UNIT 2 TEST REVIEW
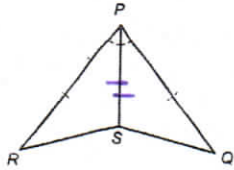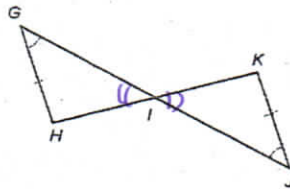
Congruent Triangles: Determine whether each pair of triangles are congruent (SSS, SAS, ASA, AAS, or HL). If not, write not congruent. If they are congruent, write a congruence statement.
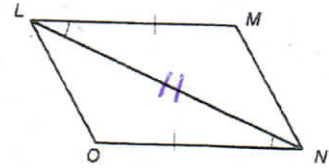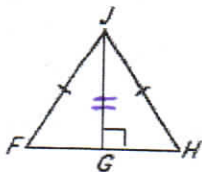
1. Δ __RPS__ ≅ Δ __QPS__ , by __SAS__

2. Δ __GIH__ ≅ Δ __JIK__ , by __AAS__

3. Δ __MLN__ ≅ Δ __ONL__ , by __SAS__

4. Δ __FJG__ ≅ Δ __HJG__ , by __HL__

5. Δ __BAC__ ≅ Δ __EDF__ , by __SAS__
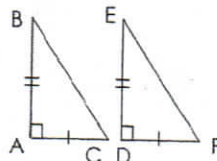
6. Δ __ACB__ ≅ Δ __BDA__ , by __AAS__
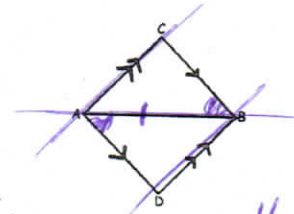
*Arrows mean ∥

Congruent Triangles: Write the congruence statement for each pair of triangles.

7. ΔRAC ≅ Δ __ONG__
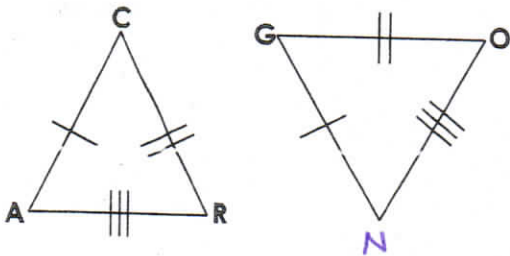
8. ΔFOX ≅ Δ __BXO__
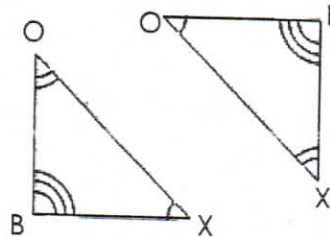
Proofs: Complete the following proofs.

9.
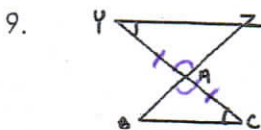
Statement	Reason
1. ∠Y ≅ ∠C	1. Given
2. A is mdpt of $\overline{YC}$	2. Given
3. YA ≅ CA	3. Def of Mdpt
4. ∠YAZ ≅ ∠CAB	4. VA ≅
5. ΔYZA ≅ ΔCBA	5. ASA

10.
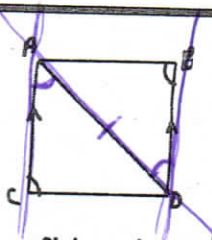
Statement	Reason
1. ∠B ≅ ∠C	1. Given
2. $\overline{AC} \parallel \overline{BD}$	2. Given
3. ∠CAD ≅ ∠BDA	3. AIA ≅
4. AD ≅ AD	4. Reflexive
5. ΔACD ≅ ΔDBA	5. AAS

II. For each pair of triangles, tell: (a) Are they congruent (b) Write the triangle congruency statement. (c) Give the conjecture that makes them congruent.
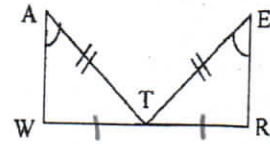
1.

a. _____yes_____

b. Δ_DCE_ ≅ Δ_BAE_

c. _____ASA_____

2.
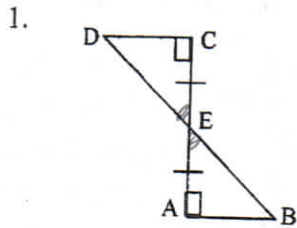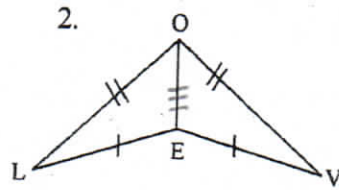
a. _____yes_____

b. Δ_LOE_ ≅ Δ_VOE_

c. _____SSS_____

3. Given: T is the midpoint of $\overline{WR}$

a. _____NO_____

b. Δ_____ ≅ Δ_____

c. _____

4.

a. _____yes_____

b. Δ_EGF_ ≅ Δ_HFG_
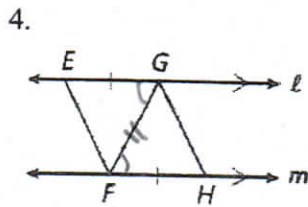
c. _____SAS_____

5. Given: $\overrightarrow{IH}$ Bisects∠WIS
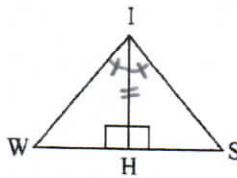
a. _____yes_____

b. Δ_WIH_ ≅ Δ_SIH_
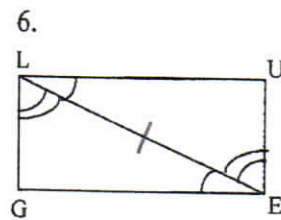
c. _____ASA_____

6.

a. _____yes_____

b. Δ_GLE_ ≅ Δ_UEL_

c. _____ASA_____

7.

a. _____yes_____

b. Δ_RTU_ ≅ Δ_TRS_

c. _____ASA_____

8.

a. _____NO_____

b. Δ_____ ≅ Δ_____

c. _____

9.

a. _____NO_____

b. Δ_____ ≅ Δ_____

c. _____
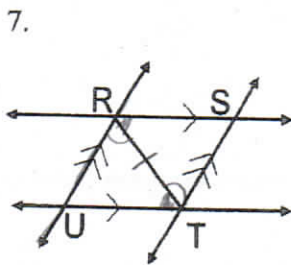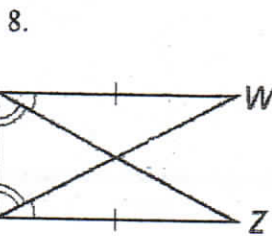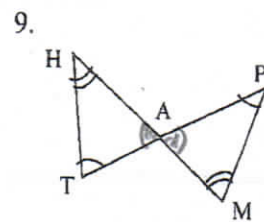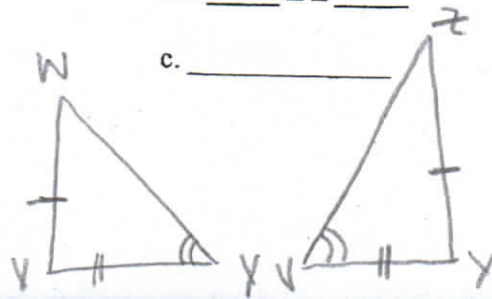
Name _____

Remember

Two figures are *congruent* if they are the same shape and size. The two figures have corresponding sides and corresponding angles that are congruent.

Side-Side-Side (SSS) Congruence—If three sides of one triangle are congruent to three sides of another triangle, then the triangles are congruent.
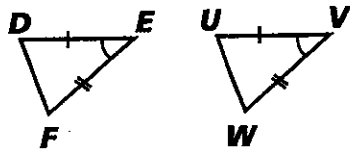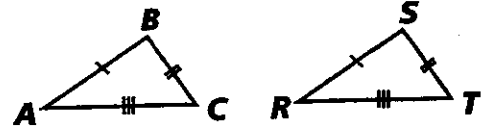
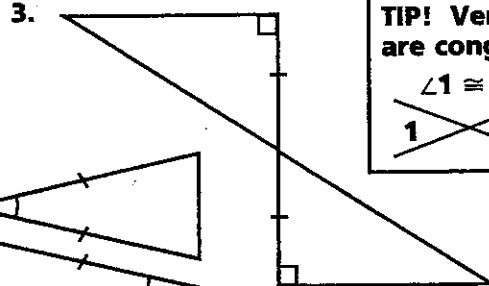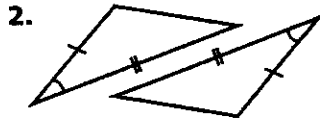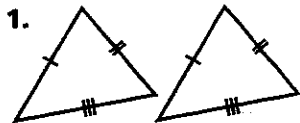**Side-Angle-Side (SAS) Congruence**—If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then the triangles are congruent.
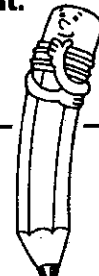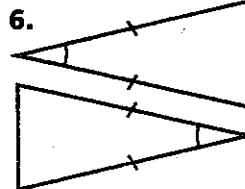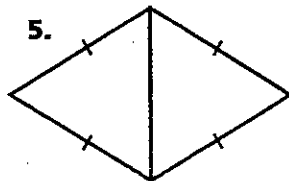
Angle-Side-Angle (ASA) Congruence—If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then the triangles are congruent.
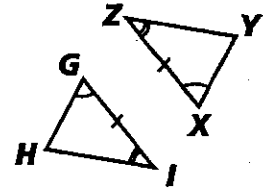
Determine which method if any can prove the triangles are congruent. Shade in the matching column letters and copy them onto the blanks to reveal a message.

1.

2.

3.

TIP! Vertical angles are congruent.
$\angle 1 \cong \angle 2$
1   2

4.

5.

6.

	SSS	SAS	ASA	can't
1.	*P*	R	D	A
2.	B	*A*	L	U
3.	A	G	*R*	T
4.	K	E	*P*	I
5.	*E*	N	O	X
6.	Q	*C*	H	E
7.	I	D	V	*T*
8.	W	U	*P*	I
9.	G	O	L	*A*
10.	S	*P*	J	D
11.	K	N	O	*R*
12.	*P*	Z	A	F

7.

8.

9.

10.

11.

12.

Perfect Paper!

MP3497

Congruent Triangles—AAS, HL

Remember

Angle-Angle-Side (AAS) Congruence—If two angles and a non-included side of one triangle are congruent to two angles and a non-included side of another triangle, then the two triangles are congruent.
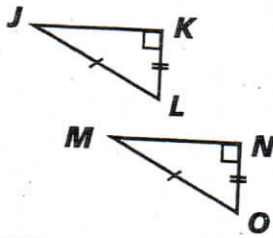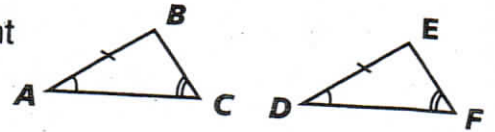
Hypotenuse-Leg (HL) Congruence—If the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and a leg of another right triangle, then the two triangles are congruent.

In a right triangle, the sides that form the right angle are *legs*. The side opposite the right angle is the *hypotenuse*.

Determine which methods if any can prove the triangles are congruent. There may be more than one answer. Shade in the matching column letters. Copy the letters onto the blanks to reveal the riddle answer.
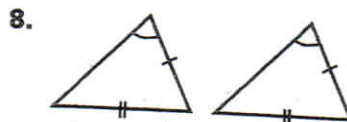
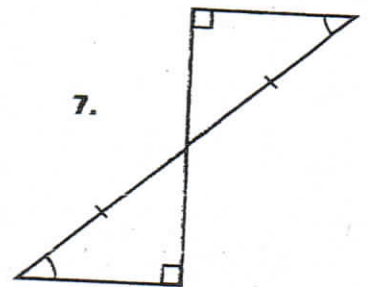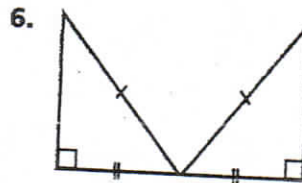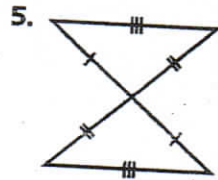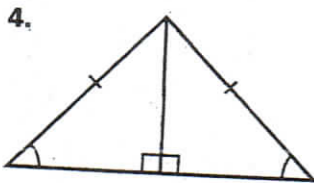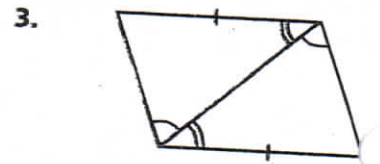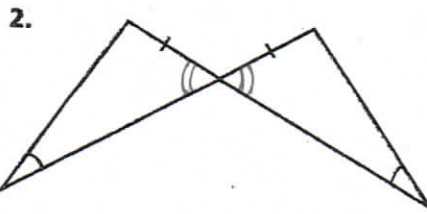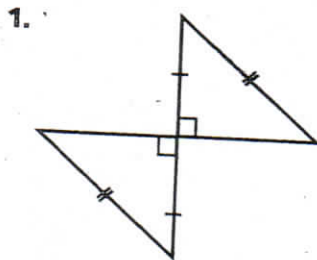|	SSS	SAS	ASA	AAS	HL	can't
1.	U	M	W	A	N	P
2.	B	R	I	O	L	Y
3.	A	N	E	C	Q	T
4.	M	E	P	A	N	R
5.	T	P	H	E	G	F
6.	Z	A	D	H	R	E
7.	I	M	O	V	G	U
8.	S	N	A	K	L	E
9.	W	I	T	B	E	X

How many geometry teachers does it take to change a light bulb?

N O N E. THEY C A N 'T DO IT.
THEY CAN ONLY P R O V E
I T CAN B E DONE!

Proving Congruence

TIPS! 1. By the Reflexive Property, a segment **is** congruent to itself. $\overline{XY} \cong \overline{XY}$

2. This symbol →— indicates parallel lines.

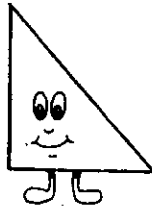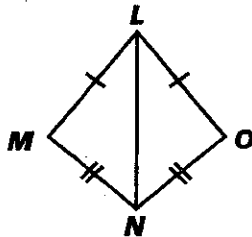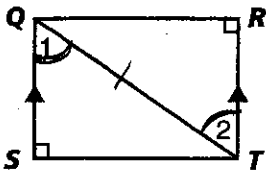Draw straight lines to match each statement within the proof to its reason. Each set will have an extra unused reason. The uncrossed letters will spell out a word.
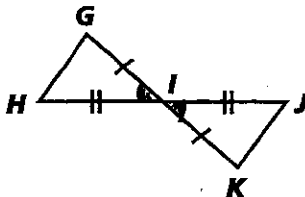
1.

| Statement	Reason
1. $\overline{LM} \cong \overline{LO}$ • (A) •	SAS Congruence
2. $\overline{MN} \cong \overline{ON}$ •	SSS Congruence
3. $\overline{LN} \cong \overline{LN}$ •	Given
4. $\triangle LMN \cong \triangle LON$ •	Given
	Reflexive Property

2.

| Statement	Reason
1. $\overline{QS} \parallel \overline{RT}$ • (W)	Reflexive Property
2. $\angle R \cong \angle S$ •	AAS Congruence
3. $\angle 1 \cong \angle 2$ •	Alternate Interior Angles
4. $\overline{QT} \cong \overline{QT}$ •	SAS Congruence
5. $\triangle QST \cong \triangle TRQ$ • (E)	Right Angle Congruence
	Given

3.

Statement	Reason
1. $\overline{GI} \cong \overline{KI}$ • (S)	Vertical Angles
2. $\overline{HI} \cong \overline{JI}$ •	SAS Congruence
3. $\angle GIH \cong \angle KIJ$ •	Given
4. $\triangle GIH \cong \triangle KIJ$ • (O)	Given
	SSS Congruence

4.
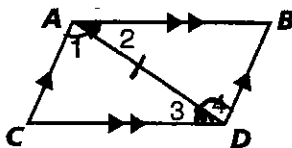
Statement	Reason
1. $\overline{AC} \parallel \overline{BD}, \overline{AB} \parallel \overline{CD}$ •	Alternate Interior Angles
2. $\angle 1 \cong \angle 4, \angle 2 \cong \angle 3$ • (M)	AAS Congruence
3. $\overline{AD} \cong \overline{AD}$ •	Reflexive Property
4. $\triangle ADC \cong \triangle DAB$ •	Given
	ASA Congruence

5.
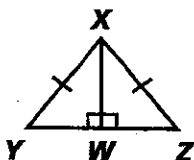
Statement	Reason
1. $\angle XWY$ and $\angle XWZ$ are right angles •	Definition of Right Triangles
2. $\triangle XWY$ and $\triangle XWZ$ are right triangles •	Given
3. $\overline{XY} \cong \overline{XZ}$ • (E!)	SAS Congruence
4. $\overline{XW} \cong \overline{XW}$ •	HL Congruence
5. $\triangle XWY \cong \triangle XWZ$ •	Reflexive Property
	Given

16 AWESOME!

MP3497

Proving Theorems about Parallelograms

Choose the best answer.

$x + 30 + 4x$

$5x + 30 = 180$

$5x = 150$

$x = 30$

1. The (consecutive) angles of a parallelogram measure $(x + 30)°$ and $4x°$. What is the measure of the smallest angle?

A 10° C 40°
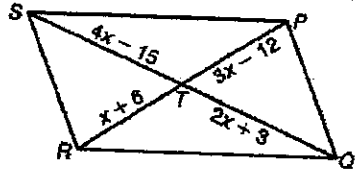
B 30 = x (D) 60° Smallest angle

2. PQRS is a parallelogram. Find x.

$4x - 15 = 2x + 3$

$2x = 18$

$\boxed{x = 9}$

$x + 6 = 3x - 12$

$18 = 2x$

$\boxed{9 = x}$

F 3 (H) 9

G 7 J 15

3. PSTV is a parallelogram, and V is the midpoint of $\overline{PR}$.
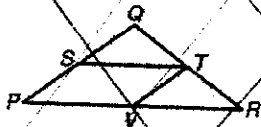
Which is NOT necessarily true?
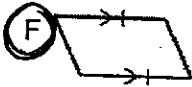
A $TR = TV$ C $\overline{QP} \parallel \overline{TV}$

B $QS = SP$ D $\overline{ST}$ is a midsegment.

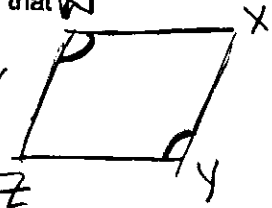4. Which quadrilateral MUST be a parallelogram?

(F)   H

G   J

5. In quadrilateral WXYZ, $\angle W \cong \angle Y$. Which information would help to prove that WXYZ is a parallelogram?
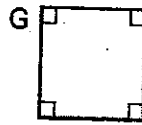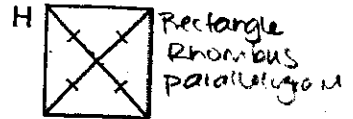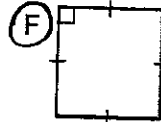
A $WY = XZ$ C $WX = XY$

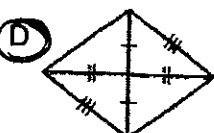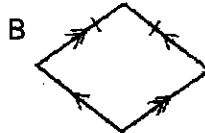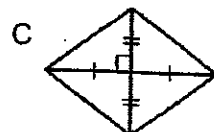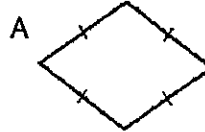B $\angle X \cong \angle W$ (D) $\angle X \cong \angle Z$

6. Which MUST be a square?

(F)   H Rectangle Rhombus parallelogram

G   J Rectangle

Rectangle Square

7. Which is NOT necessarily a rhombus?

A   C

B   (D)

8. Quadrilateral RSTU is a parallelogram. What other information would allow you to prove that RSTU is a rectangle?

F Opposite angles are congruent.

G Opposite sides are congruent.

H The diagonals bisect the angles.

(J) The diagonals are congruent.

9. Three sides of a kite measure 8 inches, 10 inches, and 8 inches. What is the perimeter of the kite?

A 26 in. C 34 in.

B 28 in. (D) 36 in.