

Name: Key

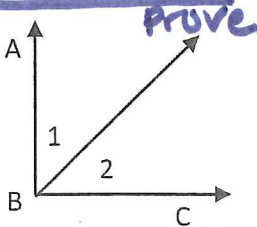
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Angle Proofs Review

1. Prove the theorem that we discussed in class:

Given

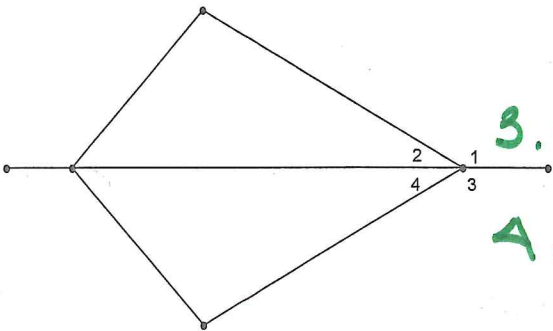
"If two adjacent angles form a right angle, then they are complementary"



| Statements | Reasons |
|--|-----------------------|
| 1. $\angle ABC$ is a right angle | 1. Given |
| 2. $\angle ABC = 90$ | 2. def of RT \angle |
| 3. $\angle 1 + \angle 2 = \angle ABC$ | 3. \angle add |
| 4. $\angle 1 + \angle 2 = 90$ | 4. Subs |
| 5. $\angle 1$ and $\angle 2$ are complementary | 5. def of compl. |

2. Given: $\angle 2 \cong \angle 4$

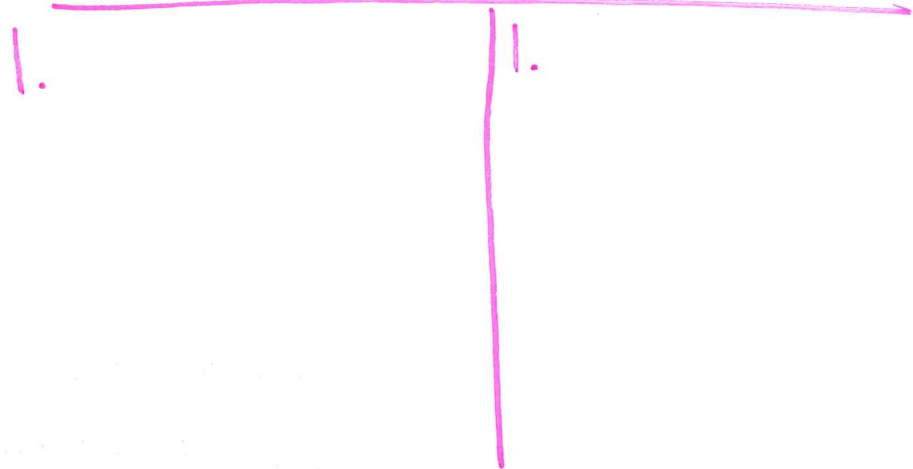
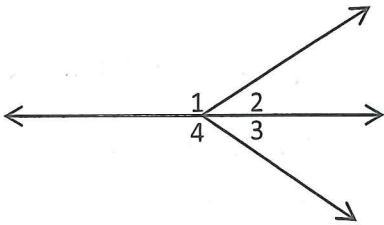
Prove: $\angle 1 \cong \angle 3$



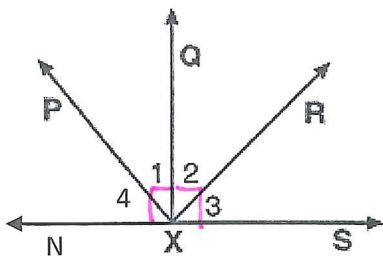
| | |
|---|----------------------------|
| 1. $\angle 2 \cong \angle 4$ | 1. given |
| 2. $\angle 1 + \angle 2 = 180$ $\angle 3 + \angle 4 = 180$ | 2. linear pairs are suppl. |
| 3. $\angle 1 + \angle 2 = \angle 3 + \angle 4$ | 3. Subs |
| 4. $\angle 1 + \angle 2 = \angle 3 + \angle 2$ | 4. Subs. |
| 5. $\angle 1 \cong \angle 3$ | 5. Subst. |

Some questions as #2

3. Given: $\angle 1 \cong \angle 4$
 Prove: $\angle 2 \cong \angle 3$



4. Given: $\overline{OQ} \perp \overline{NS}$, $\angle 1 \cong \angle 3$
 Prove: $\angle 2 \cong \angle 4$



1. $OQ \perp NS$
 $\angle 1 \cong \angle 3$

2. $\angle NXQ = 90$
 $\angle SXQ = 90$

3. $\angle NXQ = \angle 4 + \angle 1$
 $\angle SXQ = \angle 2 + \angle 3$

4. $\angle NXQ \cong \angle SXQ$

5. $\angle 4 + \angle 1 = \angle 2 + \angle 3$

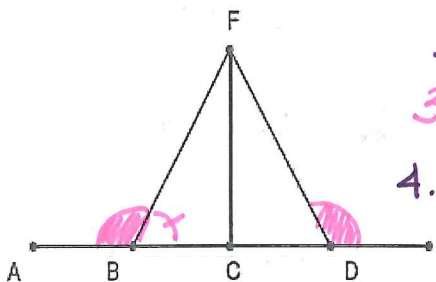
6. $\angle 4 + \angle 1 = \angle 2 + \angle 1$

7. $\angle 4 \cong \angle 2$

1. given
 2. def of \perp
 3. \angle add
 4. subs.
 5. subs
 6. subs
 7. Subst.

5. Given: $\angle FDE$ and $\angle FBC$ are supplementary,

Prove: $\angle FDE \cong \angle FBA$



1. $\angle FDE$ and $\angle FBC$ are suppl.

2. $\angle FDE + \angle FBC = 180$

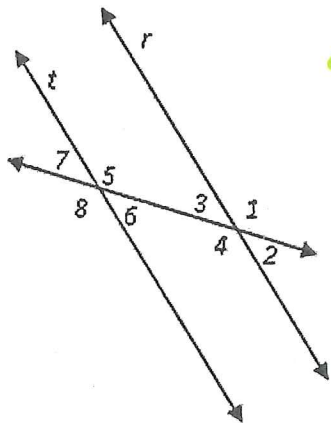
3. $\angle FBC + \angle FBA = 180$

4. $\angle FDE + \angle FBC = \angle FBC + \angle FBA$

5. $\angle FDE \cong \angle FBA$

1. given
 2. def of suppl.
 3. linear pairs are suppl.
 4. Subs
 5. Subst.

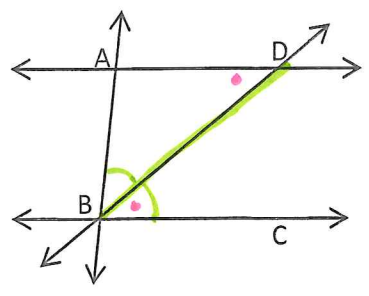
6. Given: $r \parallel t$
 Prove: $\angle 8 \cong \angle 1$



1. $r \parallel t$
2. $\angle 1 \cong \angle 8$

1. given
2. \parallel lines form \cong alt. ext. \angle s.

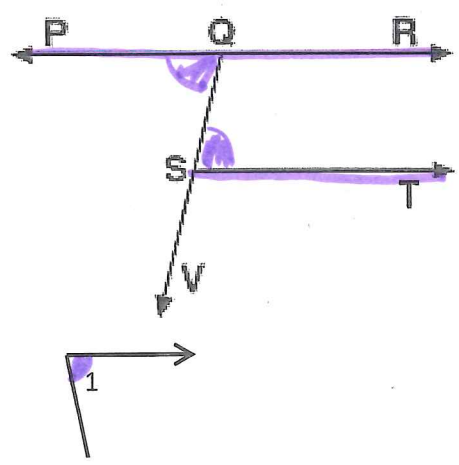
7. Given: $\overline{AD} \parallel \overline{BC}$, \overline{BD} bisects $\angle ABC$
 Prove: $\angle ADB \cong \angle ABD$



1. $AD \parallel BC$
 BD bisects $\angle ABC$
2. $\angle ABD \cong \angle CBD$
3. $\angle CBD \cong \angle ADB$
4. $\angle ADB \cong \angle ABD$

1. given
2. def of \angle bisector.
3. \parallel lines form \cong alt. int. \angle s.
4. subs.

8. Given: $\overline{PR} \parallel \overline{ST}$, $\angle QST \cong \angle 1$
 Prove: $\angle PQS \cong \angle 1$

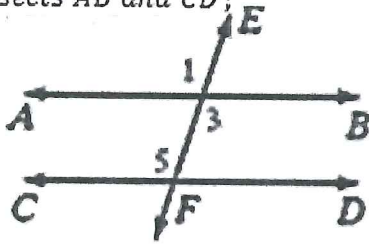


1. $PR \parallel ST$
 $\angle QST \cong \angle 1$
2. $\angle PQS \cong \angle QST$
3. $\angle PQS \cong \angle 1$

1. given
2. \parallel lines form \cong alt. int. \angle s.
3. subs.

9. Given: \overleftrightarrow{EF} intersects \overleftrightarrow{AB} and \overleftrightarrow{CD} ;
 $\angle 1 \cong \angle 5$

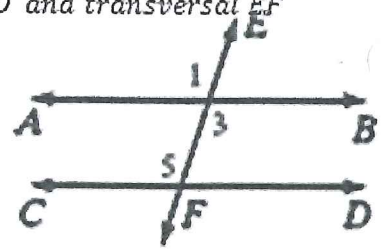
Prove: $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$



1. $\angle 1 \cong \angle 5$
2. $AB \parallel CD$

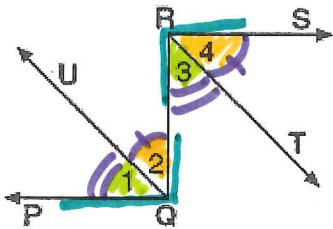
1. given
2. \cong corr. \angle s form \parallel lines

10. Given: $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$ and transversal \overleftrightarrow{EF}
Prove: $\angle 1 \cong \angle 5$



1. given
2. \parallel lines form \cong corr. \angle s.

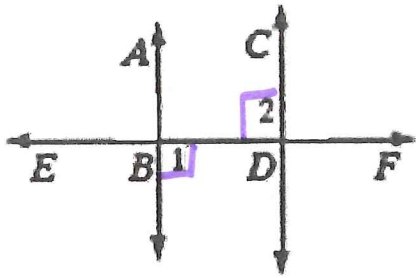
11. Given: $\angle 1 \cong \angle 3$
 $\angle 2 \cong \angle 4$
Prove: $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$



1. $\angle 1 \cong \angle 3$
 $\angle 2 \cong \angle 4$
2. $\angle 1 + \angle 2 = \angle SRQ$
 $\angle 3 + \angle 4 = \angle PQR$
3. $\angle 1 + \angle 2 = \angle PQR$
4. $\angle SRQ \cong \angle PQR$
5. \parallel lines form \cong alt. int. \angle s

12. Given: $\overline{AB} \perp \overline{EF}$ and $\overline{CD} \perp \overline{EF}$

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

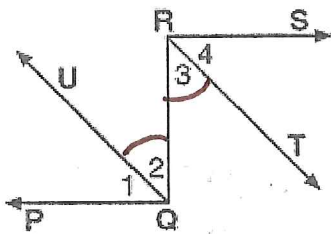


1. $AB \perp EF$
 $CD \perp EF$
2. $\angle 1 = 90^\circ$
 $\angle 2 = 90^\circ$
3. $\angle 1 \cong \angle 2$
4. $AB \parallel CD$

1. given
2. def of \perp
3. Subs.
4. ~~# lines form~~
 \cong alt. int \angle s
form \parallel lines.

13. Given: $m\angle 2 = m\angle 3$

Prove: $\overline{UQ} \parallel \overline{RT}$



1. $\angle 2 \cong \angle 3$
2. $UQ \parallel RT$

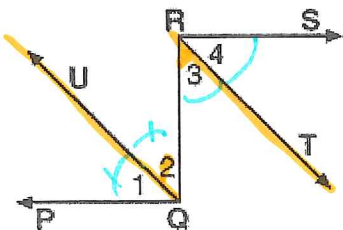
1. given
2. \cong alt int \angle s
form \parallel lines.

14. Given: \overline{RT} bisects $\angle QRS$

\overline{QU} bisects $\angle RQP$

$\angle 1 \cong \angle 4$

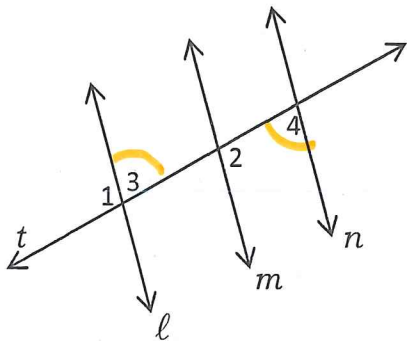
Prove: $\overline{QU} \parallel \overline{RT}$



1. RT bisects $\angle QRS$
 QU bisects $\angle RQP$
 $\angle 1 \cong \angle 4$
2. $\angle 3 \cong \angle 4$
 $\angle 1 \cong \angle 2$
3. $\angle 2 \cong \angle 3$
4. $QU \parallel RT$

1. given
2. def of \angle
bisector.
3. Subs
4. \cong alt. int
 \angle s form \parallel lines.

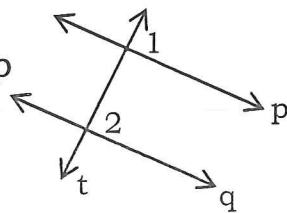
15. Given: $\angle 1 \cong \angle 2$, $m \parallel n$
 Prove: $\angle 3 \cong \angle 4$



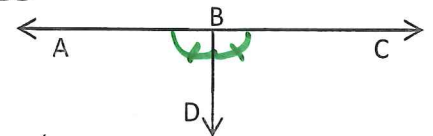
1. $\angle 1 \cong \angle 2$
 $m \parallel n$
2. $l \parallel m$
3. $l \parallel n$
4. $\angle 3 \cong \angle 4$

1. given
2. \cong alt. ext \angle s form \parallel lines.
3. Subs/transitive
4. \parallel lines form \cong alt int \angle s.

16. Given: $p \parallel q$, $t \perp p$
 Prove: $t \perp q$



17. Given: \overline{ABC} , \overline{BD} , $\angle ABD \cong \angle CBD$
 Prove: $\overline{AC} \perp \overline{BD}$

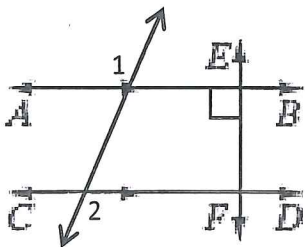


| Statement | Reason |
|----------------------------------|--|
| 1. $p \parallel q$, $t \perp p$ | 1. given |
| 2. $\angle 1 \cong 90^\circ$ | 2. def of \perp |
| 3. $\angle 1 \cong \angle 2$ | 3. \parallel lines form \cong corr. \angle s |
| 4. $\angle 2 \cong 90^\circ$ | 4. Subs |
| 5. $t \perp q$ | 5. def of \perp |

| Statement | Reason |
|--|----------------------------|
| 1. $\angle ABD \cong \angle CBD$ | 1. given |
| 2. $\angle ABD + \angle CBD = 180^\circ$ | 2. linear pairs are suppl. |
| 3. $\angle ABD + \angle ABD = 180$ | 3. Subs |
| 4. $2\angle ABD = 180$ | 4. CLT |
| 5. $\angle ABD = 90$ | 5. division |
| 6. $AC \perp BD$ | 6. def of \perp |

18. Given: $\overline{AB} \perp \overline{EF}$, $\overline{CD} \perp \overline{EF}$

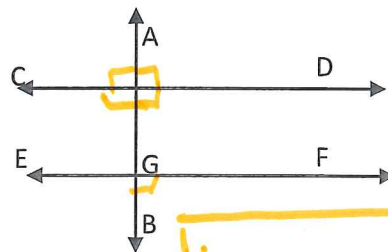
Prove: $\angle 1 \cong \angle 2$



| | |
|---|---|
| 1. $AB \perp EF$, $CD \perp EF$ | 1. given |
| 2. $\angle AEF = 90$ $\angle DFE = 90$ | 2. def of \perp |
| 3. $\angle AEF \cong \angle DFE$ | 3. Subs |
| 4. $AB \parallel CD$ | 4. \cong alt int \angle s form \parallel lines. |
| 5. $\angle 1 \cong \angle 2$ | 5. \parallel lines form \cong alt. ext. \angle s. |

19. Given: $\overline{CD} \parallel \overline{EF}$, $\overline{AB} \perp \overline{CD}$

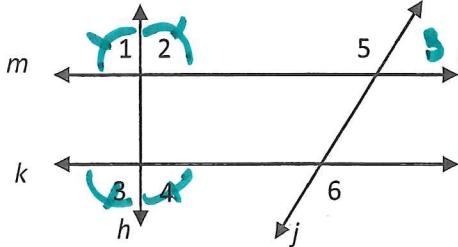
Prove: $m\angle BGF = 90^\circ$



| | |
|------------------------------|--|
| 1. $\angle DAG = 90^\circ$ | 1. given |
| 2. $\angle BGF = \angle DAG$ | 2. def of \perp |
| 3. $\angle BGF = 90^\circ$ | 3. \parallel lines form \cong corr. \angle s |
| 4. $\angle BGF = 90^\circ$ | 4. Subs. |

20. Given: $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$

Prove: $\angle 5 \cong \angle 6$

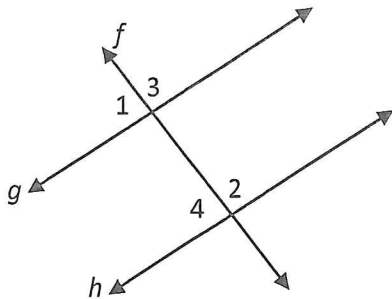


1. $\angle 1 \cong \angle 2$
 $\angle 3 \cong \angle 4$
2. $\angle 1 + \angle 2 = 180$
 $\angle 3 + \angle 4 = 180$
3. $\angle 1 + \angle 1 = 180$
 $\angle 4 + \angle 4 = 180$
4. $2\angle 1 = 180$
 $2\angle 4 = 180$
5. $\angle 1 = 90$
 $\angle 4 = 90$
6. $\angle 1 \cong \angle 4$
7. $m \parallel k$
8. $\angle 5 \cong \angle 6$

1. given
2. linear pairs are Suppl.
3. Subs
4. CLT
5. divide
6. Subs
7. \cong alt ext \angle s form \parallel lines
8. \parallel lines form \cong alt. ext. \angle s

21. Given: $h \perp f$ $\angle 1 \cong \angle 2$,

Prove: $g \parallel h$



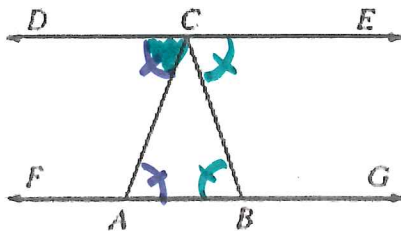
1. $h \perp f$
 $\angle 1 \cong \angle 2$
2. $\angle 2 = 90$
 $\angle 4 = 90$
3. $\angle 2 \cong \angle 4$
4. $\angle 1 \cong \angle 4$

1. given
2. def of \perp
3. Subs.
4. \cong corr. \angle s form \parallel lines.

22. Given: $\angle CAB \cong \angle DCA$ and $\angle DCA \cong \angle ECB$

Prove: (a) $\vec{FG} \parallel \vec{DE}$

(b) $\angle CAB \cong \angle CBA$



2. $FG \parallel DE$
3. $\angle CBA \cong \angle ECB$
4. $\angle CAB \cong \angle CBA$

1. given
2. \cong alt. int \angle s form \parallel lines
3. \parallel lines form \cong alt int. \angle s.
4. Subs.

