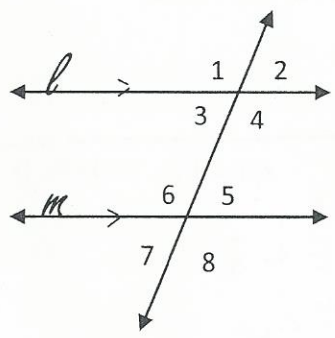


PROOFS chapter 3 – MORE PRACTICE

Complete the following proofs:

1a) Given: $l \parallel m$

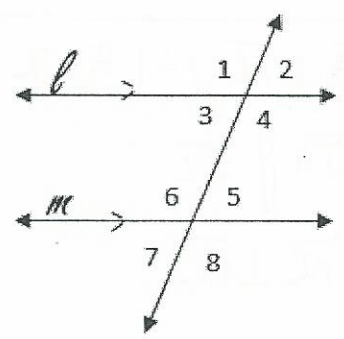
Prove: $\angle 1$ is supplementary to $\angle 5$



Statements	Reasons
1) $l \parallel m$	1) Given
2) $\angle 3 \cong \angle 5$	2) alt. int. \angle thm
3) $m\angle 3 = m\angle 5$	3) Defn. \cong
4) $\angle 1$ & $\angle 3$ suppl.	4) L.H. Pr. Post.
5) $m\angle 1 + m\angle 3 = 180$	5) Defn. suppl.
6) $m\angle 1 + m\angle 5 = 180$	6) Substitution
7) $\angle 1$ & $\angle 5$ suppl.	7) Defn. suppl.

5) Given: $m\angle 3 = 80^\circ$; $m\angle 8 = 100^\circ$

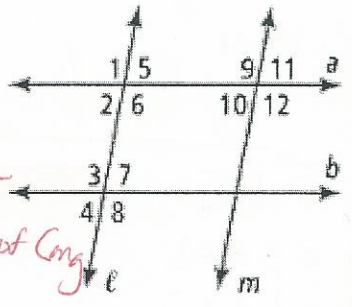
Prove: $l \parallel m$



S	R
1) $m\angle 3 = 80, m\angle 8 = 100$	1) given
2) $80 + 100 = 180$	2) math
3) $m\angle 3 + m\angle 8 = 180$	3) substitution
4) $\angle 7$ & $\angle 8$ suppl.	4) L.H. Pr. Post.
5) $m\angle 3$ and $m\angle 8$ are suppl.	5) Defn. suppl.
6) $\angle 3 \cong \angle 7$	6) Congr. suppl. thm.
7) $l \parallel m$	7) Conv. of corresp. \angle thm

8) Given: $a \parallel b$; $\angle 9 \cong \angle 8$

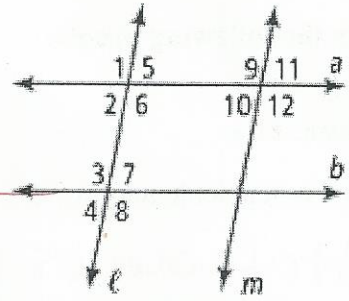
Prove: $l \parallel m$



S	R
1) $a \parallel b$; $\angle 9 \cong \angle 8$	1) Given
2) $\angle 6 \cong \angle 8$	2) Corresp. \angle thm
3) $\angle 6 \cong \angle 9$	3) transitive Prop. of Cong.
4) $l \parallel m$	4) Conv. of alt. int. \angle thm

6) Given: $l \parallel m$; $m \perp 12 = m \perp 8$

Prove: $a \parallel b$

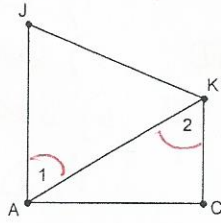


- S**
- 1) $l \parallel m$; $m \perp 12 = m \perp 8$
 - 2) $\angle 12 \cong \angle 8$
 - 3) $\angle 12 \cong \angle 6$
 - 4) $\angle 6 \cong \angle 8$
 - 5) $a \parallel b$

- R**
- 1) Given
 - 2) Defn. \cong
 - 3) Corresp. \angle thm
 - 4) transitive P.O.C.
 - 5) Conv. of corresp. \angle thm

1. Given: $\overline{JA} \perp \overline{AC}$, $\angle 1 \cong \angle 2$

Prove: $\overline{KC} \perp \overline{AC}$

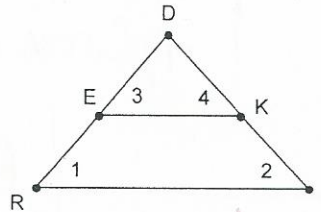


- S**
- 1) $\overline{JA} \perp \overline{AC}$, $\angle 1 \cong \angle 2$
 - 2) $\overline{JA} \parallel \overline{KC}$
 - 3) $\overline{KC} \perp \overline{AC}$

- R**
- 1) Given
 - 2) Conv. of alt. int. \angle thm
 - 3) If a line is \perp to one of two \parallel lines, then \perp to the other

2. Given: $\overline{EK} \parallel \overline{RI}$, $\angle 1 \cong \angle 2$

Prove: $\angle 3 \cong \angle 4$



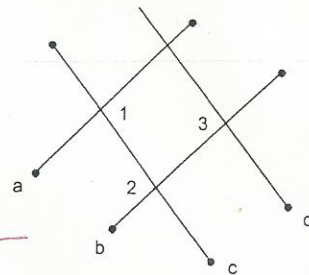
transitive
order
here,
you
could
make
shorter

- S**
- 1) $\overline{EK} \parallel \overline{RI}$, ~~given~~
 - 2) $\angle 3 \cong \angle 1$
 - 3) $\angle 1 \cong \angle 2$
 - 4) $\angle 2 \cong \angle 4$
 - 5) $\angle 3 \cong \angle 4$

- R**
- 1) Given
 - 2) corresp. \angle thm
 - 3) Given
 - 4) corresp. \angle thm
 - 5) transitive P.O.C.

3. Given: $a \parallel b$, $\angle 1 \cong \angle 3$

Prove: $c \parallel d$



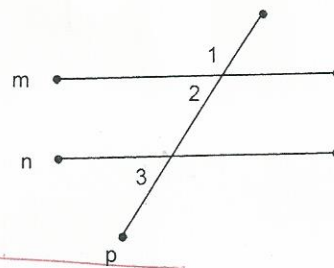
- S**
- 1) $a \parallel b$
 - 2) $\angle 1 \cong \angle 2$
 - 3) $\angle 1 \cong \angle 3$
 - 4) $\angle 2 \cong \angle 3$
 - 5) $c \parallel d$

- R**
- 1) Given
 - 2) alt. int. \angle thm.
 - 3) given
 - 4) transitive P.O.C.
 - 5) Conv. of corresp. \angle thm

4. Given: $\angle 1$ and $\angle 3$ are supplementary

p is a transversal

Prove: $m \parallel n$

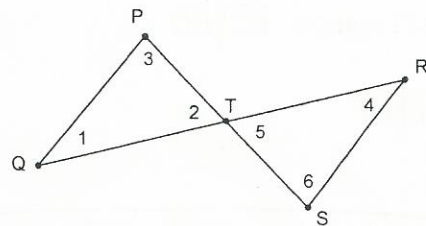


- S**
- 1) $\angle 1$ and $\angle 3$ suppl.
 - 2) $\angle 1$ and $\angle 2$ suppl.
 - 3) $\angle 2 \cong \angle 3$
 - 4) $m \parallel n$

- R**
- 1) given
 - 2) Lin. Pr. Post.
 - 3) Congr. Suppl. Thm.
 - 4) Conv. of corresp. \angle thm

5. Given: $\angle 1 \cong \angle 2$; $\angle 4 \cong \angle 5$

Prove: $\overline{PQ} \parallel \overline{RS}$

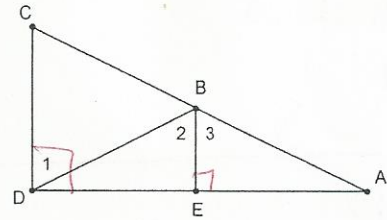


- S**
- 1) $\angle 1 \cong \angle 2$, $\angle 4 \cong \angle 5$
 - 2) $\angle 2 \cong \angle 5$
 - 3) $\angle 5 \cong \angle 4$
 - 4) $\angle 1 \cong \angle 4$
 - 5) $\overline{PQ} \parallel \overline{RS}$

- R**
- 1) Given
 - 2) vertical \angle thm
 - 3) Symmetric (I used this to put my statements in the zig zag transitive order)
 - 4) Transitive P.O.C.
 - 5) Conv. of alt. int. \angle thm

6. Given: $\overline{BE} \perp \overline{DA}$
 $\overline{CD} \perp \overline{DA}$

Prove: $\angle 1 \cong \angle 2$



S

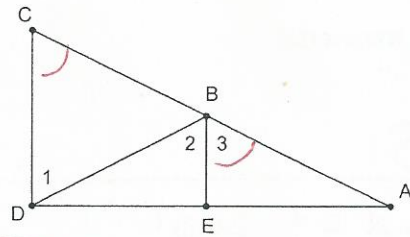
R

- 1) $\overline{BE} \perp \overline{DA}$, $\overline{CD} \perp \overline{DA}$
- 2) $\overline{CD} \parallel \overline{BE}$
- 3) $\angle 1 \cong \angle 2$

- 1) Given
- 2) If 2 lines are \perp to same line, then \parallel to each other.
- 3) alt. int. \cong thm.

7. Given: $\angle C \cong \angle 3$
 $\overline{BE} \perp \overline{DA}$

Prove: $\overline{CD} \perp \overline{DA}$



S

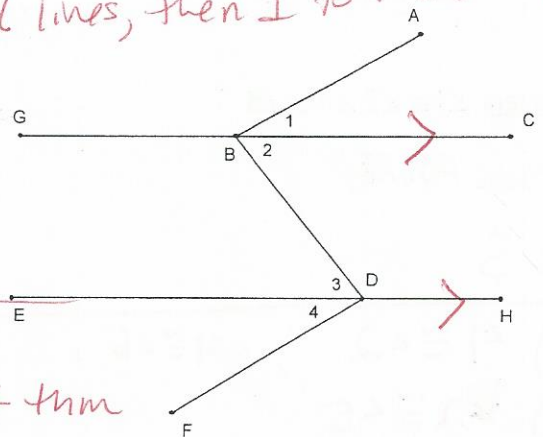
R

- 1) $\angle C \cong \angle 3$
- 2) $\overline{CD} \parallel \overline{BE}$
- 3) $\overline{BE} \perp \overline{DA}$
- 4) $\overline{CD} \perp \overline{DA}$

- 1) Given
- 2) Conv. of corresp. \cong thm
- 3) Given
- 4) If a line is \perp to one of 2 parallel lines, then \perp to the other.

8. Given: $m\angle 1 = m\angle 4$, $\overline{BC} \parallel \overline{ED}$

Prove: $\overline{AB} \parallel \overline{DF}$



S

R

- 1) $m\angle 1 = m\angle 4$; $\overline{BC} \parallel \overline{ED}$
- 2) $\angle 2 \cong \angle 3$
- 3) $m\angle 2 = m\angle 3$
- 4) $m\angle 3 + m\angle 4 = m\angle BDF$
- 5) $m\angle 2 + m\angle 3 = m\angle ABD$
- 6) $m\angle 3 + m\angle 4 = m\angle ABD$
- 7) $m\angle BDF = m\angle ABD$
- 8) $\angle BDF \cong \angle ABD$
- 9) $\overline{AB} \parallel \overline{DF}$

- 1) Given
- 2) alt. int. \cong thm
- 3) Defn. \cong
- 4) Angle Add. Post.
- 5) Substitution
- 6) Substitution
- 7) Defn. \cong
- 8) Conv. of alt. int. \cong thm