

# **SECTION 4.2: SOME WAYS TO PROVE TRIANGLES CONGRUENT**

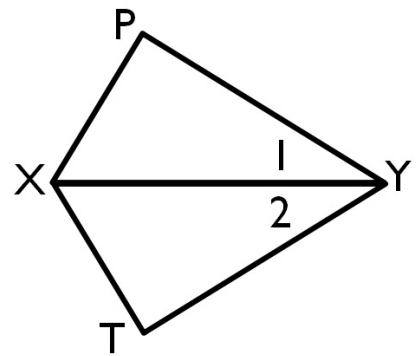
Standards:

2.0 - Students write geometric proofs, including proofs by contradiction

4.0 - Students prove basic theorems involving congruence and similarity.

## WARMUP

The two triangles shown are congruent. Complete.



a)  $\triangle PXY \cong \triangle$  \_\_\_\_\_

b)  $\angle P \cong \angle$  \_\_\_\_\_ because \_\_\_\_\_

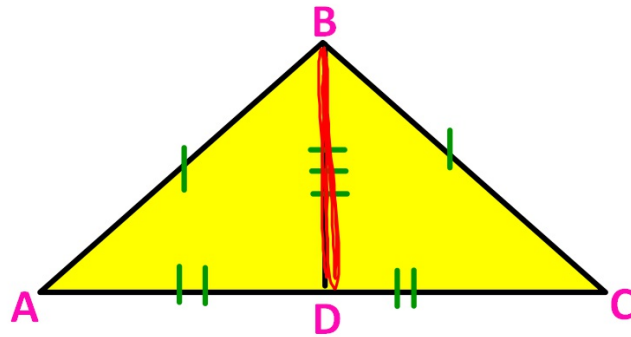
c)  $\overline{XP} \cong$  \_\_\_\_\_ because \_\_\_\_\_

d)  $\angle 1 \cong \angle$  \_\_\_\_\_ because \_\_\_\_\_

e) Then  $\overline{YX}$  bisects  $\angle PYT$  because \_\_\_\_\_

**SSS POSTULATE**

If 3 sides of 1  $\Delta$  are  $\cong$  to 3 sides of another  $\Delta$ , then the  $\Delta$ s are  $\cong$

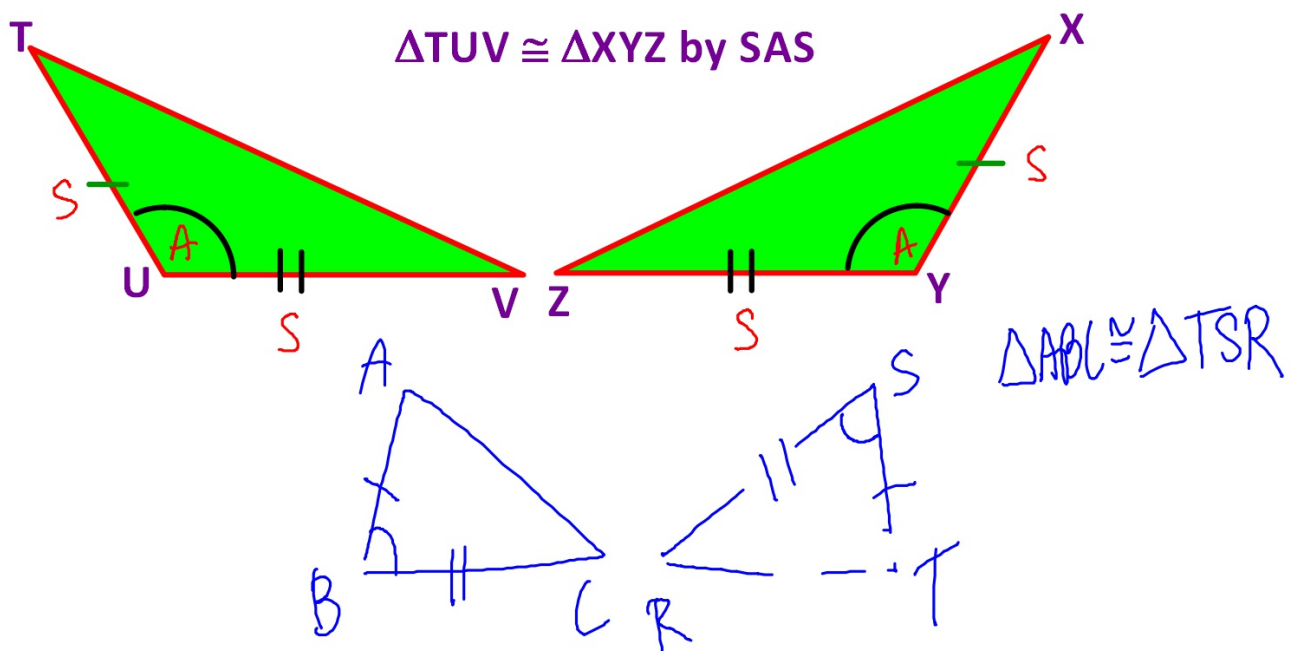


S = Side  
A = Angle

$\Delta ABD \cong \Delta CBD$  by SSS

## SAS POSTULATE

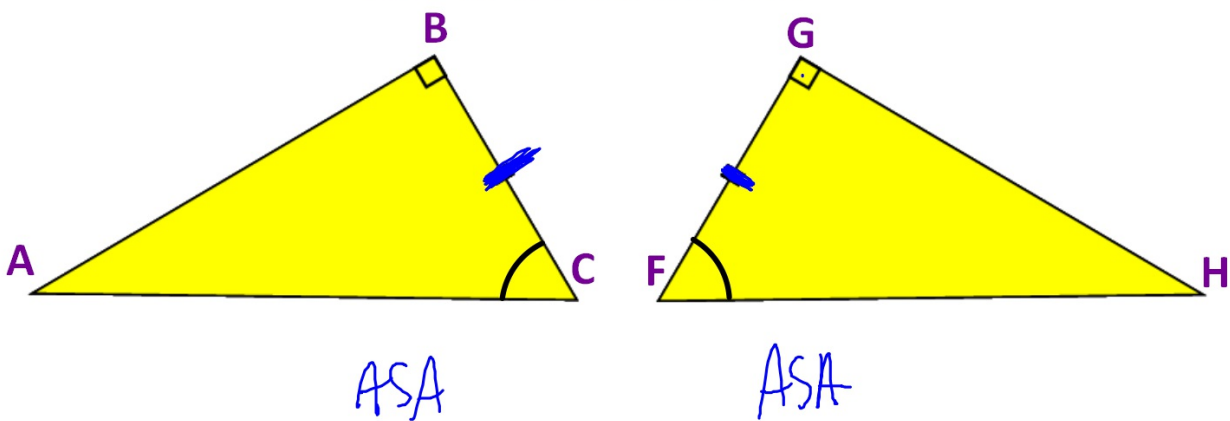
If 2 sides and the included angle of 1  $\Delta$  are  $\cong$  to 2 sides and the included angle of another  $\Delta$ , then the  $\Delta$ s are  $\cong$



## ASA POSTULATE

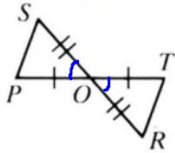
If 2 angles and the included side of 1  $\Delta$  are  $\cong$  to 2 angles and the included side of another  $\Delta$ , then the  $\Delta$ s are  $\cong$

$\Delta ABC \cong \Delta HGF$  by ASA

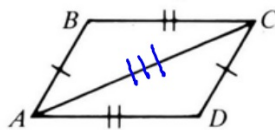


**1-12: Can the two triangles be proved congruent? If so, write the congruence and name the postulate used. If not, write *no congruence can be deduced*.**

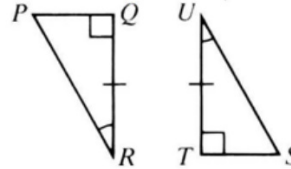
1)  $\triangle POS \cong \triangle TOR$   
by SAS



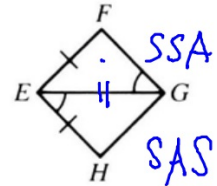
2)  $\triangle ABC \cong \triangle CDA$   
by SSS



3)  $\triangle PQR \cong \triangle STU$   
by ASA



4)  $\triangle EFG \cong$  \_\_\_\_\_  
by none



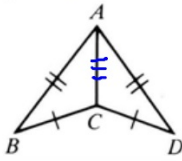
**Answer**

**Answer**

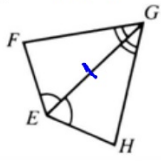
**Answer**

**Answer**

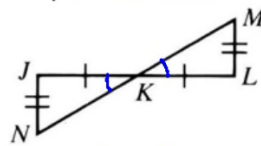
5)  $\triangle ABC \cong \triangle ADC$   
by SSS



6)  $\triangle GEF \cong \triangle GEH$   
by ASA

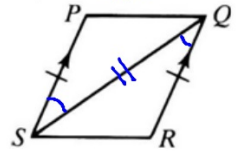


7)  $\triangle JNK \cong$  \_\_\_\_\_  
by none



~~SSA~~ ~~ASS~~

8)  $\triangle PQS \cong \triangle RSQ$   
by SAS



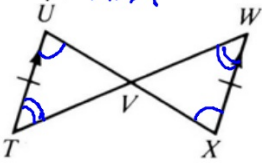
**Answer**

**Answer**

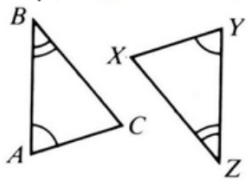
**Answer**

**Answer**

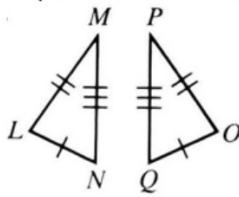
9)  $\triangle UVT \cong \triangle XVW$   
by ASA



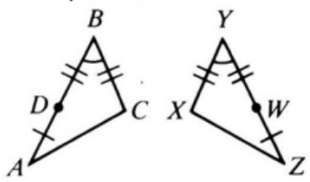
10)  $\triangle BAC \cong$  \_\_\_\_\_  
by none



11)  $\triangle MNL \cong \triangle PQO$   
by SSS



12)  $\triangle ABC \cong \triangle ZYX$   
by SAS



**Answer**

**Answer**

**Answer**

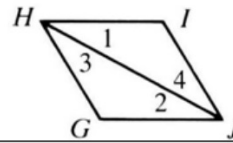
**Answer**

13)

Given:  $\overline{HI} \parallel \overline{GJ}$ ;  $\overline{HG} \parallel \overline{IJ}$

Prove:  $\triangle GHJ \cong \triangle IJH$

Proof:



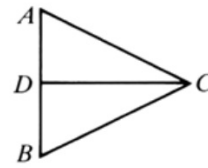
STATEMENTS	REASONS
①	①
②	②
③	③
④	④

14)

Given:  $\overline{DC}$  bisects  $\overline{AB}$ ;  $\overline{AC} \cong \overline{BC}$

Prove:  $\triangle ADC \cong \triangle BDC$

Proof:



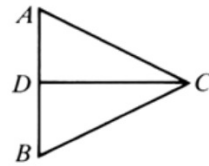
STATEMENTS	REASONS
①	①
②	②
③	③
④	④
⑤	⑤

15)

Given:  $\overline{AC} \cong \overline{BC}$ ;  $\overline{CD}$  bisects  $\angle ACB$

Prove:  $\triangle ADC \cong \triangle BDC$

Proof:



STATEMENTS	REASONS
①	①
②	②
③	③
④	④

# **HOMEWORK**

## **Assignment #4.2**

- **Pages 124-126 #1-19**

5)  $\triangle ABC \cong$  \_\_\_\_\_  
by \_\_\_\_\_

6)  $\triangle GEF \cong$  \_\_\_\_\_  
by \_\_\_\_\_

7)  $\triangle JNK \cong$  \_\_\_\_\_  
by \_\_\_\_\_

8)  $\triangle PQS \cong$  \_\_\_\_\_  
by \_\_\_\_\_

Enter text

andrew	andrew.gf	aurora	barbara
caifren	denise.l	gabriel.c	helen
helen	isa	isabelle	jenica
jatin	isidore	ingerl	isa
marcoso	marion	mgale	pedron
robert	robin	quinn	ross
shube	stevens	stump	tanarata
terrina	to	trish	veda.aron
walter	zack		

**Answer** **answer** **Answer**

5)  $\triangle ABC \cong \triangle ADC$   
by SSS

6)  $\triangle GEF \cong$  \_\_\_\_\_  
by \_\_\_\_\_

7)  $\triangle JNK \cong$  \_\_\_\_\_  
by \_\_\_\_\_

8)  $\triangle PQS \cong$  \_\_\_\_\_  
by \_\_\_\_\_

Enter text

andrew	andrew.gf	aurora	barbara
caithryn	Denise L	Gabriel, Camilo	helia
edward	elo	isabelle	jenica
jatin	ISABEL	ingerl	lee
marcosantonio	Markon	MIGUEL	Pradon
willard	Walter	Quinn	rose
Shubra	stevens	Glenn P	Tanvirata
Terrance	to	Tresh	Veda Arana
whelan	Zack		

Answer

answer

Answer

5)  $\triangle ABC \cong \triangle ADC$   
by SSS

6)  $\triangle GEF \cong \triangle GEH$   
by ASA

7)  $\triangle JNK \cong$  \_\_\_\_\_  
by \_\_\_\_\_

8)  $\triangle PQS \cong$  \_\_\_\_\_  
by \_\_\_\_\_

Enter text

andrew	andrew.gf	austina	barbara
caifren	denise.l	gabriele.c	helo
felimon	gab	isabelle	jenica
jatin	isabel.c	ingerl	isa
marcoso...	marco.m	mgale	pedron
robert	robert	quinn	ross
shube	stevens	stump	tanarata
terrina	to	trish	vada.arata
whelan	zack		

**Answer** **answer** **Answer**

9)  $\triangle UVT \cong$  \_\_\_\_\_  
by \_\_\_\_\_

10)  $\triangle BAC \cong$  \_\_\_\_\_  
by \_\_\_\_\_

11)  $\triangle MNL \cong$  \_\_\_\_\_  
by \_\_\_\_\_

12)  $\triangle ABC \cong$  \_\_\_\_\_  
by \_\_\_\_\_

Enter text

andrew	andrew gf	aurora	barbara
caifren	denise L	gabriel Camilo	helo
felimon	elo	isabelle	jenica
lath	isidoro	ingerl	lee
marcosantonio	marlon	miguel	pedron
pedrad	roder	quinn	ross
shube	stevens	stumpf	tanarata
teronah	to	trish	vada arana
whelan	zack		

Answer

wer

Answer

9)  $\triangle UVT \cong \triangle XVW$   
by **ASA**

10)  $\triangle BAC \cong$  \_\_\_\_\_  
by \_\_\_\_\_

11)  $\triangle MNL \cong$  \_\_\_\_\_  
by \_\_\_\_\_

12)  $\triangle ABC \cong$  \_\_\_\_\_  
by \_\_\_\_\_

andrew	andrew.gf	austina	barbara
caifren	denise.l	gabriel.casib	helo
helen	elo	isabelle	jenica
lath	isidore	ingerl	lee
marcosimo	marlon	mgale	pedron
willard	roder	quinn	ross
shube	stevens	stumpf	tanarata
terrina	to	trish	vada.arona
whelan	zack		

Answer      Answer      Answer

9)  $\triangle UVT \cong \triangle XVW$   
by ASA

10)  $\triangle BAC \cong$  \_\_\_\_\_  
by NDL

11)  $\triangle MNL \cong \triangle PQO$   
by SSS

12)  $\triangle ABC \cong$  \_\_\_\_\_  
by \_\_\_\_\_

andrew	andrew.gf	austina	barbara
caifren	denise.l	gabriel.casib	helo
helen	elo	isabelle	jenica
lath	isidore	ingerl	lee
marcosimo	marlon	mgale	pedron
robert	robin	quinn	ross
shube	stevens	stump	tanarata
terrina	to	trish	vada.arona
whelan	zack		

Answer      Answer      Answer