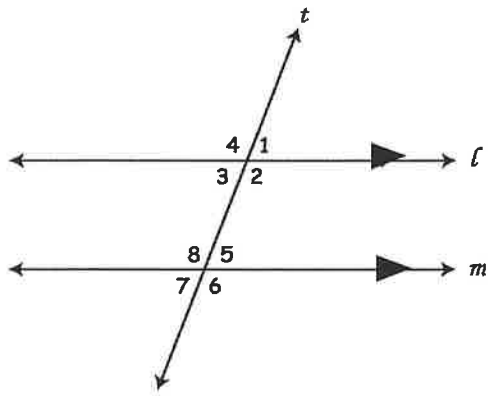
Name _____ Date _____

Parallel Lines and Transversals

1. IF TWO PARALLEL LINES ARE CUT BY A TRANSVERSAL, THEN:
   - Alternate Interior Angles are $\cong$.
   - Alternate Exterior Angles are $\cong$.
   - Corresponding Angles are $\cong$.
   - Consecutive Interior Angles are Supplementary.

2. Find the measurement of the indicated angle.
   (treat each question independently)
   a) If $m\angle 1 = 58°$, find $m\angle 5$. 58
   b) If $m\angle 8 = 106°$, find $m\angle 2$. 106
   c) If $m\angle 1 = 67°$, find $m\angle 7$. 67
   d) If $m\angle 3 = 3x - 7$ and $m\angle 8 = 6x - 2$, find $m\angle 3$. 56
   $3x - 7 + 6x - 2 = 180$



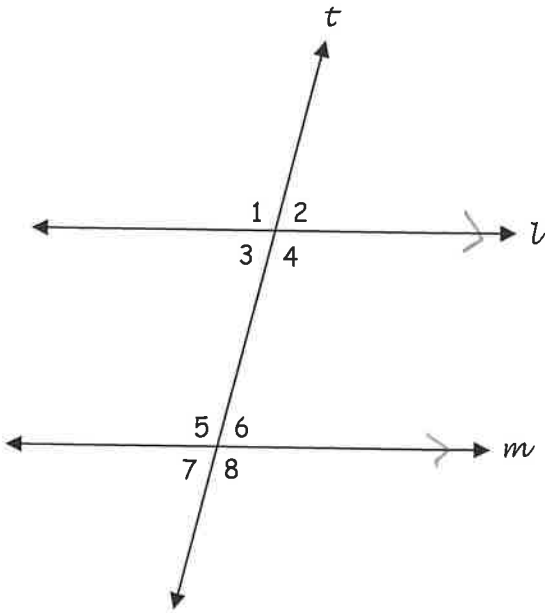
3. Using the figure above. If $m\angle 1 = 47°$, find the measures of all other angles.

   $m\angle 2 =$ 133 $m\angle 6 =$ 133 $m\angle 3 =$ 47 $m\angle 7 =$ 47

   $m\angle 4 =$ 133 $m\angle 8 =$ 133 $m\angle 5 =$ 47

$\ell \parallel m$. Find the measure of each angle and provide the angle pair name. Treat each problem independently.

4. If $m\angle 1 = 120°$, find $m\angle 5 =$ 120
   - $\angle$ pair name: Corresponding
5. If $m\angle 6 = 72°$, find $m\angle 4 =$ 108
   - $\angle$ pair name: Consecutive Interior
6. If $m\angle 2 = 64°$, find $m\angle 8 =$ 116
   - $\angle$ pair name: —
7. If $m\angle 4 = 112°$, find $m\angle 5 =$ 112
   - $\angle$ pair name: Alternate Interior
8. If $m\angle 2 = 82°$, find $m\angle 7 =$ 82
   - $\angle$ pair name: Alternate Exterior
9. If $m\angle 2 = 80°$, find $m\angle 5 =$ 100
   - $\angle$ pair name: —



10. Use the figure to identify a pair of angles.

a. Alternate Exterior Angles 1 & 7 2 & 8

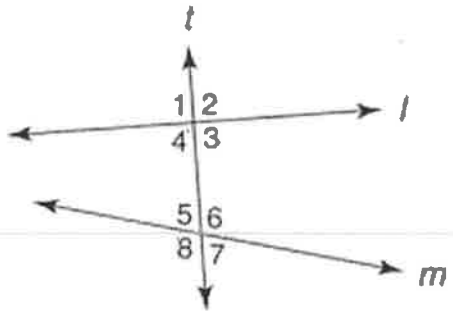
b. Corresponding Angles
1 & 5 2 & 6 4 & 8 3 & 7

c. Alternate Interior Angles
4 & 6 3 & 5

d. Consecutive Interior Angles
4 & 5 3 & 6

e. Vertical Angles
1 & 3 2 & 4 5 & 7 6 & 8

f. Linear Pair
1 & 2 1 & 4 5 & 6 5 & 8
3 & 4 2 & 3 8 & 7 6 & 7



11. Identify the angle pair name for each angle pair and name the pair's transversal.

a) ∠1 and ∠4 Vert ∠s t

b) ∠13 and ∠10 Consec Int w

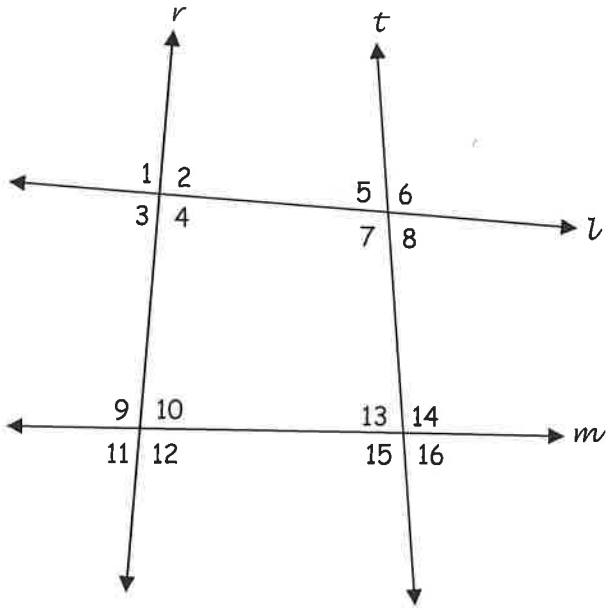
c) ∠5 and ∠13 Corresponding t

d) ∠12 and ∠16 Corresponding m

e) ∠11 and ∠14 Alt Ext m

f) ∠2 and ∠7 Alt Int l

g) ∠7 and ∠8 Lin pair X

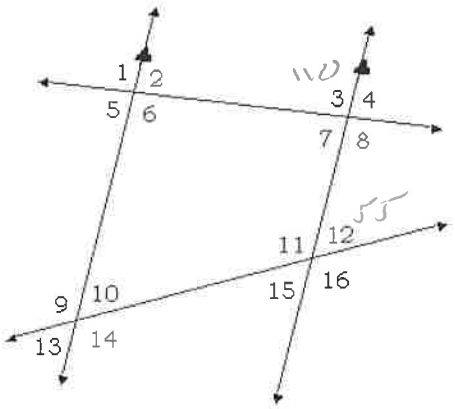


12. In the figure, $m\angle 3 = 110$ and $m\angle 12 = 55$.
Find the measure of each angle.

a.) ∠1 110 b.) ∠6 110

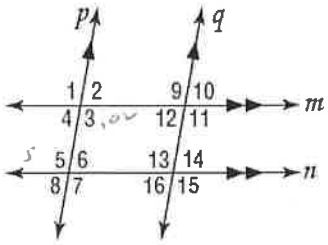
c.) ∠2 70 d.) ∠10 55

e.) ∠13 55 f.) ∠15 55



Name _____ Date _____

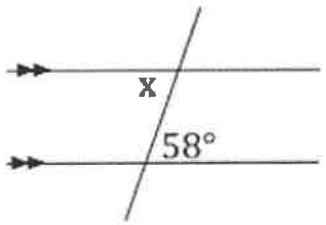
In the figure, $m\angle 3 = 102$. Find the measure of each angle.



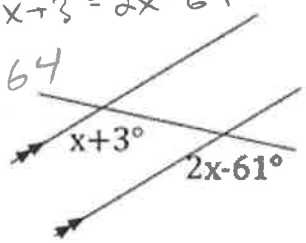
1. $\angle 5$ 102
2. $\angle 6$ 78
3. $\angle 11$ 102
4. $\angle 7$ 102
5. $\angle 15$ 102
6. $\angle 14$ 78

In the following problems, find x.

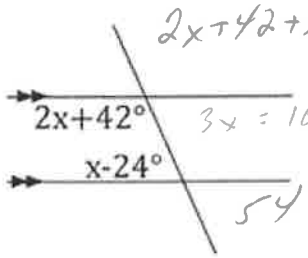
7. 58



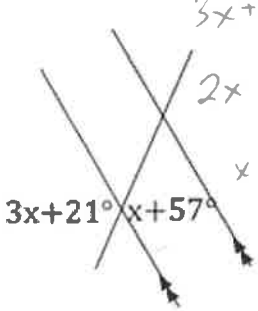
8. $x+3 = 2x-61$, $x = 64$



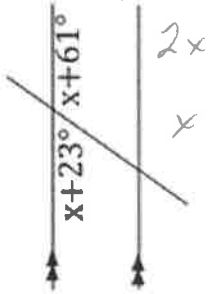
9. $2x+42+x-24 = 180$, $3x = 162$, 54



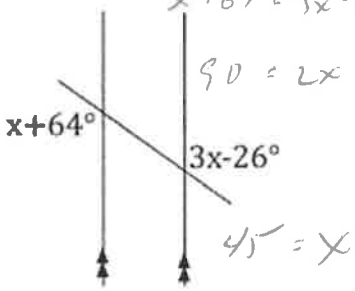
10. $3x+21 = x+57$, $2x = 36$, $x = 18$



11. $x+23+x+61 = 180$, $2x = 96$, $x = 48$

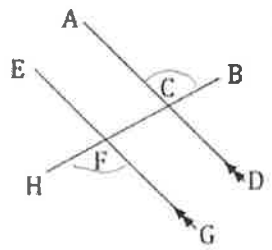


12. $x+64 = 3x-26$, $90 = 2x$, $45 = x$



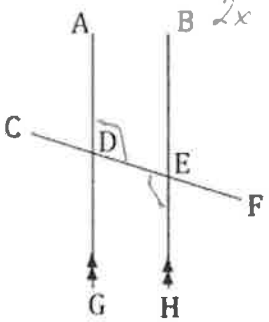
In the following problems, find the indicated angle.

13. **$m\angle ACB = 2X-45°$, $m\angle HFG = X+23°$. Find $m\angle HFG$.**



$2x-45 = x+23$, $x = 68$, $\angle HFG = 91$

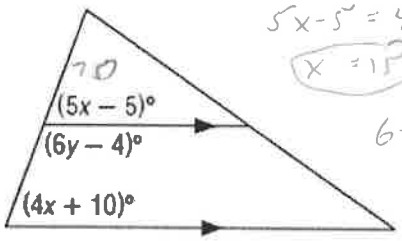
14. **$m\angle ADF = 2X+4°$, $m\angle HEC = 4X-14°$. Find $m\angle HEC$.**



$2x+4 = 4x-14$, $18 = 2x$, $9 = x$, $\angle HEC = 22$

In the following problems, find the value of all variables.

15.



$5x-5 = 4x+10$

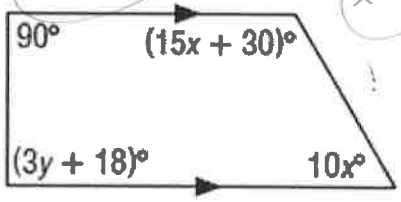
$x = 15$

$6y - 4 + 70 = 180$

$6y = 114$

$y = 19$

16.



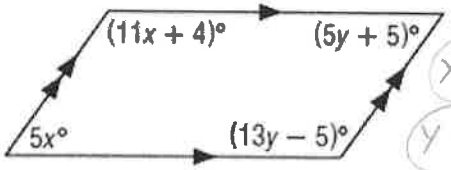
$90 + 3y + 18 = 180$

$y = 24$

$15x + 30 + 10x = 180$

$x = 6$

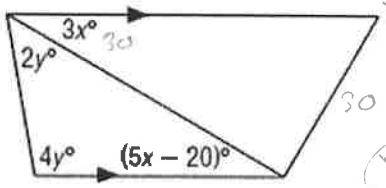
17.



$x = 11$

$y = 10$

18.



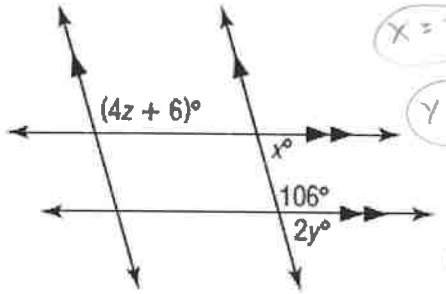
$3x = 5x - 20$

$x = 10$

$30 + 2y + 4y = 180$

$y = 25$

19.



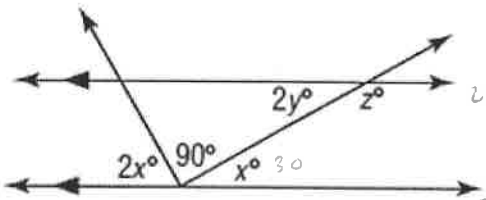
$x = 74$

$y = 37$

$4z + 6 = 106$

$z = 25$

20.



$2y + 150 = 180$

$y = 15$

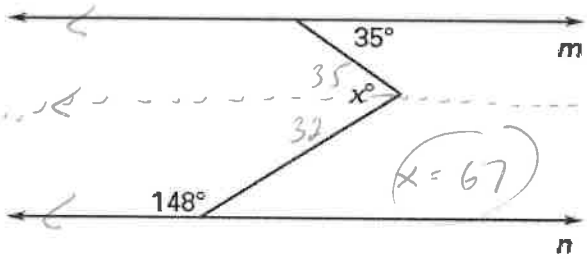
$2x + 90 + x = 180$

$x = 30$

$30 + z = 180$

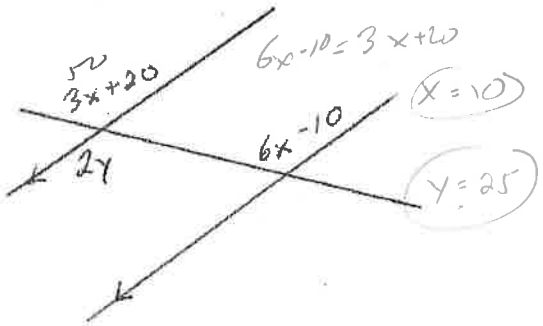
$z = 150$

21.



$x = 67$

22.

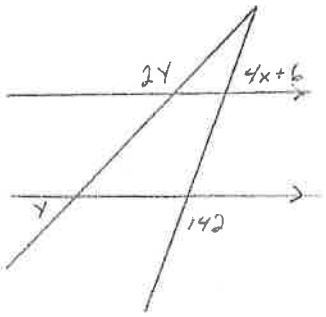


$6x - 10 = 3x + 20$

$x = 10$

$y = 25$

23.



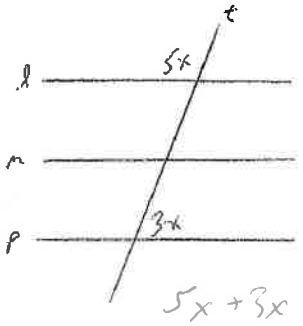
$4x + 6 + 142 = 180$

$x = 8$

$y + 2y = 180$

$y = 60$

24. lines l, m, and p are all parallel.

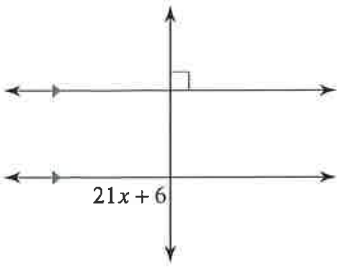


$5x + 3x = 180$

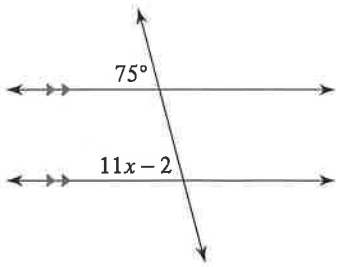
$x = 22.5$

Solve for x.

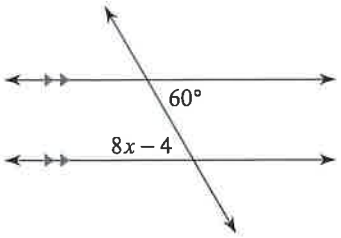
19)



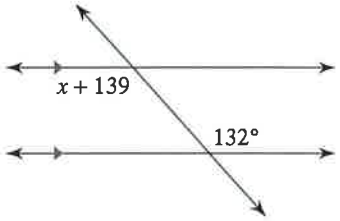
20)



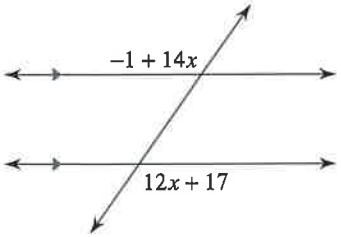
21)



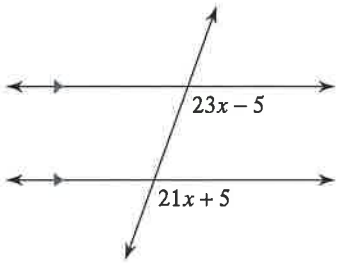
22)



23)

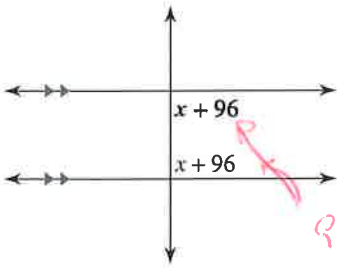


24)

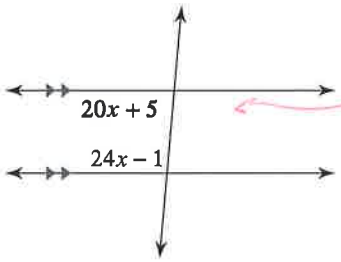


Find the measure of the angle indicated in bold.

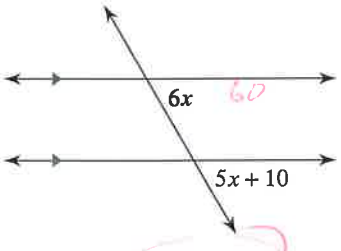
25)



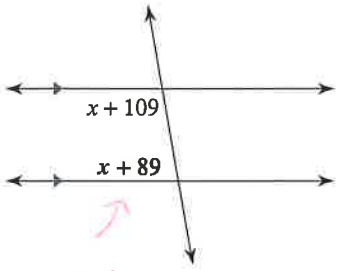
26)



27)



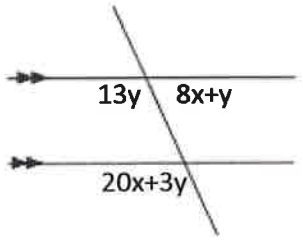
28)



Honors

In the following problems, find the value of all variables.

1.



$13y + 8x + y = 180$

$13y = 20x + 3y$

$-20x + 10y = 0 \quad (\times 2) \rightarrow -40x + 20y = 0$

$8x + 14y = 180 \quad (\times 5) \rightarrow 40x + 70y = 900$

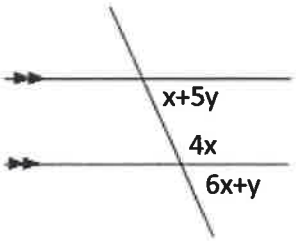
$90y = 900$

$y = 10$

$8x + 14(10) = 180$

$x = 5$

2.



$x + 5y + 4x = 180$

$x + 5y = 6x + y$

$-5x + 4y = 0$

$5x + 5y = 180$

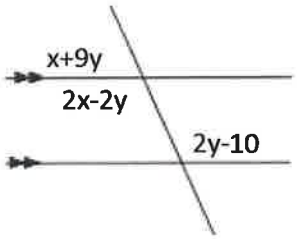
$9y = 180$

$y = 20$

$5x + 5(20) = 180$

$x = 16$

3.



$x + 9y + 2x - 2y = 180$

$x + 9y + 2y - 10 = 180$

$x + 11y = 190 \quad (\times 3)$

$3x + 7y = 180$

$3x + 33y = 570$

$(-) \; 3x + 7y = 180$

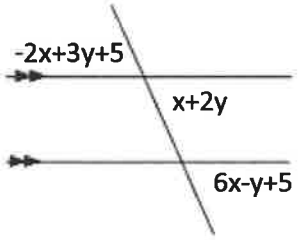
$26y = 390$

$y = 15$

$3x + 7(15) = 180$

$x = 25$

4.



$-2x + 3y + 5 = 2y + x$

$2y + x = 6x - y + 5$

$-5x + 3y - 5 = 0$

$(\times 3) \quad -9x + 3y + 15 = 0$

$(-)$

$4x - 20 = 0$

$x = 5$

$-5(5) + 3y - 5 = 0$

$y = 10$