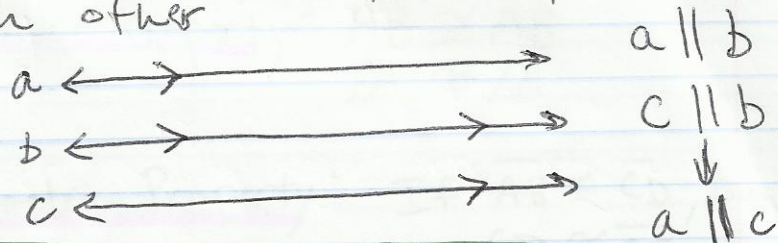
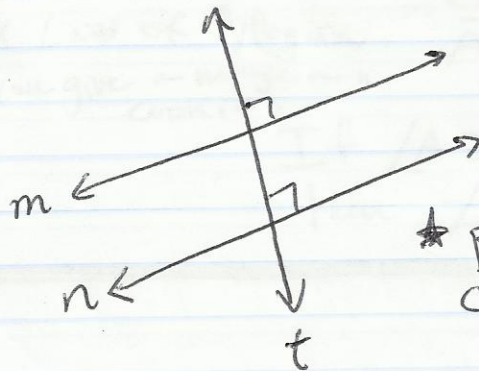


### 3-3 Parallel and Perpendicular Lines

Theorem 3-9: If 2 lines are parallel to the same line, they are parallel to each other



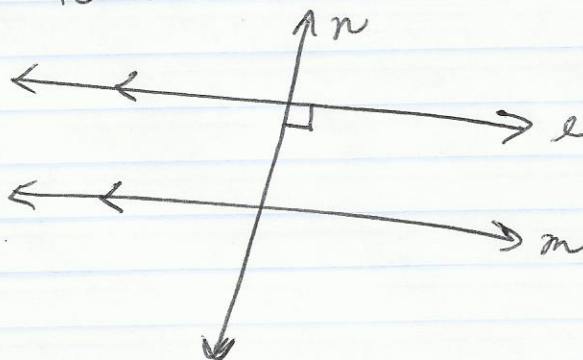
Theorem 3-10: If 2 lines are perpendicular ( $\perp$ ) to the same line, then they are  $\parallel$  to each other.



If  $m \perp t$   
and  $n \perp t$ ,  
then  $m \parallel n$ .

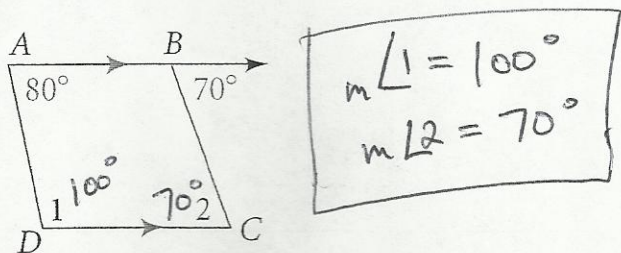
\* proof:  
Corresponding  $\angle$ s  
are  $\cong$ .

Theorem 3-11: In a plane, if a line is  $\perp$  to one of two  $\parallel$  lines, then it is  $\perp$  to the other.

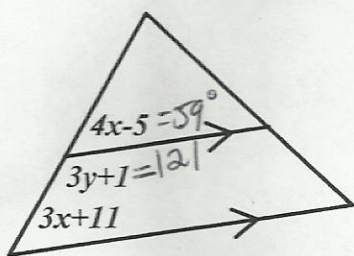


If  $n \perp l$ ,  
then  $n \perp m$ .

1.) Find the measures of angles 1 and 2.



2.) Find the value of x and y.



$$4x - 5 = 3x + 11$$

$$x - 5 = 11$$

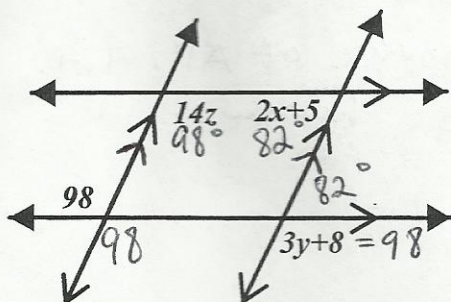
$$\boxed{x = 16}$$

$$3y + 1 = 121$$

$$3y = 120$$

$$\boxed{y = 40}$$

3.) Find the value of x, y and z.



$$14z = 98$$

$$\boxed{z = 7}$$

$$2x + 5 = 82$$

$$2x = 77$$

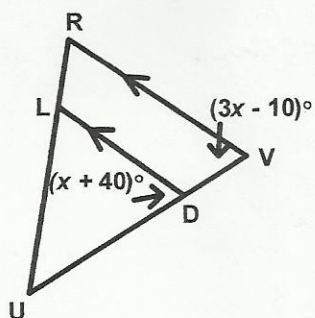
$$\boxed{x = 38.5}$$

$$3y + 8 = 98$$

$$3y = 90$$

$$\boxed{y = 30}$$

4.) Find the values of x and the measure of  $\angle UDL$  and  $\angle DVR$ .



$$3x - 10 = x + 40$$

$$2x - 10 = 40$$

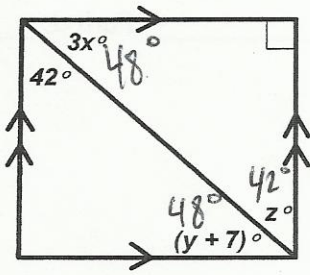
$$2x = 50$$

$$x = 25$$

$$\boxed{m\angle UDL = 65^\circ}$$

$$\boxed{m\angle DVR = 65^\circ}$$

5.) Find the values of  $x$ ,  $y$  and  $z$ .



$$3x + 42 = 90$$

$$3x = 48$$

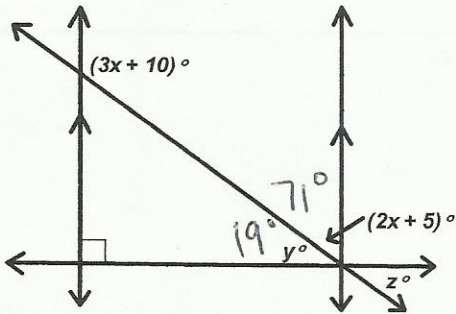
$$x = 16$$

$$z = 42$$

$$y + 7 = 48$$

$$y = 41$$

6.) Find the values of  $x$ ,  $y$  and  $z$ .



$$3x + 10 + 2x + 5 = 180$$

$$5x + 15 = 180$$

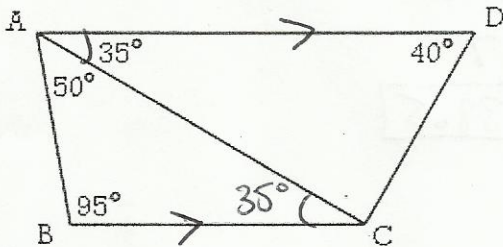
$$5x = 165$$

$$x = 33$$

$$y = 19$$

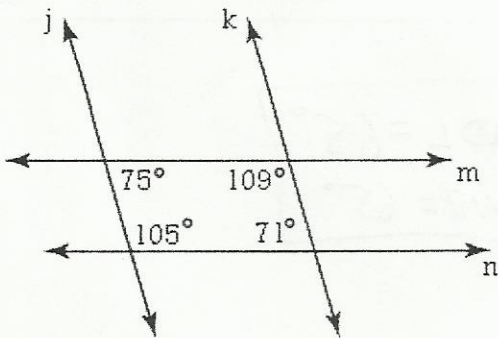
$$z = 19$$

7.) Which lines are parallel in quadrilateral ABCD? Justify with a theorem or postulate.



$\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$  by Converse of Alt. Int.  $\angle$ s Theorem.

8.) Which lines are parallel? Justify with a theorem or postulate.



$m \parallel n$  by converse of same-side Int.  $\angle$ s Theorem.