

# Vertical Angles and Linear Pair Puzzles

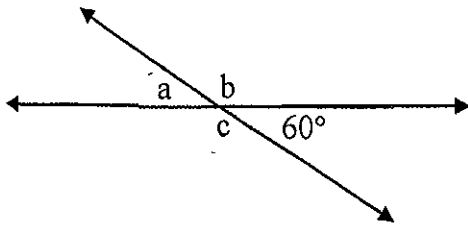
Name Answer

Block \_\_\_\_\_ Date \_\_\_\_\_

Calculate the missing angles. Show your work by writing in the angles as you find them.

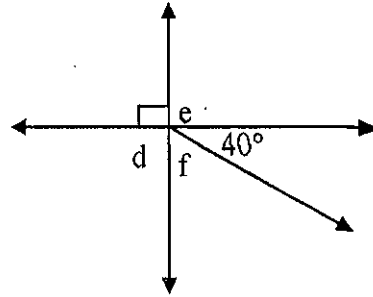
1.

$a = 60^\circ$   $b = 120^\circ$   $c = 120^\circ$



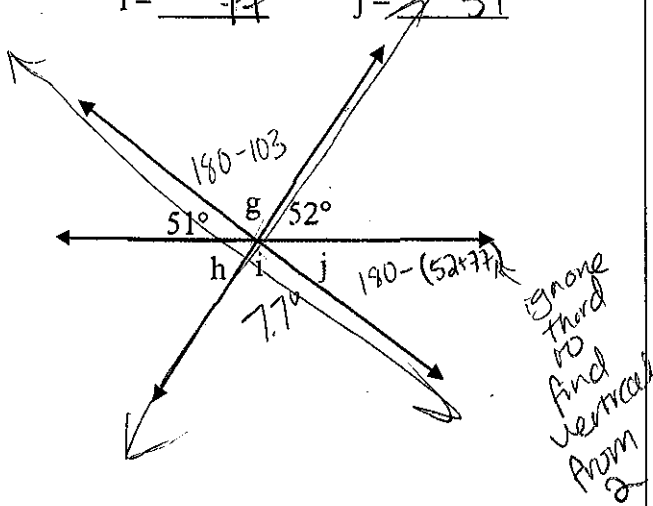
2.

$d = 90^\circ$   $e = 96^\circ$   $f = 56^\circ$



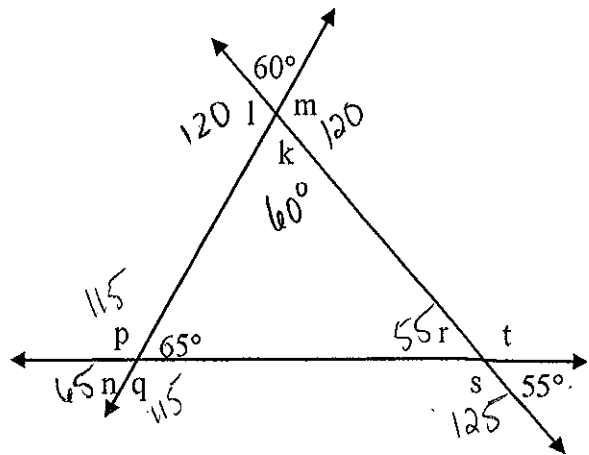
3.

$g = 77^\circ$   $h = 52^\circ$   
 $i = 77^\circ$   $j = 51^\circ$



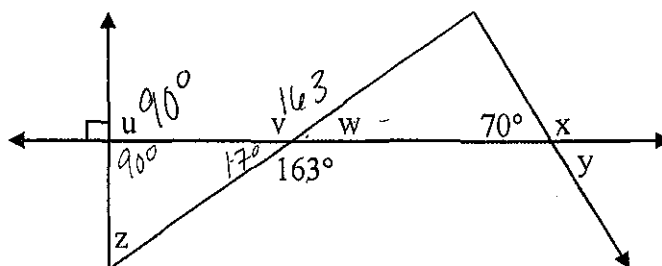
4.

$k = 60^\circ$   $l = 120$   $m = 120$   
 $n = 65$   $p = 115$   $q = 115$   
 $r = 55$   $s = 125$   $t = 125$

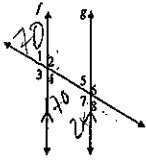


5.

$u = 90^\circ$   $v = 163^\circ$   $w = 17^\circ$   $x = 110^\circ$   $y = 70^\circ$   $z = 73^\circ$



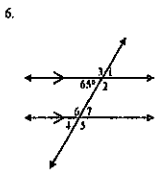
Use the diagram below for exercises 1-4



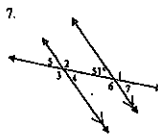
- Identify four pairs of congruent angles. (exclude vertical angle pairs)  
 $\angle 1 \cong \angle 3, \angle 2 \cong \angle 4, \angle 1 \cong \angle 4, \angle 2 \cong \angle 3$
- Identify two pairs of supplementary angles. (exclude linear pairs)  
 $\angle 2 \cong \angle 5, \angle 4 \cong \angle 3$
- If  $m\angle 1 = 70^\circ$ , what is  $m\angle 8$ ?  
 $70^\circ$
- If  $m\angle 4 = 70^\circ$  and  $m\angle 7 = 2x$  what is the value of  $x$ ?  
 $70 + 2x = 180 \rightarrow 2x = 110 \rightarrow x = 55$

5. How are the Alternate Interior Angle Theorem and Alternate Exterior Angle Theorem alike? How are they different?  
Both are congruent but they are in different locations

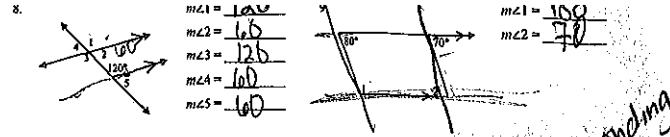
Find the measure of all the numbered angles.



6.  $m\angle 1 = 65$   
 $m\angle 2 = 115$   
 $m\angle 3 = 115$   
 $m\angle 4 = 65$   
 $m\angle 5 = 115$   
 $m\angle 6 = 115$   
 $m\angle 7 = 65$   
 $m\angle 8 = 65$



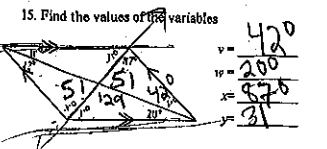
7.  $m\angle 1 =$  \_\_\_\_\_  
 $m\angle 2 =$  \_\_\_\_\_  
 $m\angle 3 =$  \_\_\_\_\_  
 $m\angle 4 =$  \_\_\_\_\_  
 $m\angle 5 =$  \_\_\_\_\_  
 $m\angle 6 =$  \_\_\_\_\_  
 $m\angle 7 =$  \_\_\_\_\_



8. Find the value of  $x$ . Then find the measure of each labeled angle. Be sure to show work!  
 $x =$  \_\_\_\_\_  
 $m\angle A =$  \_\_\_\_\_  
 $m\angle B =$  \_\_\_\_\_  
 $m\angle C =$  \_\_\_\_\_  
 $X + X - 50 = 180$   
 $3x - 10 = x + 40$

12.  $x =$  \_\_\_\_\_  
 $m\angle D =$  \_\_\_\_\_  
 $m\angle C =$  \_\_\_\_\_  
 $5x + 4x = 180$   
13. Solve for  $p$   
 $3p - 6 = 90$

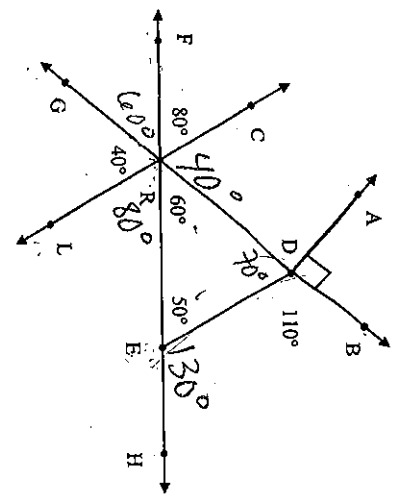
14. Solve for  $x$  and  $y$   
 $x = 130$   
 $y = 45$   
 $3y = x \rightarrow$  corresponding  
 $x + y = 180$   
 $3y + y = 180$   
 $4y = 180$   
 $y = 45$



110°	130°	160°	60°	80°	120°	70°	90°	40°	200°	100°	140°	
W	I	Z	A	R	P	D	D	F	D	D	Z	E

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- A  $m\angle FRG = 60^\circ$  Z  $m\angle FRL = 100^\circ$   
R  $m\angle ERL = 80^\circ$  D  $m\angle FRD = 120^\circ$   
O  $m\angle CRD = 40^\circ$  E  $m\angle CRG = 140^\circ$   
I  $m\angle HED = 130^\circ$  Z  $m\angle ADE = 160^\circ$   
F  $m\angle BDA = 90^\circ$  O  $m\angle ADB + m\angle BDE = 90 + 110 = 200$   
O  $m\angle RDE = 70^\circ$  W  $m\angle DRE + m\angle RED = 60 + 50 = 110$



Who is Mud-Wrestling Champ?  
Find the answer in one of the boxes at the bottom of the page. Write the letter of the exercise in the box.