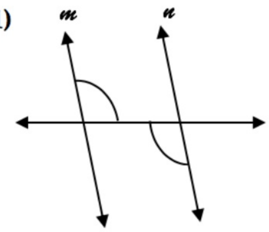
Is it possible to prove lines m and n are parallel? If so, state the postulate or theorem you would use:
Corresponding Angles, Alternate Interior Angles, Alternate Exterior Angles, Same-Side Interior Angles.

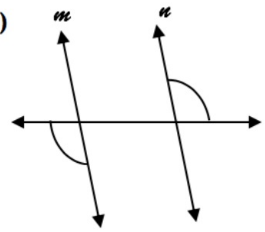
1)



Yes/No yes conv.

Why? alt int.

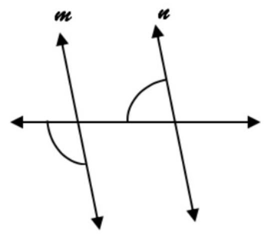
2)



Yes/No yes

Why? conv. alt ext.

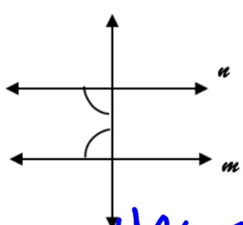
3)



Yes/No NO.

Why?

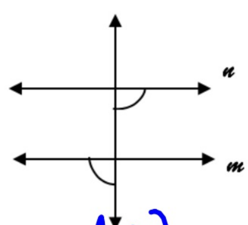
4)



Yes/No yes conv.

Why? same side int

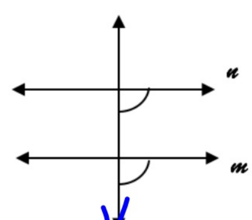
5)



Yes/No NO.

Why?

6)

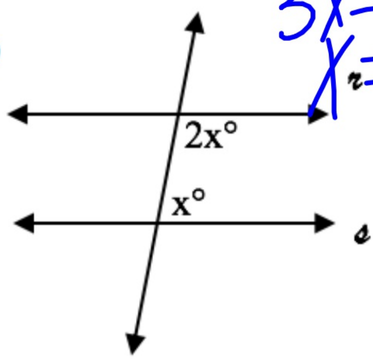


Yes/No Yes

Why? conv. corres post

Find the value of x that makes r ∥ s.

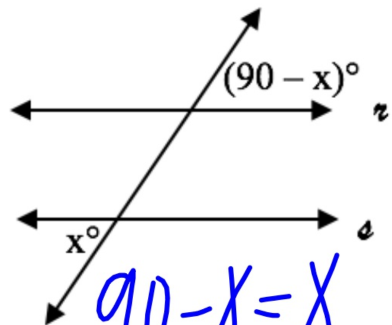
7)



$3x=180$

$x=60$

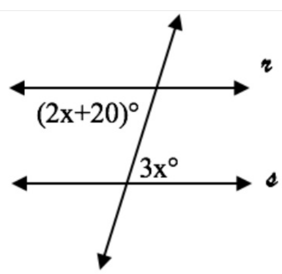
8)



$90-x=x$

$x=45$

9)



$2x+20=3x$

$20=x$

Geometry **3-3: Parallel and Perpendicular Lines**

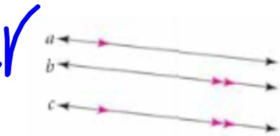
Objective: To relate parallel and perpendicular lines

There are two ways to draw parallel lines. You can draw them parallel to a given line or ⊥ to a given line.

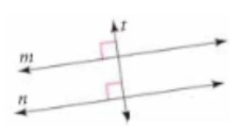
Symbol for parallel: $\parallel$ Symbol for perpendicular: $\perp$

Theorem 3-9:
If two lines are parallel to the same line, then they are $\parallel$ to each other

$a \parallel b$



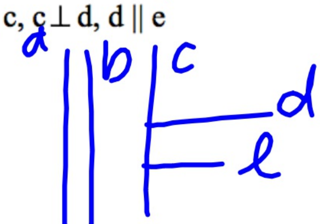
Theorem 3-10:
In a plane, if two lines are perpendicular to the same line, then they are $\parallel$ to each other $m \parallel n$



Example 1:

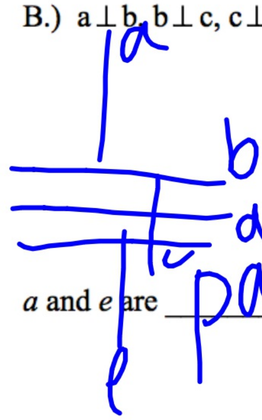
How are *a* and *e* related? (Hint: draw a picture)

A.) $a \parallel b$, $b \parallel c$, $c \perp d$, $d \parallel e$



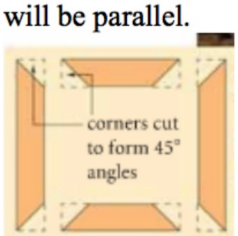
a and *e* are $\perp$

B.) $a \perp b$, $b \perp c$, $c \perp d$, $d \perp e$



a and *e* are parallel

Example 2: To make a frame for a painting, a miter box and backsaw are used to cut the framing at 45° angles. Explain why cutting the framing at this angle ensures that opposite sides of the frame will be parallel.

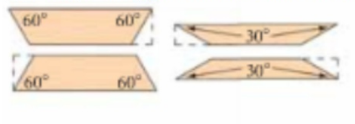


Two adj $45° = 90°$

Opp. sides are $\perp$ to same side

Thus, the opp. sides are $\parallel$ b/c two lines $\perp$ to third line are $\parallel$.

QC 2: Can you assemble the framing below into a frame with opposite sides parallel? Explain.

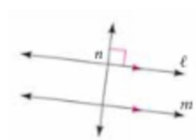


Theorem 3-11:

In a plane, if a line is perpendicular to one of two parallel lines,

then it is ⊥ to the other

$n \perp m$.



Example 3: Use Theorem 3-11 to show each of the following

A. **Given:** In a plane, $a \perp b$, $b \perp c$, and $c \perp d$.

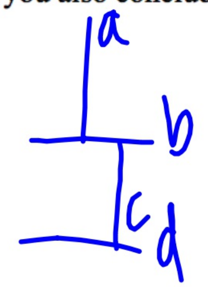
Prove: $a \perp d$

Lines a & c are $\perp$ to line b, $a \parallel c$. Given that $c \perp d$, $a \perp d$ b/c a line that is $\perp$ to one of the two lines its $\perp$ to the other line.

B. From what is given in Example 3A, can you also conclude $b \parallel d$? Explain.

Thm 3-10

$b \parallel d$



Hwk #16 - due tomorrow

Sect. 3-3

Pages: 143 - 144

Problems: 1, 3, 6-10, 14-16

IXL #8 - D.6 due Friday at 4pm!