

Section 3.2 – Angles Formed by a Transversal with Parallel Lines.

Name: Key

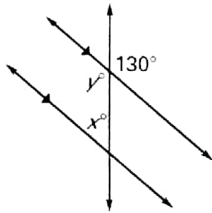
For each diagram below find the value of each variable. You must state all postulates and theorems used. Your options are listed below. **REMEMBER: THE LAST 4 CAN ONLY BE USED WITH PARALLEL LINES!!!!**

Vertical Angles Congruence Theorem  
 Alternate Interior Angles Theorem  
 Consecutive Interior Angles Theorem

Linear Pair Postulate  
 Alternate Exterior Angles Theorem  
 Corresponding Angles Postulate

Postulate/Theorem Used

1)



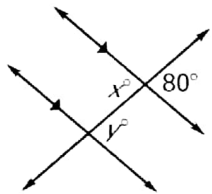
$x = 50^\circ$

CIA Thm

$y = 130^\circ$

VA Thm.

2)



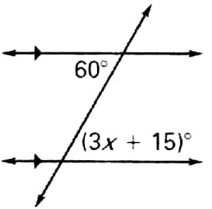
$x = 80^\circ$

VA Thm.

$y = 80^\circ$

AIA Thm. or CA Postulate

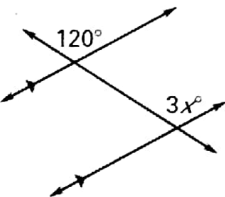
3)



$x = 15$

AIA Thm.

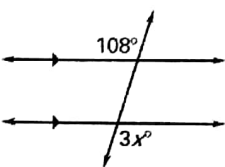
4)



$x = 40$

CA Postulate

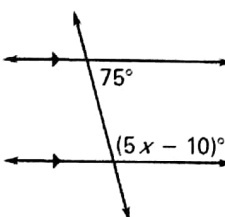
5)



$x = 36$

AEA Thm.

6)

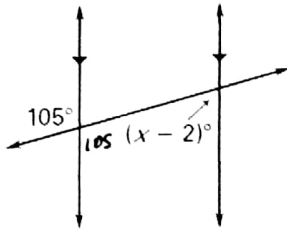


$x = 23$

CIA Thm.

For the diagrams on this page – you may need to use TWO postulates/theorems to help you. Meaning – you may need to find another angle in-between to help you set up an equation and solve for x. When two postulates/theorems are used...you will see two lines in that column ☺

7)



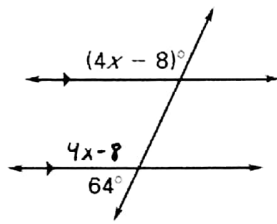
x = 77

Postulate/Theorem Used

VA Thm.

CIA Thm.

8)

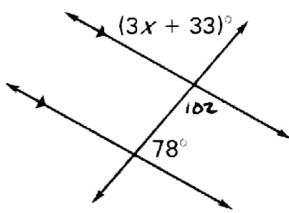


x = 31

CA Postulate

Linear Pair Postulate

9)

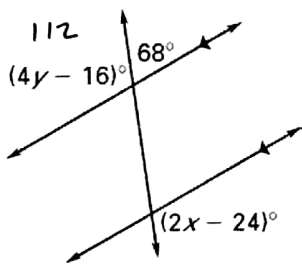


x = 23

CIA Thm.

VA Thm.

10)



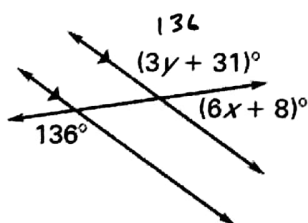
x = 68

AEA Thm.

y = 32

Linear Pair Postulate

11)



x = 6

Linear Pair Postulate

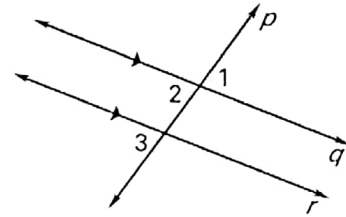
y = 35

AEA Thm.

\*\*If you get stuck on 10 and 11 – try solving for y first...and using that knowledge to help you find x ☺\*\*

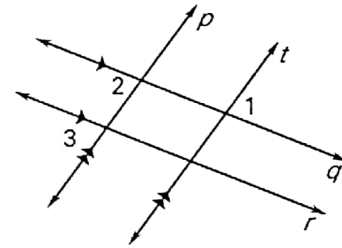
Use what you did in the above problems to help you complete the two-column proofs.

- 12) GIVEN:  $q \parallel r$   
 PROVE:  $\angle 1 \cong \angle 3$



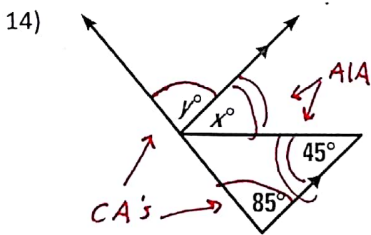
Statements	Reasons
1. $q \parallel r$	1. Given
2. $\angle 1 \cong \angle 2$	2. VA Thm.
3. $\angle 2 \cong \angle 3$	3. CA Postulate
4. $\angle 1 \cong \angle 3$	4. Transitive POC

- 13) GIVEN:  $q \parallel r, p \parallel t$   
 PROVE:  $\angle 1 \cong \angle 3$

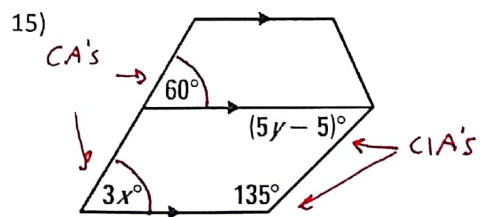


Statements	Reasons
1. $p \parallel t, q \parallel r$	1. Given
2. $\angle 1 \cong \angle 2$	2. AEA Thm.
3. $\angle 2 \cong \angle 3$	3. CA Postulate
4. $\angle 1 \cong \angle 3$	4. Transitive POC

Find the values of x and y.

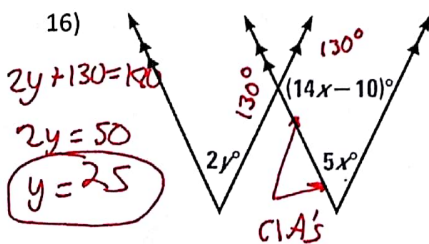


$x = 45^\circ$   
 $y = 85^\circ$



$60 = 3x$   
 $x = 20$

$5y - 5 + 135 = 180$   
 $5y + 130 = 180$   
 $5y = 50$   
 $y = 10$



$2y + 130 = 180$   
 $2y = 50$   
 $y = 25$

$14x - 10 + 5x = 180$   
 $19x - 10 = 180$   
 $19x = 190$   
 $x = 10$