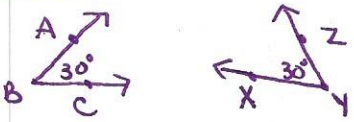
7.1 Adjacent and Vertical Angles p.274

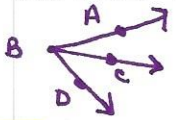
Congruent angles: angles that have the same measure (degrees)



$\angle abc \cong \angle xyz$

$\cong$ is the symbol for congruent

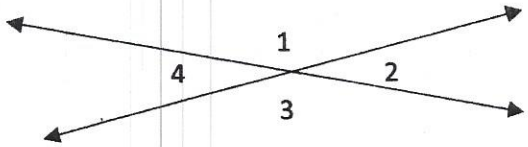
Adjacent angles: angles that have a common side and the same vertex; they are next to each other



$\angle Abc$ is adjacent to $\angle cbd$

B is the vertex; $\overrightarrow{BC}$ is the common side

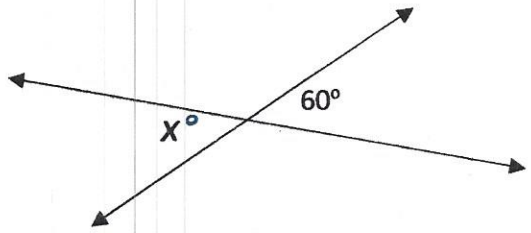
Vertical angles: angles that are opposite each other (across) (diagonal) from intersecting lines; they are congruent



adjacent	vertical
$\angle 1$ and $\angle 2$	$\angle 1$ and $\angle 3$
$\angle 4$ and $\angle 3$	$\angle 2$ and $\angle 4$
$\angle 2$ and $\angle 3$	
$\angle 1$ and $\angle 4$	

Tell whether the angles are adjacent or vertical; then find the value of the variable.

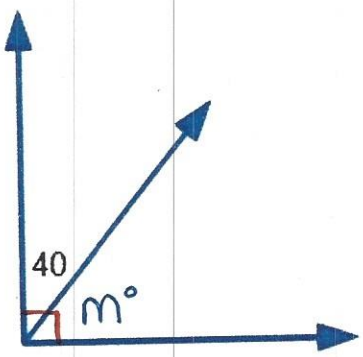
1.



vertical

60°

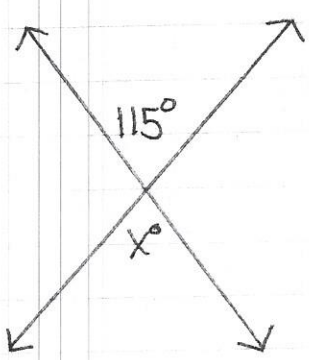
2.



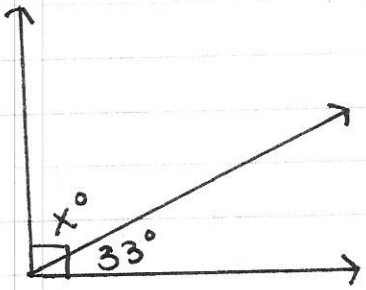
adjacent

50°

(together they are 90°)

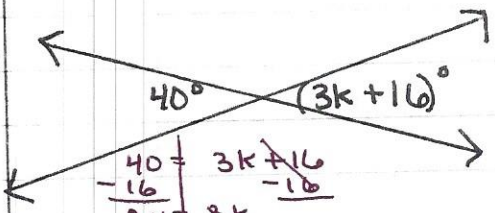
3) 

vertical
115°

4) 

adjacent
57°

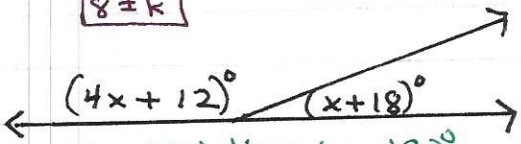
$\begin{array}{r} 90 \\ -33 \\ \hline 57 \end{array}$

5) 

$40 = 3k + 16$
$-16 \quad -16$
$\frac{24}{3} = \frac{3k}{3}$
$8 = k$

vertical
$k = 8$

* we learned how to solve equations in chapter 3

6) 

a straight line is 180° so add the angles and make them equal to 180°

adjacent
$x = 30$

$4x + 12 + x + 18 = 180$
$5x + 30 = 180$
$-30 \quad -30$
$\frac{5x}{5} = \frac{150}{5}$

$x = 30$

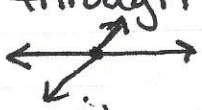
7) Construct vertical angles of 85°.

Steps

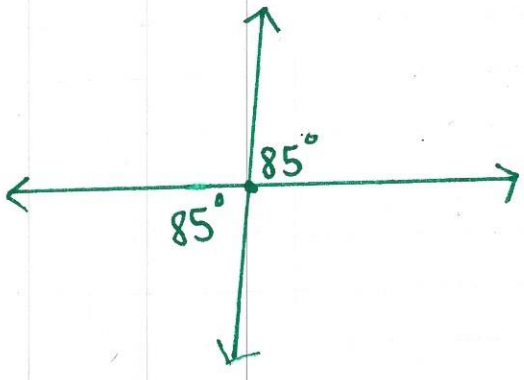
① draw a line w/ a vertex

② use that line to measure an 85° angle

③ Then contine the line all the way through the vertex



④ The angles opposite each other are vertical and congruent (≅)



⑤ label both