

5.7 Using Congruent Triangles CYU

Use when you get it right all by yourself  
**S** Use when you did it all by yourself, but made a silly mistake  
**H** Use when you could do it alone with a little help from teacher or peer  
**G** Use when you completed the problem in a group  
**X** Use when a question was attempted but wrong (get help)  
**N** Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Reflexive POC	1, 2, 3		7
CPCTC	1 - 3	10	6
Alternate Interior Angles	2	5	
Definition of Isosceles Triangle	3	4, 5	6, 7
ASA, AAS, SSS, HL, SAS	9, 10	4, 5	6, 7
Definition of Vertical Angles	10	5	6, 7
Area of Triangles			8

Explain how to prove that the statement is true.

1.  $\angle A \cong \angle D$

2.  $\overline{AC} \cong \overline{DB}$

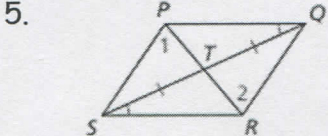
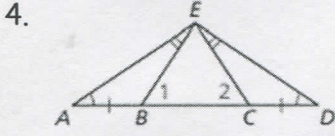
3.  $\overline{GK} \cong \overline{HJ}$

Reflexive  
 $\Rightarrow$  SSS  
 $\Rightarrow$  CPCTC

AIA  $\rightarrow$  Reflexive  $\rightarrow$  AAS  $\rightarrow$  CPCTC

AAS  
CPCTC

Write a plan to prove that angle one is congruent to angle two.



ASA  $\cong$  Thm  $\Delta STR \cong \Delta QTP$   
 $PT \cong RT$  CPCTC

or  $\overline{BE} \cong \overline{EC}$   
 Def. of  $\Delta$

AAS  $\cong$  Thm  $\Delta FHG \cong \Delta GKF$   
 $\angle ABE \cong \angle DCE$  CPCTC;  $\cong$  Complements Thm

Use the information given in the diagram to write a two-column proof.

6. Prove  $\overline{FL} \cong \overline{HN}$

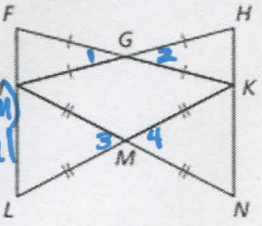
7. Prove  $\Delta PUX \cong \Delta QSY$

Statements

- $\overline{FG} \cong \overline{GT} \cong \overline{GH} \cong \overline{BK}$
- $\angle F \cong \angle G; \angle H \cong \angle K$
- $\Delta FGT \cong \Delta GKH$
- $\Delta TML \cong \Delta KMN$
- $\angle F \cong \angle H; \angle L \cong \angle N$
- $FG = GT = GH = GK$
- $HJ = HG + GT$
- $FK = FG + GT$
- $FK \cong HJ$
- $\Delta HJN \cong \Delta FKL$
- $\overline{FL} \cong \overline{HN}$

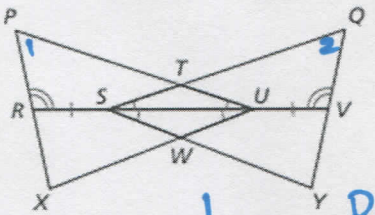
Reasons

- Given (diagram)
- Def. of vertical  $\angle$ 's
- SAS  $\cong$  Thm
- CPCTC
- $\cong \Rightarrow =$
- Seg. Add. Post.
- Substitution POE
- Transitive POE
- $\cong \Rightarrow \cong$
- AAS  $\cong$  Thm
- CPCTC



Statement 1

- $\angle PRU \cong \angle QVS; \angle PUR \cong \angle QVF; \angle RUX \cong \angle QSY$   
 $RS \cong VU$
- $RS = VU$
- $RU = RS + SU; VS = VU + SU$
- $VS = RS + SU$
- $RU = VS$
- $\overline{RU} \cong \overline{VS}$
- $\Delta PUR \cong \Delta QSU$
- $\angle 1 \cong \angle 2$
- $m\angle PUR = m\angle QSU = m\angle RUX = m\angle QSY$
- $m\angle PUX = m\angle PUR + m\angle RUX$   
 $m\angle QSY = m\angle QSU + m\angle VSU$
- $m\angle QSY = m\angle PUX + m\angle RUX$
- $m\angle PUX = m\angle QSY$



Reasons

- Given (diagram)
- $\cong \Rightarrow =$
- Seg. Add. Post.
- Substitution POE
- Transitive POE
- $\cong \Rightarrow \cong$
- ASA  $\cong$  Thm
- CPCTC
- $\cong \Rightarrow \cong$
- Seg. Add. Post.
- Substitution POE
- Transitive POE
- $\cong \Rightarrow \cong$

14. ASA  $\cong$  Thm



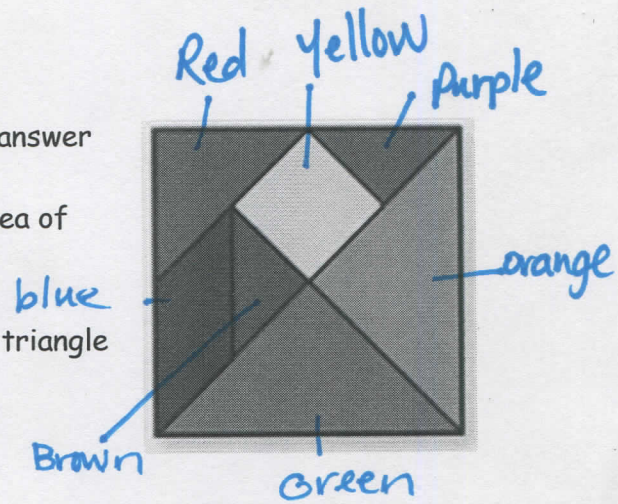
8. HOW DO YOU SEE IT? Use the tangram puzzle to answer the two questions.

a) Which triangle(s) have an area that is twice the area of the purple triangle?

Red  $\triangle$

b) How many times greater is the area of the orange triangle than the area of the purple triangle.

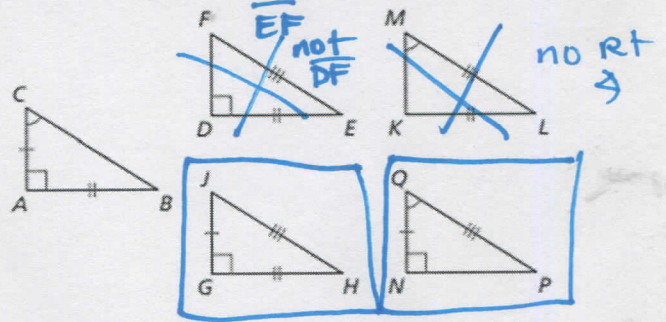
4 times



9. ATTENDING TO PRECISION Which triangles are congruent to  $\triangle ABC$ ? Select all that apply.

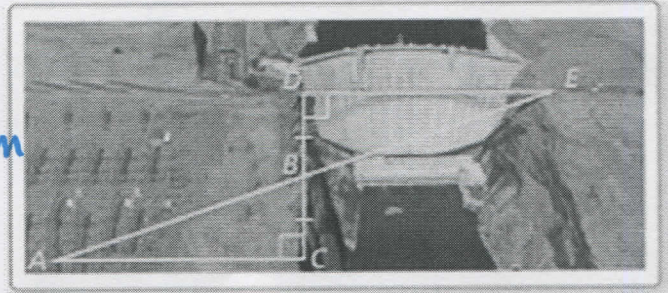
$\triangle ABC \cong \triangle GHT$  by SAS  $\cong$  Thm

$\triangle ABC \cong \triangle NPQ$  by ASA  $\cong$  Thm



10. MODELING WITH MATHEMATICS Explain how to find the distance across the canyon.

- ①  $\angle DBE \cong \angle CBA$  by Def of vertical  $\angle$ 's
- ②  $\triangle DBE \cong \triangle CBA$  by ASA  $\cong$  Thm
- ③  $\overline{AC} \cong \overline{DE}$  by CPCTC



So, measure AC to know DE.

**CYU Reflection:** How far can you go: basic, intermediate, or advanced?

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

