NAME Key Date _____ Pd __

3.3 Parallel & Perpendicular Line Proofs DAY ONE CYU

☑ Use when you get it right all by yourself

S Use when you did it all by yourself, but made a silly mistake

H Use when you could do it alone with a little help from teacher or peer

G Use when you completed the problem in a group

X Use when a question was attempted but wrong (get help)

N Use when a question was not even attempted

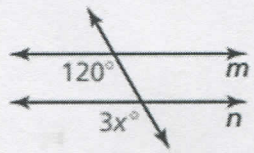
CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Corresponding Angles	1, 2	3, 5, 7	6, 7, 8
Alternate Interior Angles	1	2, 3, 5, 7	2, 6, 7, 8
Alternate Exterior Angles	1	3, 5, 7	3, 6, 7, 8
Same-Side Interior Angles		5, 7	4, 6, 7, 8
Same-Side Exterior Angles	5	5, 7	6, 7, 8
Vertical Angles			7, 8
Transitive POE/POC			7, 8
AIA Converse Theorem			7, 8
Given			7, 8
Corresponding Angles Converse Theorem			7, 8
Linear Pair			7, 8

1. Two lines are cut by a transversal. Which angle pairs MUST be congruent for the lines to be parallel?

Corr ∡'s, AIA, & AEA

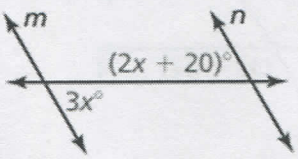
2. Find the value of x that makes line m and n parallel. Explain your reasoning in words or show your work.

a.



x = 40
corr ∡'s R ≅

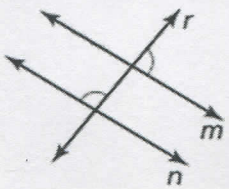
b.



x = 20
AIA R ≅

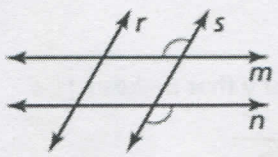
3. Decide whether there is enough information to prove that lines m and n are parallel. If so, state the theorem you would use or write the conditional statement in if-then form.

a.



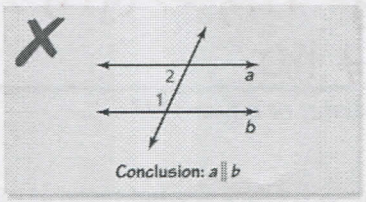
NO

b.



Yes,
AEA Converse

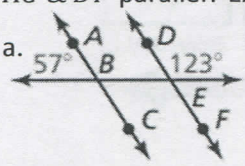
4. Describe and correct the error the reasoning.



True if a ∥ b ⇒ m∠1 + m∠2 = 180°

5. Are $\overleftrightarrow{AC}$ & $\overleftrightarrow{DF}$ parallel? Explain your reasoning in words or show your work.

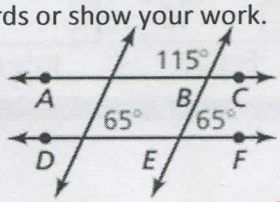
a.



yes

m∠DEB = 180 − 123 = 57°
Linear Pair Post.

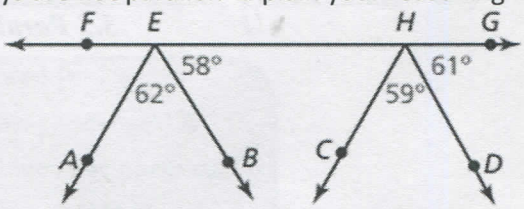
b.



yes; If SSIA R ≅ ⇒↔ R ∥.
m∠EBC = 115°
Def. of Vertical ∡'s
m∠EBC + m∠FEB = 115 + 65 = 180°
∠EBC & ∠FEB R Supp ∡'s

6. **REASONING**: Use the diagram. Which rays are parallel? Which rays are not parallel? Explain your reasoning in if-then form or with algebraic work.

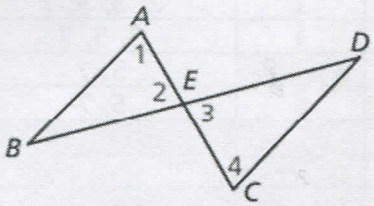
$\overrightarrow{EA} \parallel \overrightarrow{HC}$ b/c If Corr. $\measuredangle$'s $R \cong \Rightarrow \Leftrightarrow S$ $R \parallel$.
$\angle AEH \cong \angle CHG$ b/c both $= 120°$. So, If $\cong \Rightarrow \cong$.



7. Write a two-column proof.

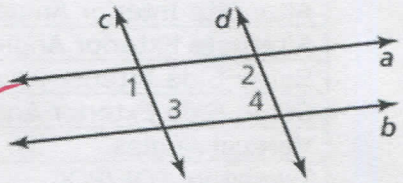
a. **Given** $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$
Prove $\overline{AB} \parallel \overline{CD}$

See paper

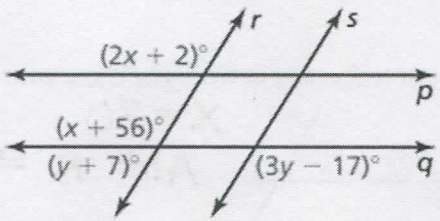


b. **Given** $a \parallel b, \angle 2 \cong \angle 3$
Prove $c \parallel d$

See paper



8. **MATHEMATICAL CONNECTIONS:** Use the diagram.



a. Find the value of x that makes p||q.

$x = 54$

b. Find the value of y that makes r || s.

$y = 47.5$

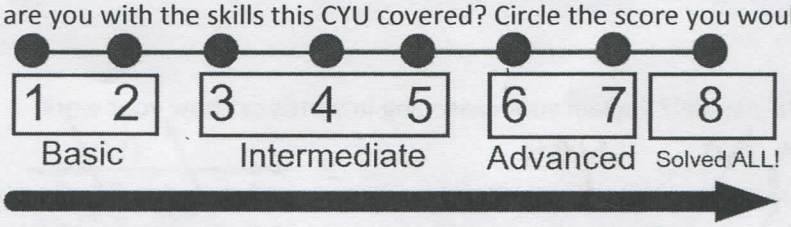
c. Can r be parallel to s and can p be parallel to q at the same time? Explain your reasoning in words.

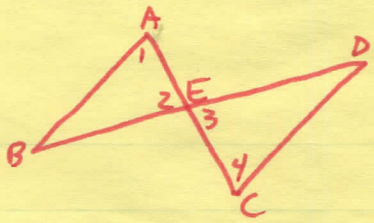
no. If $x = 54$, $\Rightarrow (x+56)° = 110°$. If $y = 47.5$, $\Rightarrow (y+7)° = 54.5°$.
Def of linear pair, but $110 + 54.5 \neq 180$.

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

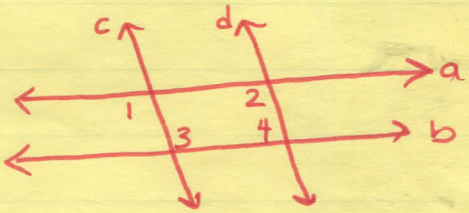
Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.





7a) Statements	Reasons
1. $\angle 1 \cong \angle 2; \angle 3 \cong \angle 4$	1. Given
2. $\angle 2 \cong \angle 3$	2. Def of Vertical $\measuredangle$'s
3. $\angle 1 \cong \angle 3$	3. Transitive POC
4. $\angle 1 \cong \angle 4$	4. Transitive POC
5. $\overline{AB} \parallel \overline{CD}$	5. AIA Converse or If AIA R$\cong \Rightarrow \Leftrightarrow$ R$\parallel$.



7b) Statements	Reasons
1. $a \parallel b; \angle 2 \cong \angle 3$	1. Given
2. $\angle 3 \cong \angle 1$	2. AIA Thm or If $\Leftrightarrow$ R$\parallel \Rightarrow$ AIA R$\cong$
3. $\angle 1 \cong \measuredangle 2$	3. Transitive POC
4. $c \parallel d$	4. Corr. $\measuredangle$'s Thm or If $\Leftrightarrow$ R$\parallel \Rightarrow$ Corr $\measuredangle$'s R$\cong$.