AB} \cong \overline{CD}$
$\overline{AD} \cong \overline{BC}$



☐

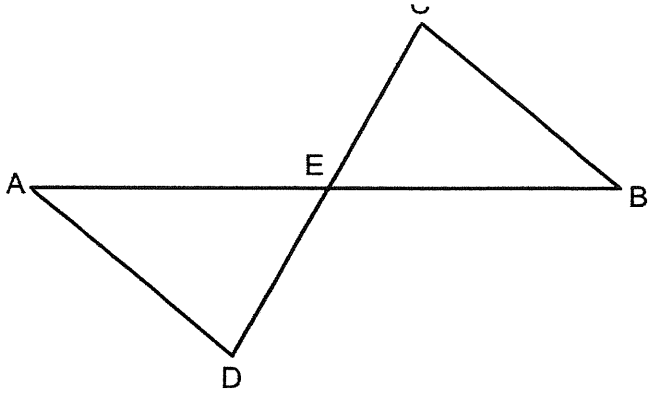
☐ Prove: $\angle BCA \cong \angle DAC$

Statements		Reasons
1)		1) Given
2)		2) Given
3)		3)
4)		4)
5)		5)

56.

Given: $\overline{AEB}$ bisects $\overline{DEC}$ at E
$\angle A \cong \angle B$

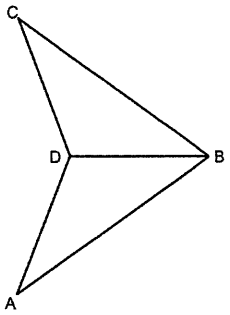
Prove: $\Delta ADE \cong \Delta BCE$



Statements		Reasons
1)		1) Given
2) DE ≅ CE		2) Definition of a bisector
3)		3) Given
4)		4)
5)		5)

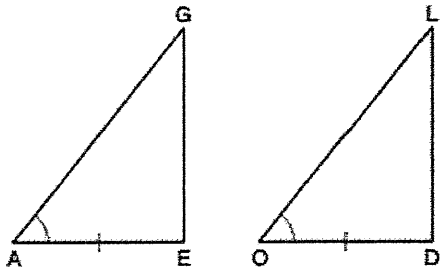
57. Given: $\overline{BA} \cong \overline{BC}$
$\overline{DA} \cong \overline{DC}$

Prove: $\angle ABD \cong \angle CBD$



Statements		**Reasons**
1)		1) Given
2)		2) Given
3)		3)
4)		4)
5)		5)

58. In the diagram below of ΔAGE and ΔOLD, $\angle GAE \cong \angle LOD$ and $AE \cong OD$. To prove that ΔAGE ≅ ΔOLD by SAS, what other information is needed?



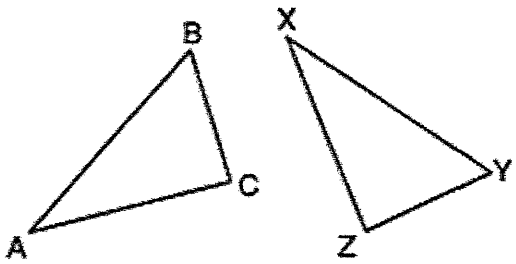
(A) $GE \cong LD$

(B) $AG \cong OL$

(C) $\angle AGE \cong \angle OLD$

(D) $\angle AEG \cong \angle ODL$

59. Which statements could be used to prove that ΔABC and ΔXYZ are congruent?



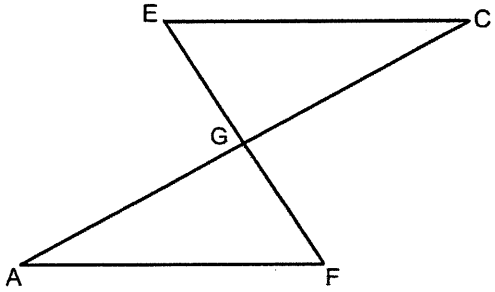
(A) $\overline{AB} \cong \overline{XY}, \overline{BC} \cong \overline{YZ}$, and $\angle A \cong \angle X$

(B) $\overline{AB} \cong \overline{XY}, \angle A \cong \angle X$, and $\angle C \cong \angle Z$

(C) $\angle A \cong \angle X, \angle B \cong \angle Y$, and $\angle C \cong \angle Z$

(D) $\angle A \cong \angle X, \overline{AC} \cong \overline{XZ}$, and $\overline{BC} \cong \overline{YZ}$

60. In the accompanying diagram, $\overline{EC} \cong \overline{FA}$ and $\overline{EC} \parallel \overline{FA}$. Triangle *EGC* can be proved congruent to triangle *FGA* by



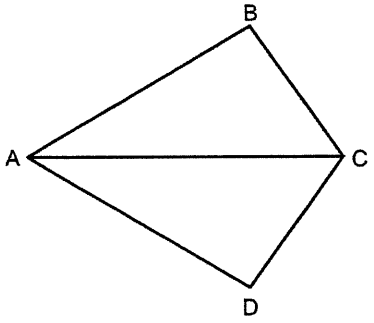
(A) HL

(B) AAA

(C) AAS

(D) SSA

61. In the diagram below, $\overline{BA} \cong \overline{DA}$, $\overline{AB} \perp \overline{CB}$, and $\overline{AD} \perp \overline{CD}$. Which method can be used to prove $\Delta ABC \cong \Delta ADC$?



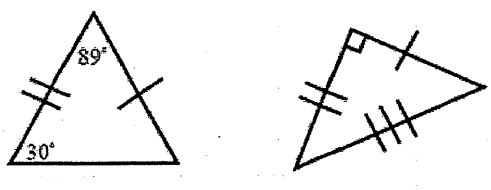
(A) HL

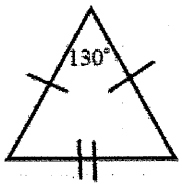
(B) SSS

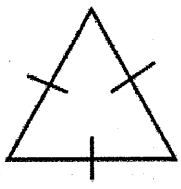
(C) AAS

(D) SAS

62. **Classify the triangles based on their side lengths and angle measures:**







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_____ _____ _____ _____