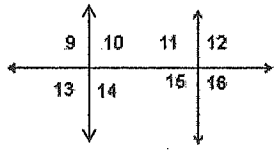
Worksheet #3 (Parallel Lines Cut by a Transversal)

Name: _____ Date: _____ Period: _____

Use the figure at the right to answer problems 1- 8.



Classify each pair of angles as one of the following:

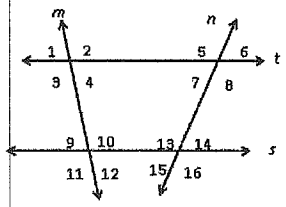
(a) alternate Interior angles (b) corresponding angles

[redacted] (d) vertical angles

(e) supplementary angles (f) none

1. f ∠9 & ∠16
2. e ∠15 & ∠11
3. a ∠10 & ∠15
4. d ∠12 & ∠15
5. b ∠9 & ∠11
6. f ∠9 & ∠15
7. e ∠13 & ∠14
8. a ∠14 & ∠11

9. m∠2 = 97° m∠6 = 83°



m∠ 3 = 97° m∠ 5 = 97°

m∠10 = 97° m∠ 7 = 83°

m∠ 9 = 83° m∠16 = 97°

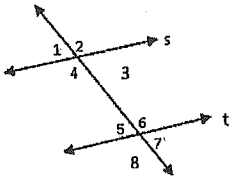
Find the value of x given that s // t

10. m∠4 = 77°, m∠8 = 4x + 57

$4x+57=77$

$4x=20$

$\boxed{x=5}$



11. m∠3 = 5x + 13, m∠5 = 53°

$5x+13=53$

$5x=40$

$\boxed{x=8}$

12. m∠1 = 6x - 5, m∠7 = 115°

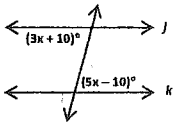
$6x-5=115$

$6x=120$

$\boxed{x=20}$

Find the value of x that makes j || k.

13.

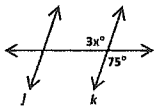


$3x+10=5x-10$

$20=2x$

$\boxed{x=10°}$

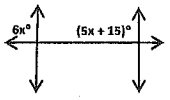
14.



$3x=75$

$\boxed{x=15°}$

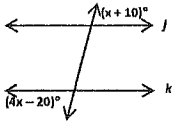
15.



$6x=5x+15$

$\boxed{x=15°}$

16.



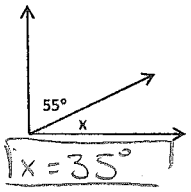
$4x-20=x+10$

$3x=30$

$\boxed{x=10°}$

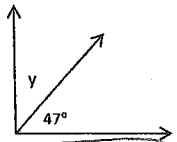
Determine the missing angles.

17.



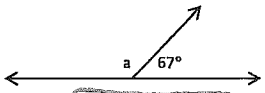
$\boxed{x=35°}$

18.



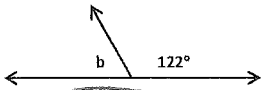
$\boxed{y=43°}$

19.



$\boxed{a=113°}$

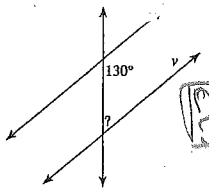
20.



$\boxed{b=58°}$

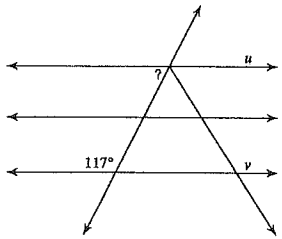
Find the ; angle that makes u and v parallel

9)



$\boxed{? = 130}$

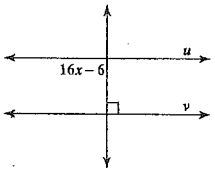
10)



$\boxed{? = 63}$

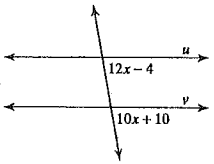
Find the value of x that makes lines u and v parallel.

11)



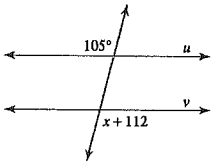
$16x - 6 = 90$
$16x = 96$
$\boxed{x = 6°}$

12)



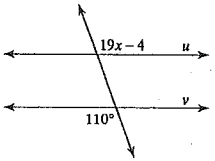
$12x - 4 = 10x + 10$
$2x = 14$
$\boxed{x = 7}$

13)



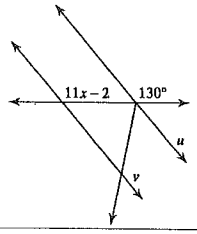
$x + 112 = 105$
$\boxed{x = -7°}$

14)



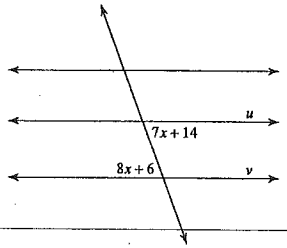
$19x - 4 = 110$
$19x = 114$
$\boxed{x = 6}$

15)



$11x - 2 = 130$
$11x = 132$
$\boxed{x = 12}$

16)



$7x + 14 = 8x + 6$
$\boxed{8 = x}$

Critical thinking questions:

17) For question #16, find a value of x that makes lines u and v intersect.

Answer will vary

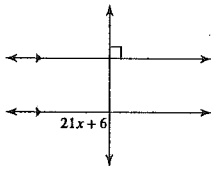
18) Even if the lines in question #16 were not parallel, could $x = 25$? Why or why not?

$7(25) + 14 = 189$

Since the angle cannot be more than 180°, $x \neq 25$.

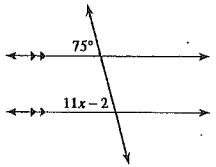
Solve for x.

19)



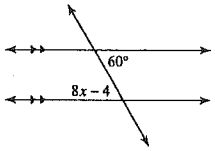
$21x + 6 = 90$
$21x = 84$
$\boxed{x = 4}$

20)



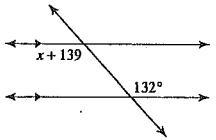
$75 = 11x - 2$
$77 = 11x$
$\boxed{7 = x}$

21)



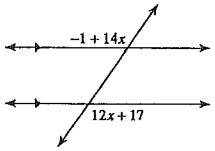
$8x - 4 = 60$
$8x = 64$
$\boxed{x = 8}$

22)



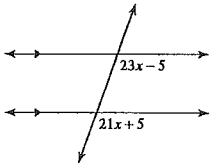
$x + 139 = 132$
$\boxed{x = -7}$

23)



$-1 + 14x = 12x + 17$
$2x = 18$
$\boxed{x = 9}$

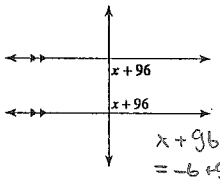
24)



$23x - 5 = 21x + 5$
$2x = 10$
$\boxed{x = 5}$

Find the measure of the angle indicated in bold.

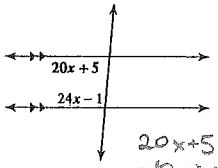
25)



$x + 96 + x + 96 = 180$
$2x + 192 = 180$
$2x = -12$
$x = -6$

$x + 96$
$= -6 + 96$
$\boxed{= 90}$

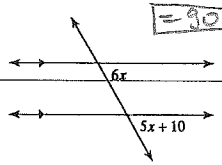
26)



$20x + 5 + 24x - 1 = 180$
$44x + 4 = 180$
$44x = 176$
$x = 4$

$20x + 5 =$
$= (20)(4) + 5$
$= \boxed{85}$

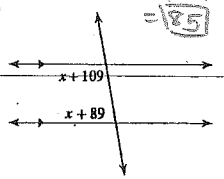
27)



$6x = 5x + 15$
$x = 15$

$6x = (6)(15)$
$= \boxed{90}$

28)



$x + 109 + x + 89 = 180$
$2x + 198 = 180$
$2x = -18$
$x = -9$

$x + 89 = -9 + 89$
$= \boxed{80}$