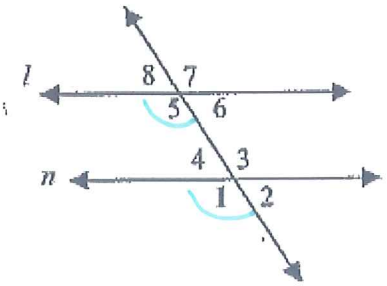
Acc Geo

Name Key

Proving Lines Parallel Advanced Worksheet

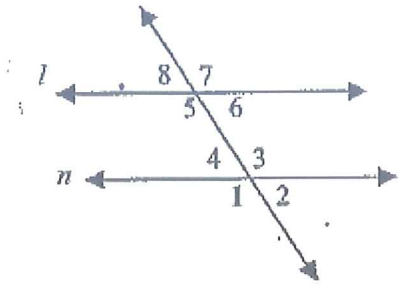
Write a two-column proof for each of the following.

1. Given: $m\angle 1 = 101°$, $m\angle 5 = 101°$
   Prove: $l \parallel n$



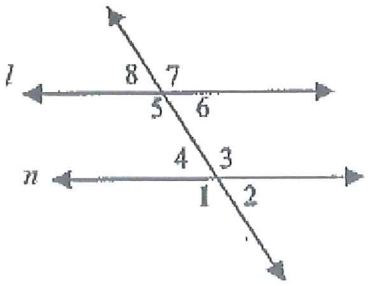
1. $\angle 1 = 101°$, $\angle 5 = 101°$	1. given
2. $\angle 1 \cong \angle 5$	2. substitution
3. $l \parallel n$	3. $\cong$ corr. $\angle$s form $\parallel$ lines

2. Given: $\angle 8 \cong \angle 2$
   Prove: $l \parallel n$



1. $\angle 8 \cong \angle 2$	1. given
2. $l \parallel n$	2. $\cong$ alt. ~~int~~ ext $\angle$s form $\parallel$ lines.

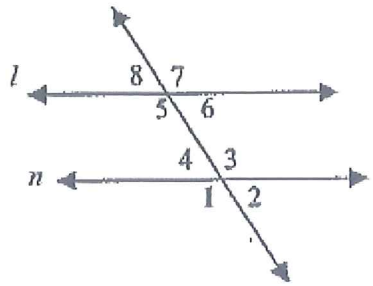
3. Given: $m\angle 3 = 105°$, $m\angle 6 = 75°$
   Prove: $l \parallel n$



1. $\angle 3 = 105°$, $\angle 6 = 75°$	1. given
2. $105 + 75 = 180°$	2. addition
3. $\angle 3 + \angle 6 = 180°$	3. substitution
4. $l \parallel n$	4. suppl. con. int $\angle$s form $\parallel$ lines.

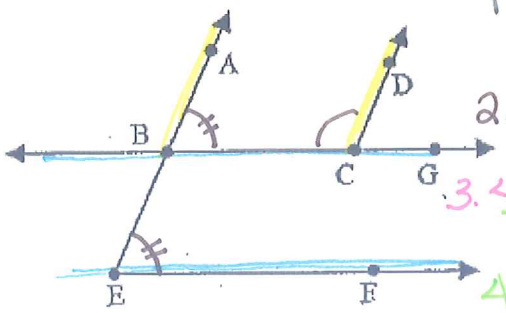
many ways to prove!

4. Given: $\angle 7$ is supplementary to $\angle 2$
   Prove: $l \parallel n$



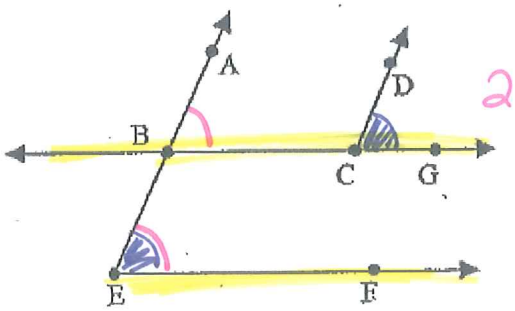
1. $\angle 7$ is suppl. to $\angle 2$	1. given
2. $\angle 7 + \angle 2 = 180°$	2. def of suppl.
3. $\angle 7 + \angle 6 = 180°$ $\angle 2 + \angle 3 = 180°$	3. linear pairs are suppl.
4. $\angle 7 = 180° - \angle 2$	4. subtraction.
5. $180 - \angle 2 + \angle 6 = 180°$	5. substitution
6. $-\angle 2 + \angle 6 = 0$	6. subtraction
7. $\angle 6 = \angle 2$	7. addition
8. $l \parallel n$	8. $\cong$ corr. $\angle$s form $\parallel$ lines

5. Given: $m\angle BCD + m\angle BEF = 180°$, $\overline{AB} \parallel \overline{DC}$
   Prove: $\overline{BC} \parallel \overline{EF}$



1. $\angle BCD + \angle BEF = 180°$ $\overline{AB} \parallel \overline{DC}$	1. given
2. $\angle ABC + \angle BCD = 180°$	2. $\parallel$ lines form Suppl. con. int $\angle$s ($\overline{AB} \parallel \overline{DC}$)
3. $\angle BCD + \angle BEF = \angle ABC + \angle BCD$ $-\angle BCD \quad -\angle BCD$	3. substitution
4. $\angle BEF \cong \angle ABC$	4. subtraction
5. $BC \parallel EF$	5. $\cong$ corr. $\angle$s form parallel lines ☺

6. Given: $\overline{BC} \parallel \overline{EF}$, $\angle BEF \cong \angle DCG$
   Prove: $\overline{AB} \parallel \overline{DC}$



1. $BC \parallel EF$ $\angle BEF \cong \angle DCG$	1. given
2.) $\angle BEF \cong \angle ABC$	2.) $\parallel$ lines form $\cong$ corr. $\angle$s. (we know $BC \parallel EF$ but NOT $AB \parallel DC$ yet)
3.) $\angle ABC \cong \angle DCG$	3. substitution
4. $AB \parallel DC$	4. $\cong$ corr. $\angle$s form $\parallel$ lines.

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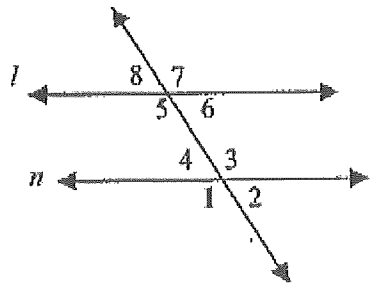

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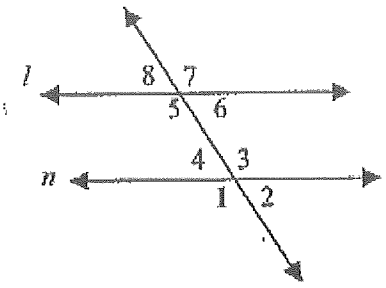

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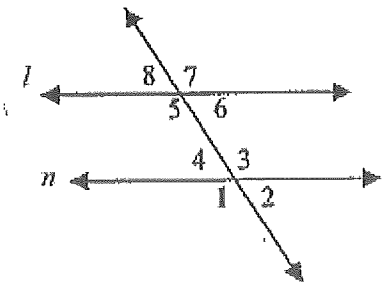

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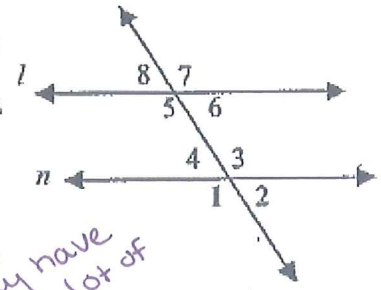
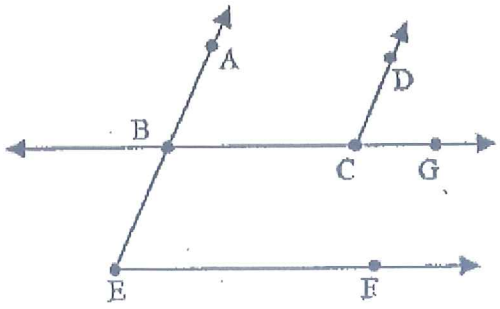


#4 may have a lot of steps. write small :)

5. Given: $m\angle BCD + m\angle BEF = 180°$, $\overline{AB} \parallel \overline{DC}$
   Prove: $\overline{BC} \parallel \overline{EF}$



6. Given: $\overline{BC} \parallel \overline{EF}$, $\angle BEF \cong \angle DCG$
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