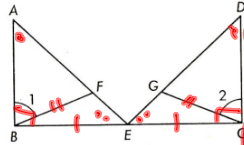# Homework From the previous Thur

More Triangle Proofs II
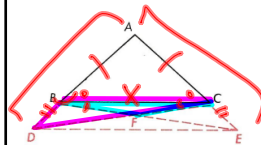Geometry Research Honors

1.

Given: $\overleftrightarrow{AB} \perp \overleftrightarrow{BC}$
$\overleftrightarrow{DC} \perp \overleftrightarrow{BC}$
$\angle 1 \cong \angle 2$
E is the midpoint
of $\overline{BC}$.
$\overline{BF} \cong \overline{CG}$
Concl.: $\angle A \cong \angle D$

S	R
①	Given
② $\angle ABE$ & $\angle DCE$ are Rt $\angle$'s	$\perp$ lines form Rt $\angle$'s.
③ $\angle ABF \cong \angle DCE$	All Rt $\angle$'s are $\cong$
④ $\overline{BE} \cong \overline{CE}$	A Midpt divides a line seg. in 2 $\cong$ parts
⑤ $\angle FBE \cong \angle GCE$	subtraction
⑥ $\triangle FBE \cong \triangle GCE$	SAS
⑦ $\angle FEB \cong \angle GEC$	CPCTC
⑧ $\triangle ABE \cong \triangle DCE$	ASA
⑨ $\angle A \cong \angle D$	CPCTC

2.

Given: $\triangle ABC$ is isosceles
with $\overline{AB} \cong \overline{AC}$.
$\triangle ADE$ is isosceles
with $\overline{AD} \cong \overline{AE}$.
Concl.: $\triangle FBC$ is isosceles.

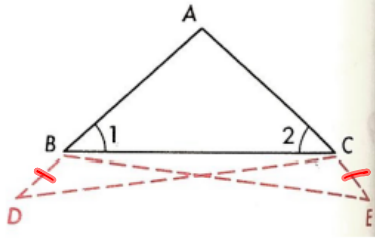| S	R
①	Given
② $\angle ABC \cong \angle ACB$	Base $\angle$'s opp. from $\cong$ Sides are $\cong$ in a isos. $\triangle$.
③ $\angle DBC$ & $\angle ABC$ are suppl. $\angle ECB$ & $\angle ACB$ are suppl.	linear pair
④ $\angle DBC \cong \angle ECB$	supp. to $\cong \angle$'s are $\cong$.
⑤ $\overline{BC} \cong \overline{BC}$	Reflexive.
⑥ $\overline{BD} \cong \overline{CE}$	Subtraction
⑦ $\triangle BCD \cong \triangle CBE$	SAS
⑧ $\angle BCD \cong \angle CBE$	CPCTC
⑨ $\triangle FBC$ is isos.	when $2 \angle$'s are $\cong$ in a $\triangle$, it is isos.

Homework From the previous Thur

3.

Given: $\angle 1 \cong \angle 2$
$\overline{BD} \cong \overline{CE}$

Concl.: $\overline{AB} \cong \overline{AC}$

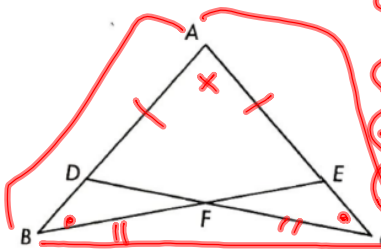| S	R
①	Given
② $\triangle ABC$ is an isos. $\triangle$	when 2 base $\angle$'s are $\cong$, it is an isos. $\triangle$.
③ $\overline{AB} \cong \overline{AC}$	isos $\triangle$ has 2 $\cong$ sides opp. to $\cong \angle$'s.

4.

Given: $\overline{AB} \cong \overline{AC}$
$\overline{AD} \cong \overline{AE}$

Prove: $\overline{BF} \cong \overline{CF}$

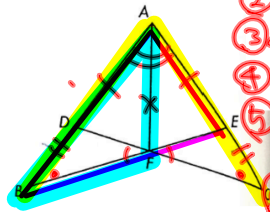| S	R
① ②	Given
$\overline{BC}$	Drawn
③ $\angle A \cong \angle A$	Reflexive
④ $\triangle ABE \cong \triangle ACD$	SAS
⑤ $\angle ABE \cong \angle ACD$	CPCTC
⑥ $\triangle ABC$ is isos.	when 2 sides are $\cong$, it is isos
⑦ $\angle ABC \cong \angle ACB$	Base $\angle$'s are $\cong$ in isos.
⑧ $\angle FBC \cong \angle FCB$	Subtraction

Homework From the previous Thur

5.

Given: $\overline{AB} \cong \overline{AC}$

$\overline{AD} \cong \overline{AE}$

Concl.: $\overrightarrow{AF}$ bisects $\angle BAC$.

S	R
①	Given
② $\angle BAC \cong \angle BAC$	Reflexive
③ $\triangle BAE \cong \triangle CAD$	SAS
④ $\angle B \cong \angle C$	CPCTC
⑤ $\angle DFB \cong \angle EFC$	vert. $\angle$'s are $\cong$ when int. by 2 lines
⑥ $\overline{DB} \cong \overline{EC}$	Subtraction
⑦ $\triangle DBF \cong \triangle ECF$	AAS
⑧ $\overline{BF} \cong \overline{CF}$	CPCTC
⑨ $\overline{AF} \cong \overline{AF}$	Reflexive
⑩ $\triangle ABF \cong \triangle ACF$	SSS
⑪ $\angle BAF \cong \angle CAF$	CPCTC
⑫ $\overrightarrow{AF}$ bisects $\angle BAC$	When a line cuts an $\angle$ in 2 $\cong$ parts, it is an $\angle$ bisect.