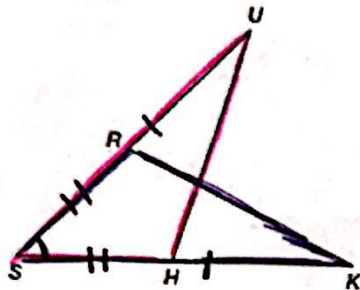


Day 5 – Proving Triangles Congruent (including CPCTC) Notes

Once you conclude two triangles are congruent, then you can also conclude that **corresponding parts of congruent triangles are congruent (CPCTC)**. CPCTC can be used as a justification **AFTER** you have proved two triangles are congruent. Look at the example proof below:

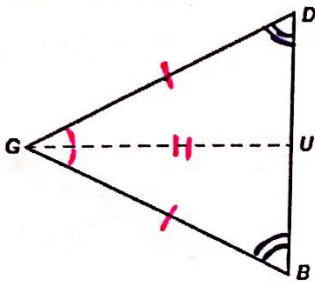


Statements	Reasons
1. $\overline{SU} \cong \overline{SK}$	1. Given
2. $\overline{SR} \cong \overline{SH}$	2. Given
3. $\angle S \cong \angle S$	3. Reflexive Property
4. $\Delta SUH \cong \Delta SKR$	4. SAS
5. $\angle U \cong \angle K$	5. CPCTC

Prove the Isosceles Base Angles Theorem

a. Given:  $\overline{GB} \cong \overline{GD}$ ,  $\overline{GU}$  bisects  $\angle DGB$

Prove:  $\angle B \cong \angle D$

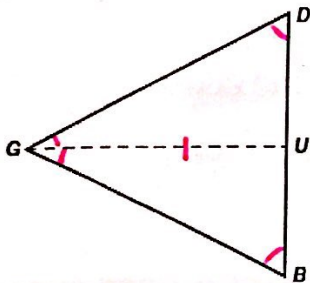


Statements	Reasons
1. $\overline{GB} \cong \overline{GD}$	1. Given
2. $\overline{GU}$ bisects $\angle DGB$	2. Given
3. $\angle DGU \cong \angle BGU$	3. Definition of bisects
4. $\overline{GU} \cong \overline{GU}$	4. Reflexive Prop
5. $\Delta GDU \cong \Delta GBU$	5. SAS
6. $\angle B \cong \angle D$	6. CPCTC

Prove the Converse of the Isosceles Base Angles Theorem:

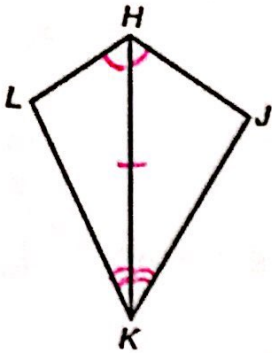
b. Given:  $\angle B \cong \angle D$ ,  $\overline{GU}$  bisects  $\angle DGB$

Prove:  $\overline{GB} \cong \overline{GD}$



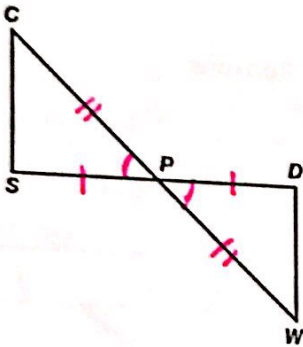
Statements	Reasons
1. $\angle B \cong \angle D$	1. Given
2. $\overline{GU}$ bisects $\angle DGB$	2. Given
3. $\angle DGU \cong \angle BGU$	3. Def of bisects
4. $\overline{GU} \cong \overline{GU}$	4. Reflexive Prop
5. $\Delta DGU \cong \Delta BGU$	5. AAS
6. $\overline{GB} \cong \overline{GD}$	6. CPCTC

c. Given:  $\angle JHK \cong \angle LHK$ ,  $\angle JKH \cong \angle LKH$   
 Prove:  $\overline{JK} \cong \overline{LK}$



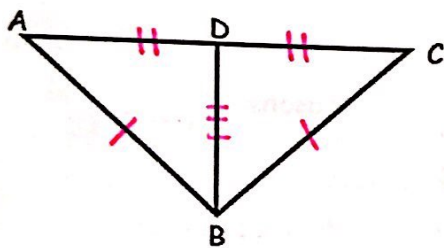
Statements	Reasons
① $\angle JHK \cong \angle LHK$	① Given
② $\angle JKH \cong \angle LKH$	② Given
③ $\overline{HK} \cong \overline{HK}$	③ Reflexive Prop
④ $\triangle LHK \cong \triangle JHK$	④ ASA
⑤ $\overline{JK} \cong \overline{LK}$	⑤ CPCTC

d. Given:  $\overline{CW}$  and  $\overline{SD}$  bisect each other  
 Prove:  $\overline{CS} \cong \overline{WD}$



Statements	Reasons
① $\overline{CW}$ & $\overline{SD}$ bisect each other	① Given
② $\overline{CP} \cong \overline{WP}$	② Def of bisector
③ $\overline{SP} \cong \overline{DP}$	③ Def of bisector
④ $\angle CPS \cong \angle WPD$	④ Vertical $\angle$ 's are $\cong$
⑤ $\triangle CPS \cong \triangle WPD$	⑤ SAS
⑥ $\overline{CS} \cong \overline{WD}$	⑥ CPCTC

e. Given:  $\overline{AB} \cong \overline{CB}$ , D is the midpoint of  $\overline{AC}$   
 Prove:  $\angle A \cong \angle C$

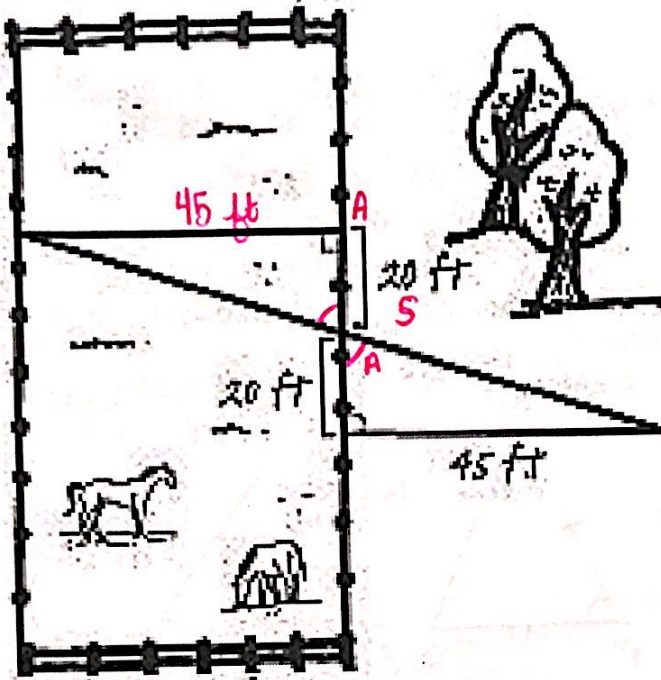


Statements	Reasons
① $\overline{AB} \cong \overline{CB}$	① Given
② D is midpoint of $\overline{AC}$	② Given
③ $\overline{AD} \cong \overline{CD}$	③ Def of Midpoint
④ $\overline{DB} \cong \overline{DB}$	④ Reflexive Prop
⑤ $\triangle ADB \cong \triangle CDB$	⑤ SSS
⑥ $\angle A \cong \angle C$	⑥ CPCTC

\* Could also use isosceles base angles theorem

Applications of CPCTC

2. How wide is the horse's pasture? Prove it using triangle congruence theorems.



45 ft wide