



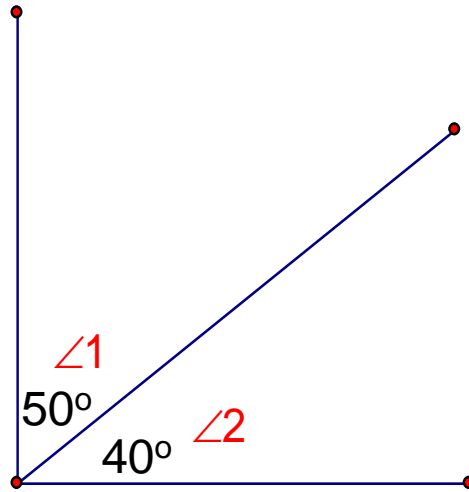
**James Madison**  
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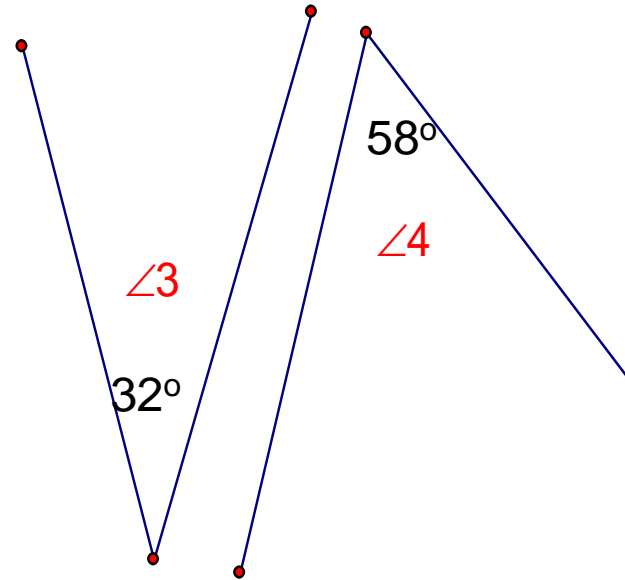
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# Two Angles are COMPLEMENTARY if:

- Their measures add to 90 degree.



complementary  
adjacent

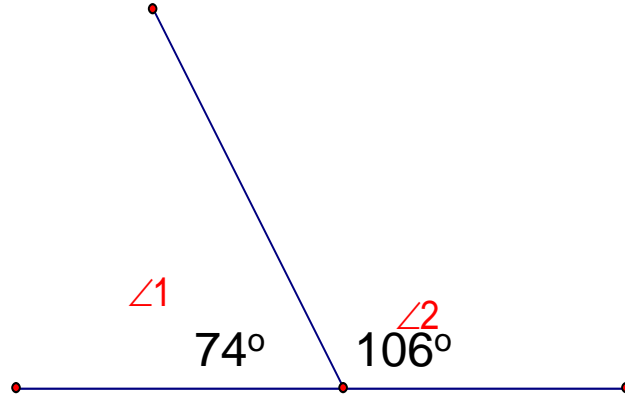


complementary  
non-adjacent

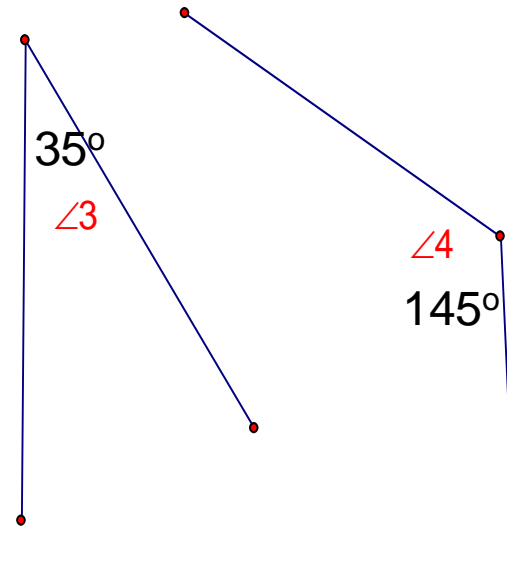


# Two angles are SUPPLEMENTARY if

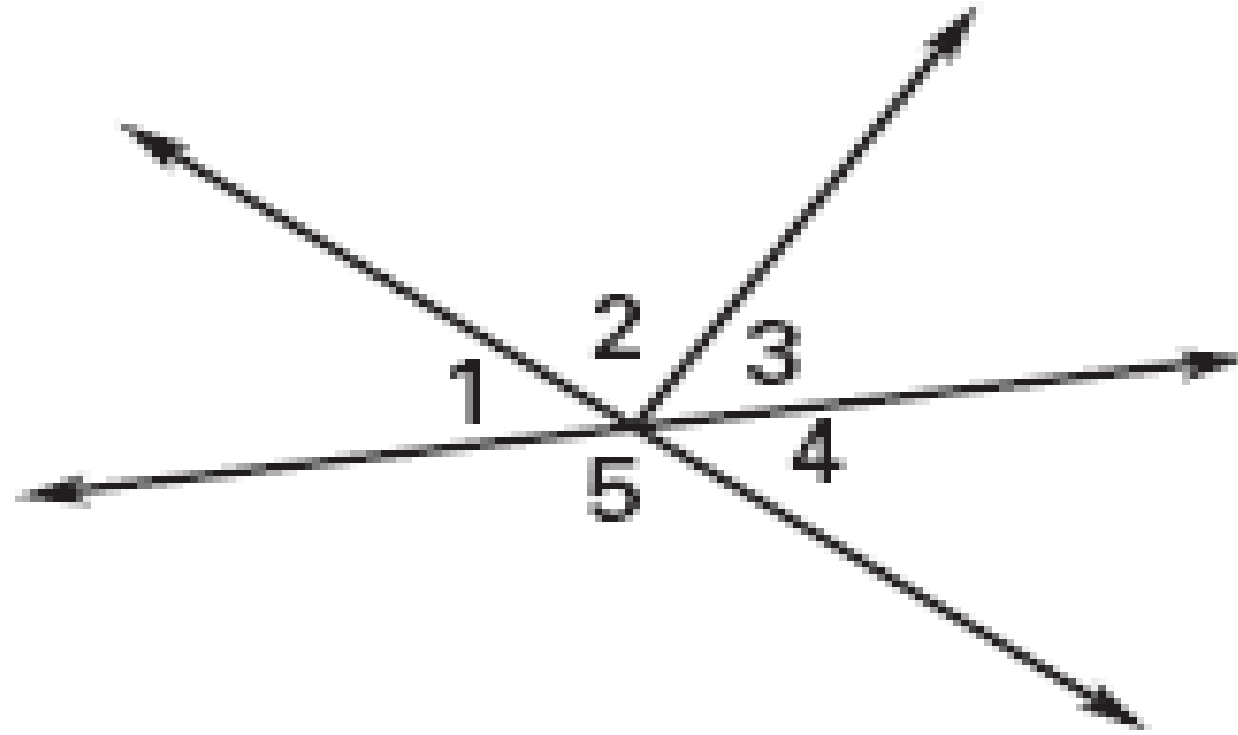
- Their measures add to 180 degrees.



Supplementary  
Adjacent



Supplementary  
NON-Adjacent



If the  $m\angle 1 = 37$  degrees and  $m\angle 2 = 90$  degrees, find the following:

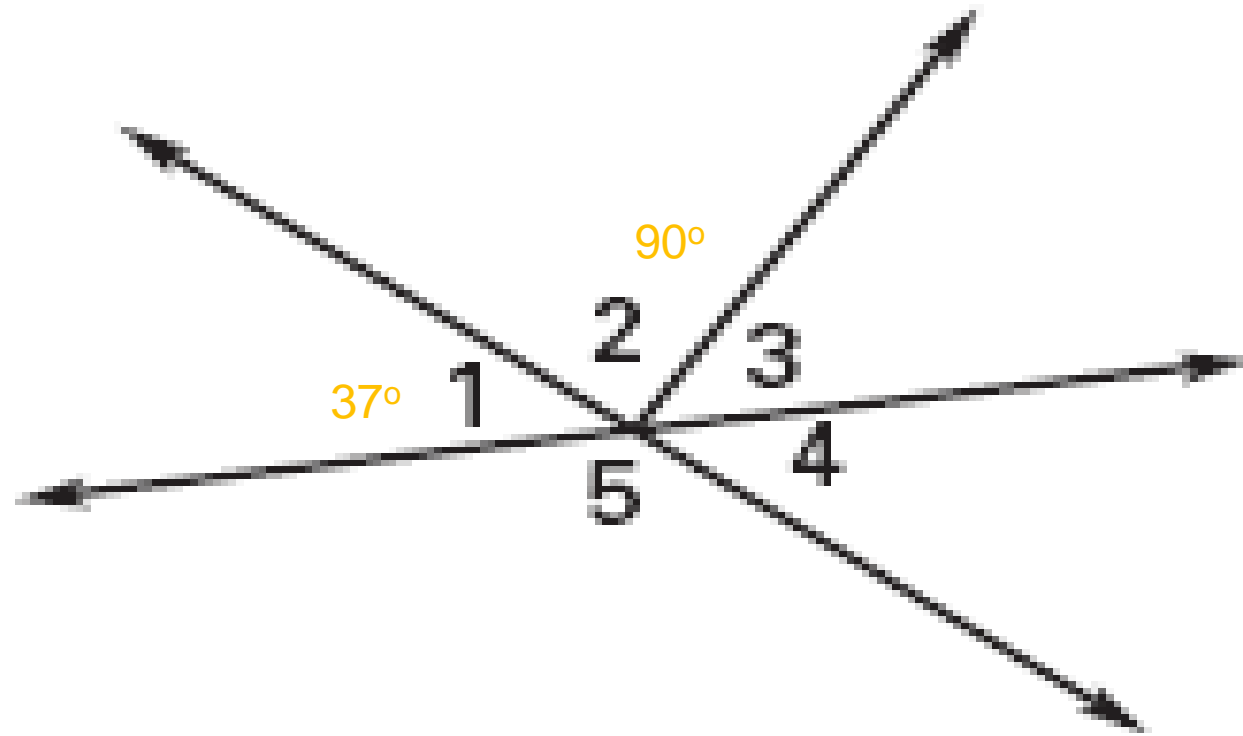
$m\angle 5$  \_\_\_\_\_

$m\angle 4$  \_\_\_\_\_

$m\angle 3$  \_\_\_\_\_



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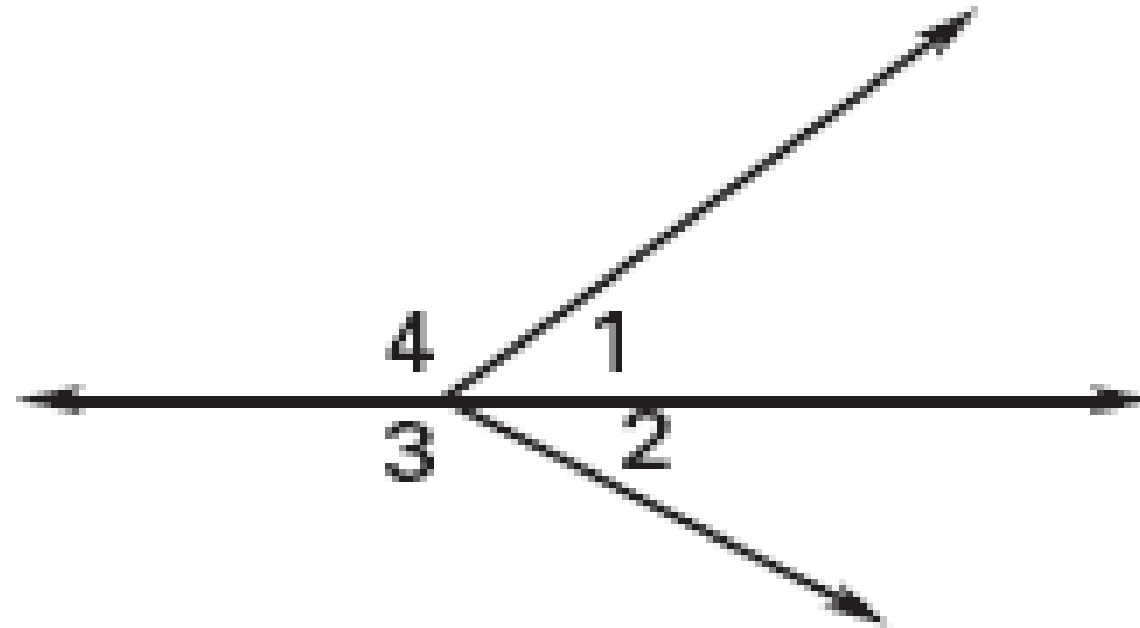


If the  $m\angle 1 = 37$  degrees and  $m\angle 2 = 90$  degrees, find the following:

$$m\angle 5 \quad \underline{m\angle 1 + m\angle 5 = 180 \text{ so } 37 + m\angle 5 = 180 \quad m\angle 5 = 143^\circ}$$

$$m\angle 4 \quad \underline{m\angle 4 + m\angle 5 = 180 \text{ so } 143 + m\angle 4 = 180 \quad m\angle 4 = 37^\circ}$$

$$m\angle 3 \quad \underline{m\angle 1 + m\angle 2 + m\angle 3 = 180 \text{ so } 37 + 90 + m\angle 3 = 180 \quad m\angle 3 = 53^\circ}$$

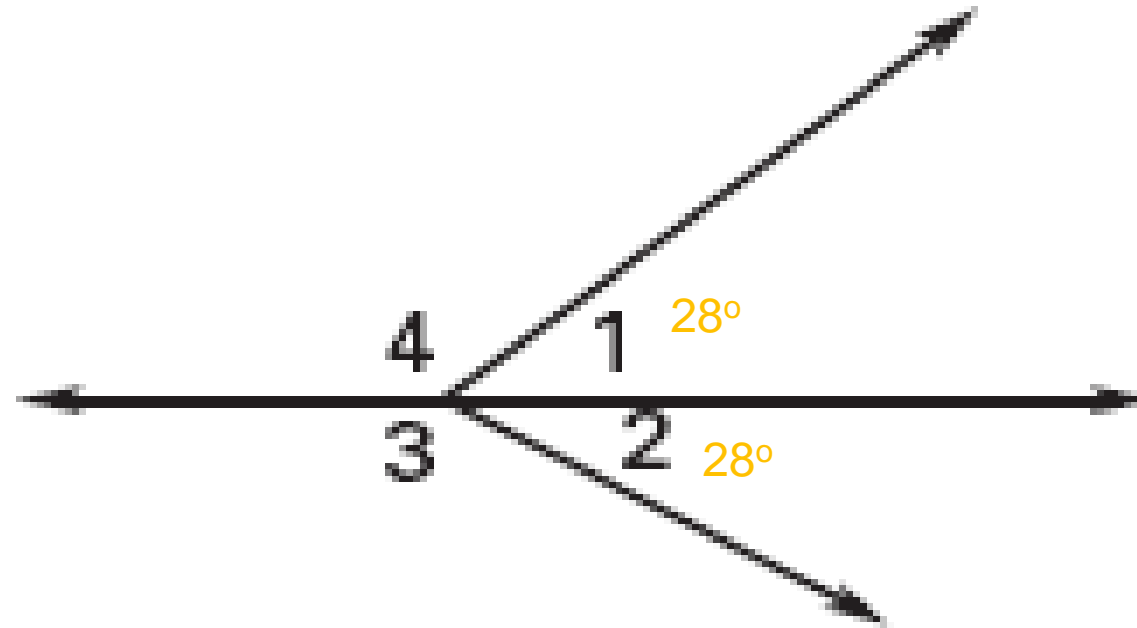


Given:  $m\angle 2 = 28$  degrees, and  $m\angle 1 = m\angle 2$

Find:

$m\angle 4$  \_\_\_\_\_

$m\angle 3$  \_\_\_\_\_



Given:  $m\angle 2 = 28$  degrees, and  $m\angle 1 = m\angle 2$

Find:

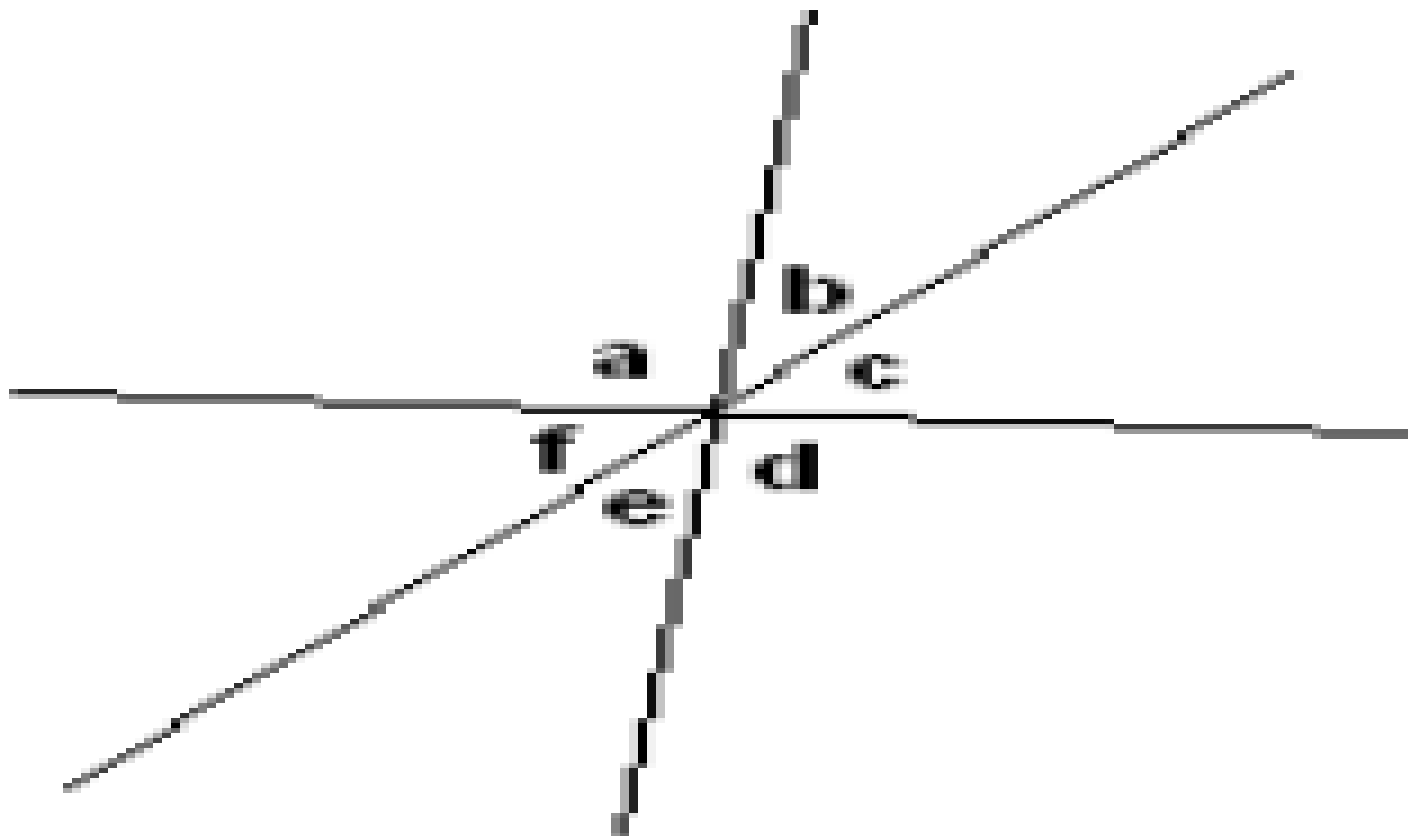
$m\angle 4$   $m\angle 1 + m\angle 4 = 180$  so  $28 + m\angle 4 = 180$   $m\angle 4 = 152^\circ$

$m\angle 3$   $m\angle 2 + m\angle 3 = 180$  so  $28 + m\angle 3 = 180$   $m\angle 3 = 152^\circ$



Given the picture at the right, find the following angle measures if  $b = 24^\circ$  and  $f = 51^\circ$ .

$a = \underline{\hspace{2cm}}$        $c = \underline{\hspace{2cm}}$        $d = \underline{\hspace{2cm}}$        $e = \underline{\hspace{2cm}}$



Given the picture at the right, find the following angles measures if  $a = 81^\circ$  and  $b = 32^\circ$ .

$c = \underline{\hspace{2cm}}$        $d = \underline{\hspace{2cm}}$        $e = \underline{\hspace{2cm}}$        $f = \underline{\hspace{2cm}}$





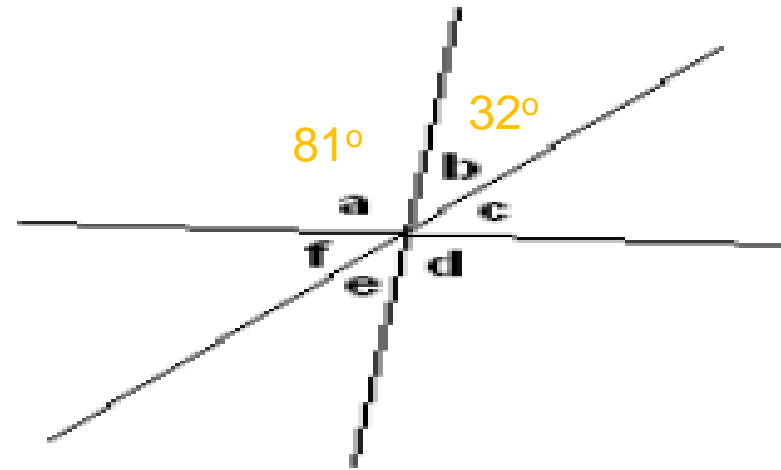
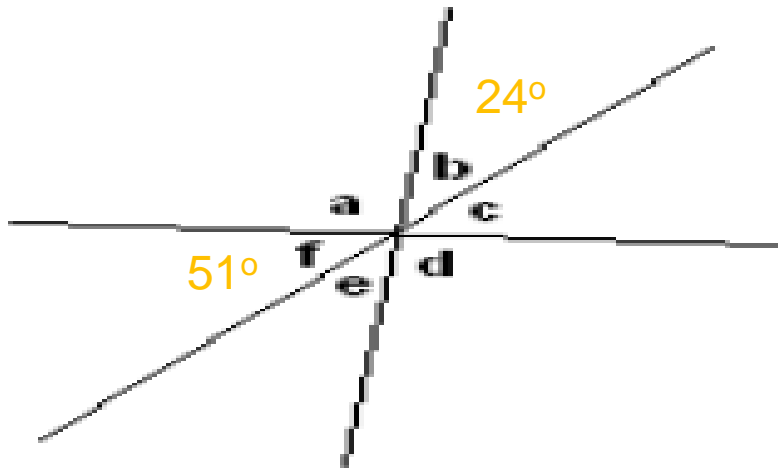
Given the picture at the right, find the following angle measures if  $b = 24^\circ$  and  $f = 51^\circ$ .

$a = 105^\circ$      $c = 51^\circ$      $d = 105^\circ$      $e = 24^\circ$  (vertical to  $\angle b$ )

$m\angle a = 180 - 24 - 51$

$m\angle d = 180 - 24 - 51$

(c vertical to  $\angle f$ )



Given the picture at the right, find the following angles measures if  $a = 81^\circ$  and  $b = 32^\circ$ .

$c = 67^\circ$      $d = 81^\circ$      $e = 32^\circ$      $f = 67^\circ$  (vertical to  $\angle c$ )

$m\angle c = 180 - 81 - 32$

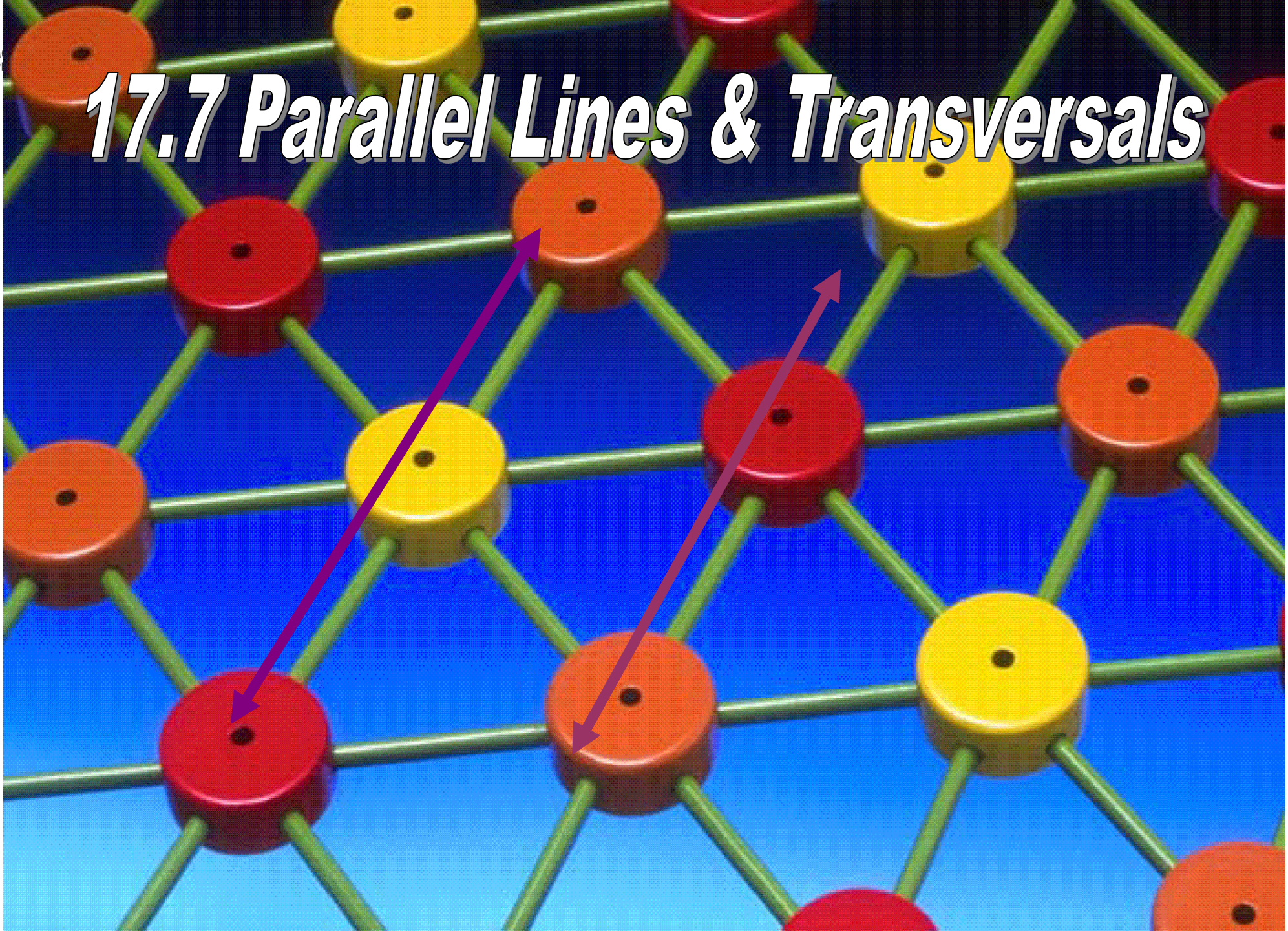
(vertical to  $\angle b$ )

(d vertical to  $\angle a$ )



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# 17.7 Parallel Lines & Transversals





# Corresponding Angles

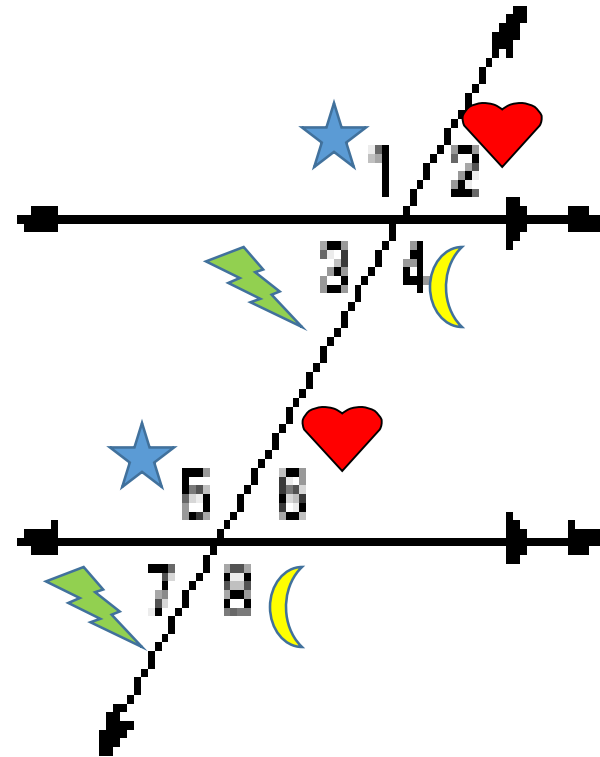
- Pairs of ***Corresponding Angles are congruent.***

$$\angle 1 \cong \angle 5$$

$$\angle 3 \cong \angle 7$$

$$\angle 2 \cong \angle 6$$

$$\angle 4 \cong \angle 8$$





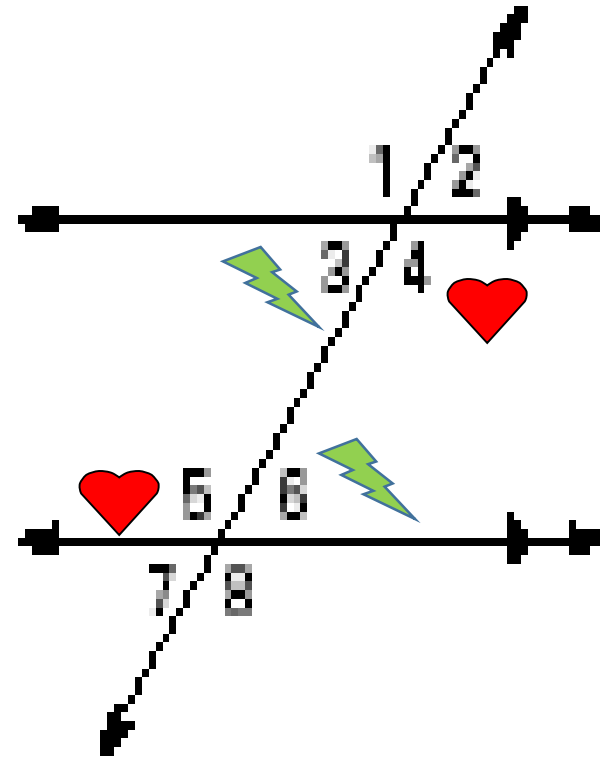
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# Alternate Interior Angles

Pairs of *Alternate Interior Angles* are congruent.

$$\angle 4 \cong \angle 5$$

$$\angle 3 \cong \angle 6$$





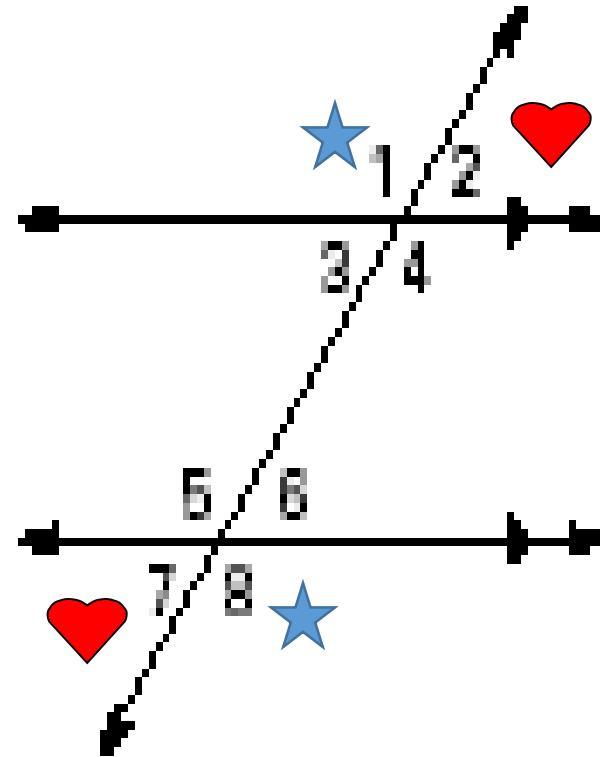
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# Alternate Exterior Angles

Pairs of *Alternate Exterior Angles* are congruent.

$$\angle 1 \cong \angle 8$$

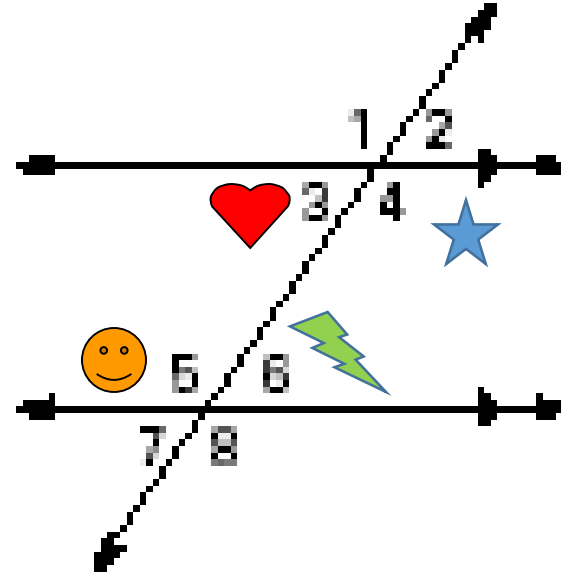
$$\angle 2 \cong \angle 7$$



Pairs of

*Consecutive Interior*

*Angles are supplementary.*



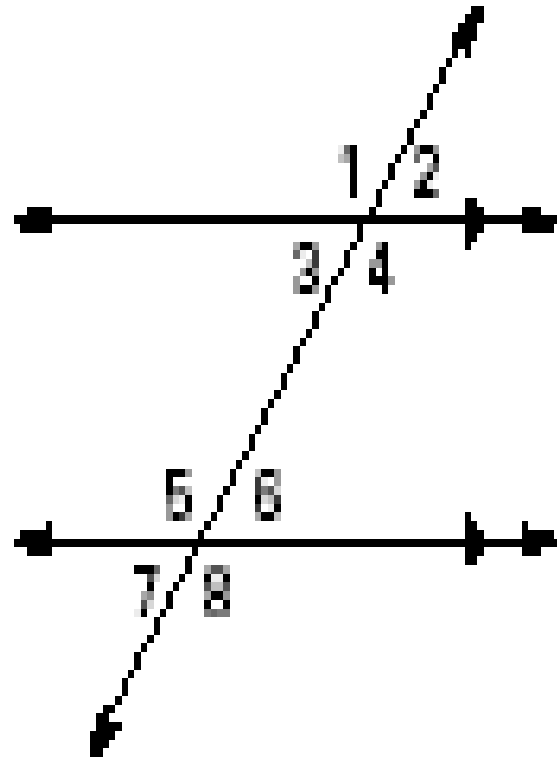
$$\text{♥} + \text{😊} = 180 \quad (\angle 3 \cong \angle 5)$$

$$\text{⚡} + \text{★} = 180 \quad (\angle 4 \cong \angle 6)$$



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State the Vocabulary and Rule that justifies the claim:



7.  $\angle 3 = \angle 7$

8.  $\angle 3 = \angle 6$

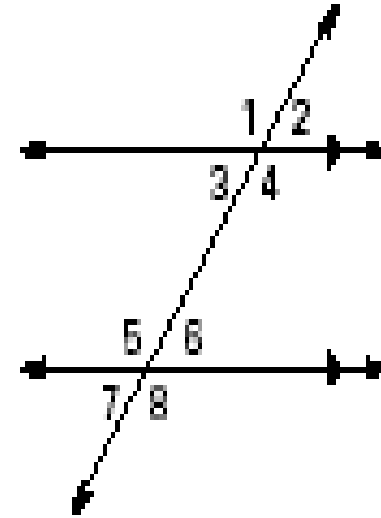
9.  $\angle 2 = \angle 7$

10.  $m\angle 4 + m\angle 6 = 180^\circ$



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State the Vocabulary and Rule that justifies the claim:



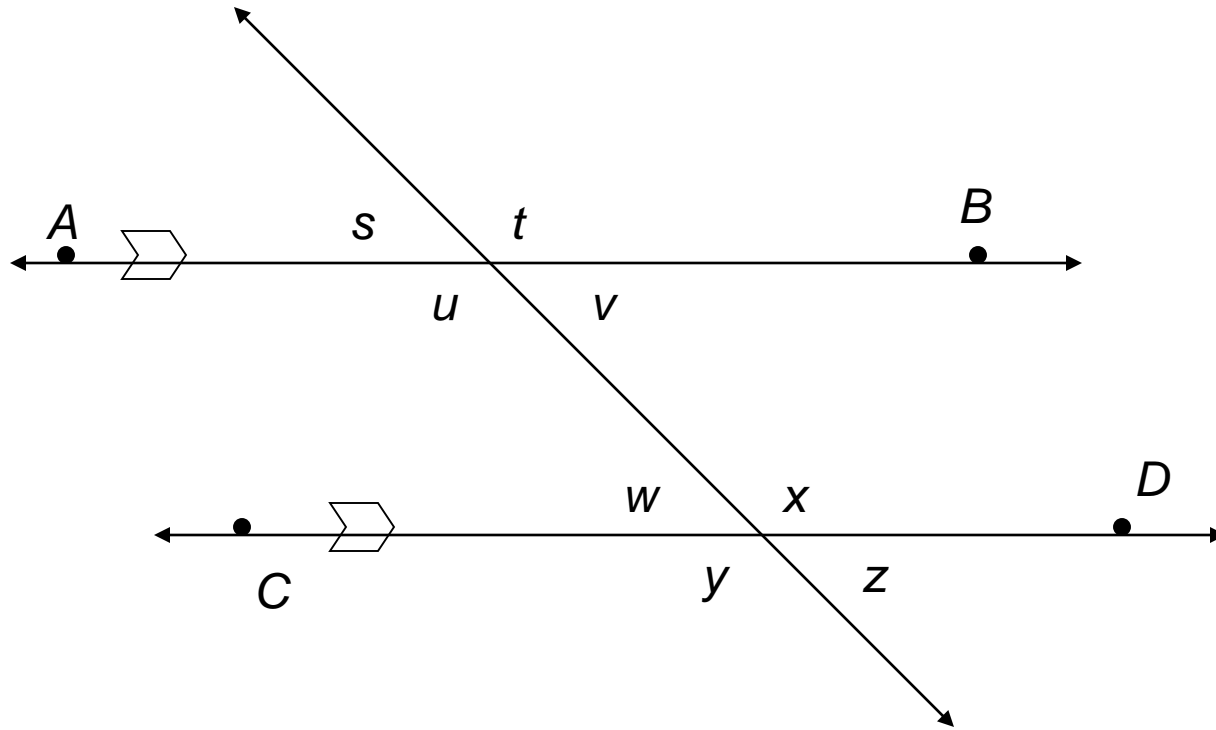
7.  $\angle 3 = \angle 7$  If //, Corresponding Angles are congruent.
8.  $\angle 3 = \angle 6$  If //, Alternate Interior Angles are congruent.
9.  $\angle 2 = \angle 7$  If //, Alternate Exterior Angles are congruent.
10.  $m\angle 4 + m\angle 6 = 180^\circ$  If //, Same-side Interior Angles are Supplementary.





Given:  $m\angle u = 105^\circ$

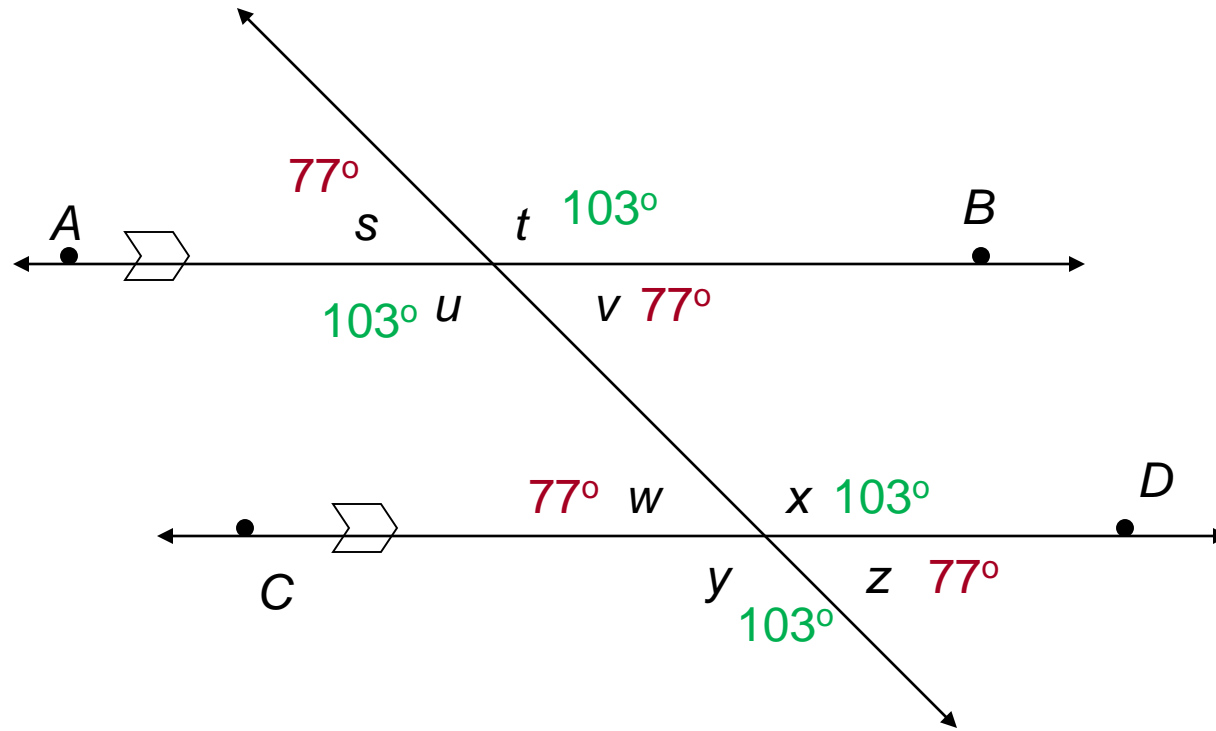
Find the measure of the other 7 angles.





Given:  $m\angle w = 77^\circ$

Find the measure of the other 7 angles.





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Answer the questions below based on the picture to the right.  
Given  $a = 118^\circ$ , find the rest of the angles.

$b = 62^\circ$

$c = 62^\circ$

$d = 118^\circ$

$e = 118^\circ$

$f = 62^\circ$

$g = 62^\circ$

$h = 118^\circ$

