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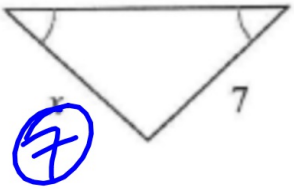

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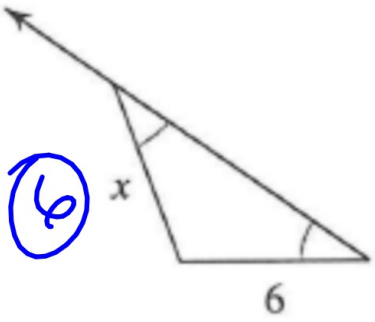

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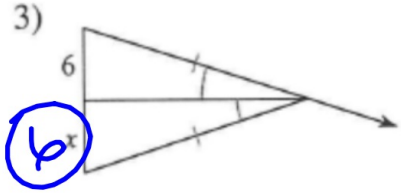

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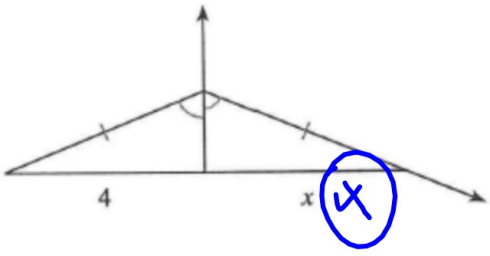

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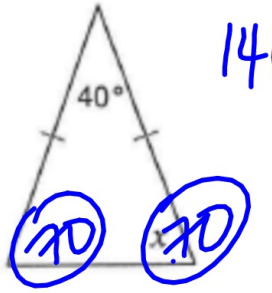

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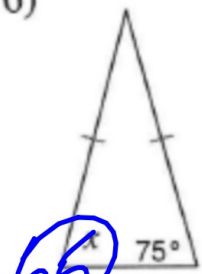

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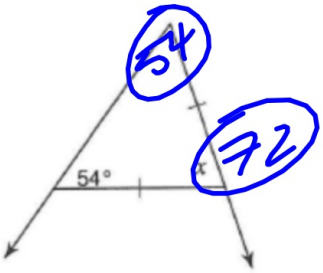

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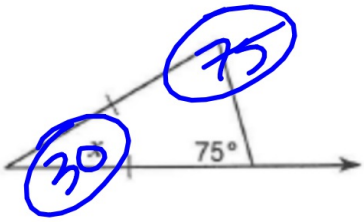

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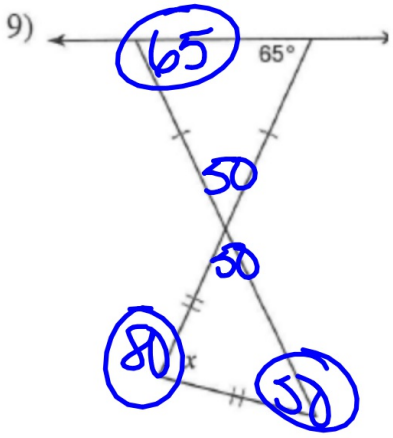

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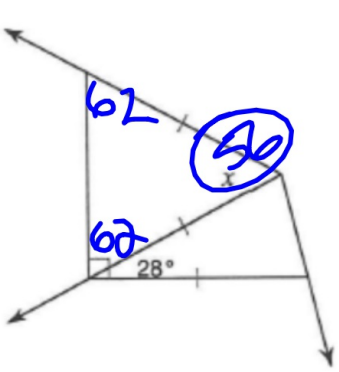

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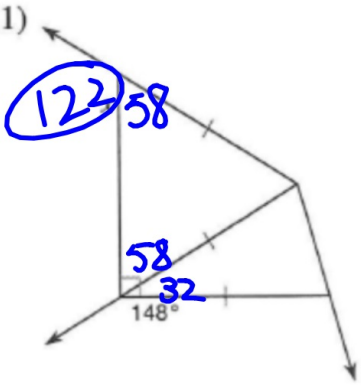

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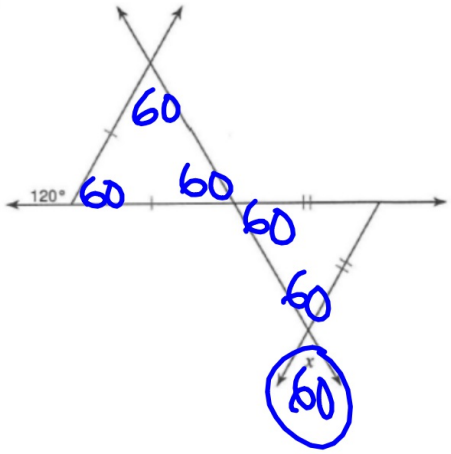

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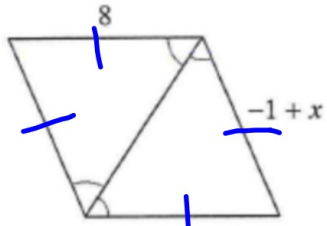
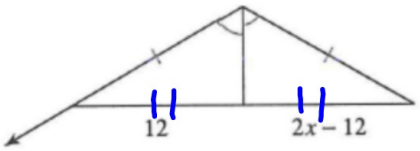


$8 = -1 + x$

$x = 9$

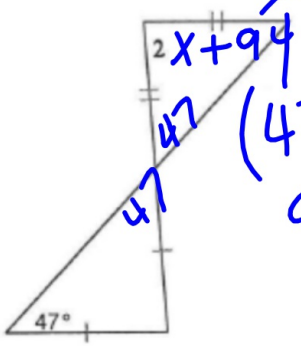
14)



$12 = 2x - 12$

$x = 12$

15) $m\angle 2 = x + 94$



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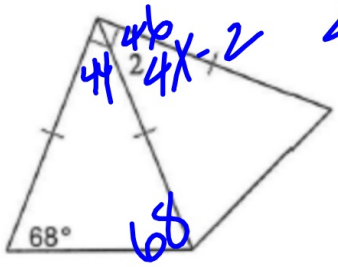
$(47) 2 +$

$94 + x$

$x =$

16) $m\angle 2 = 4x - 2 = 46$



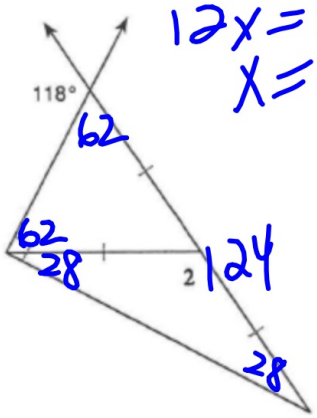
$4x = 48$

$x = 12$

17) $m\angle 2 = 12x + 4$ $= 124$

$12x = 120$

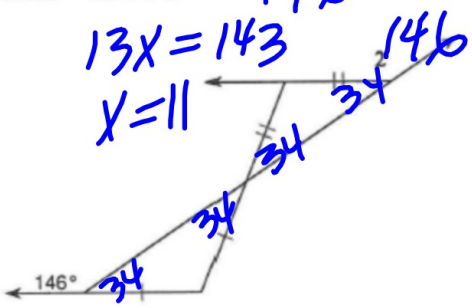
$x = 10$



18) $m\angle 2 = 13x + 3$ $= 146$

$13x = 143$

$x = 11$



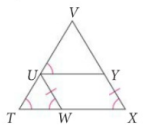
Hwk #24 Answers:

1. VX	4. Angle X	5. x = 80, y = 40	7. x = 38, y = 4
8. 150; 15	10. 64	11. 2.5	12. 42
20. x = 60; y = 30	21. x = 36; y = 36	24.	32.m = 20; n = 45

The exterior angle could be supplementary with one of the base angles. In this case:
$180 - 100 = 80$
Each of the base angles has a measure of 80 degrees. The vertex angle would have a measure of:
$180 - 2(80) = 20$
The second scenario is that the exterior angle could be supplementary to the vertex angle. In this case:
$180 - 100 = 80$
The vertex angle is 80 degrees. The base angles can be found by:
$(180 - 80)/2 = 50$
Each base angle has a measure of 50 degrees.

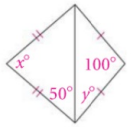
Complete each statement. Explain why it is true.

1. $\overline{VT} \cong$?
2. $\overline{UT} \cong$? $\cong \overline{YX}$
3. $\overline{VU} \cong$?
4. $\angle VYU \cong$?



Algebra Find the values of x and y.

5.



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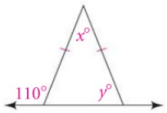

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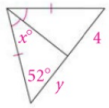
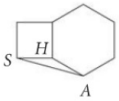


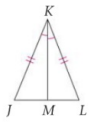
8. A square and a regular hexagon are placed so that they have a common side. Find $m\angle SHA$ and $m\angle HAS$.



9. Five fences meet at a point to form angles with measures x, $2x$, $3x$, $4x$, and $5x$ around the point. Find the measure of each angle.

Find each value.

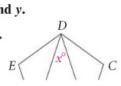
10. If $m\angle L = 58$, then $m\angle LKJ =$ ■.
11. If $JL = 5$, then $ML =$ ■.
12. If $m\angle JKM = 48$, then $m\angle J =$ ■.
13. If $m\angle J = 55$, then $m\angle JKM =$ ■.



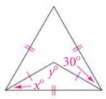
Algebra Find the values of x and y.

20.

21.



22.



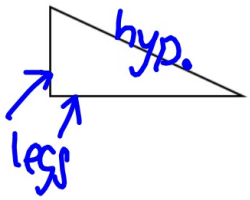
24. **Critical Thinking** An exterior angle of an isosceles triangle has measure 100. Find two possible sets of measures for the angles of the triangle.

ABCDE is a regular pentagon.

Geometry 4-6: Congruence in Right Triangles

Objective: The Hypotenuse-Leg Theorem

In a right triangle, the side opposite the right angle is the longest side and is called the hyp. The other two sides are the legs.

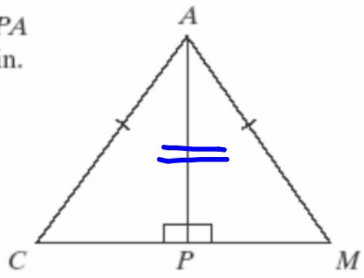


Right triangles provide a special case for which there is an SSA congruence rule, which we saw was not true for non-right triangle in sections 4-2 and 4-3. It occurs when hypotenuses are congruent and one pair of legs are congruent.

Theorem 4-6: Hypotenuse-Leg (HL) Theorem

If the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and leg of another right triangle, then the $\triangle$s are $\cong$.

Proving Triangles Congruent One student wrote "$\triangle CPA \cong \triangle MPA$ by the HL Theorem" for the diagram. Is the student correct? Explain.



The diagram shows the following congruent parts.

$\overline{CA} \cong$ [MA]

$\angle CPA \cong$ [$\angle MPA$]

$\overline{PA} \cong$ [PA]

Since $\overline{AC}$ is the [hyp] and $\overline{PA}$ is a [leg] of right triangle CPA, and $\overline{MA}$ is the [hyp] and $\overline{PA}$ is a [leg] of right triangle MPA, the triangles are congruent by the [HL thm].

The student [is] correct.

****To use the HL Theorem, you must show that three conditions are met.**

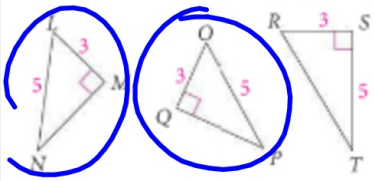
1) they must be rt $\triangle$s.
2) the $\triangle$s have $\cong$ hypotenuse
3) one pair of $\cong$ legs.

Example 1: On the tent, $\angle CPA$ and $\angle MPA$ are right angles and $\overline{CA} \cong \overline{MA}$. Can you use one pattern to cut fabric for both flaps of the tent? Explain.

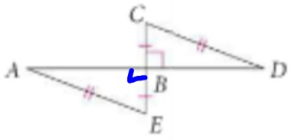
HL thm

$\triangle CPA \cong \triangle MPA$.

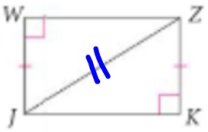
QC 1: Which two triangles are congruent by the HL Theorem? Write a congruence statement.



Example 2: Explain why $\Delta CBD \cong \Delta EBA$.

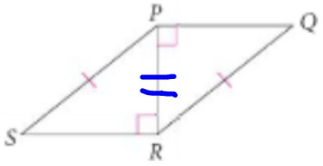


Example 3: Explain why $\Delta JWZ \cong \Delta ZKJ$.



Statement	Reason
$\angle W$ & $\angle K$ are rt $\angle$'s	Given
ΔJWZ & ΔZKJ are rt. Δs	Def of rt Δs.
$JZ \cong JZ$	Repl.
$JW \cong ZK$	Given
$\Delta JWZ \cong \Delta ZKJ$	HLthm

QC 3: Explain why $\Delta PRS \cong \Delta RPQ$.



Hwk #25 - due tomorrow

Sec. 4-6

Pages 237-238

Problems 2-4, 6, 7, 10-13

IXL #14 - K.5 & K.11 due Friday at 4pm!