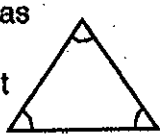
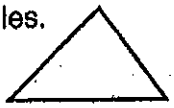
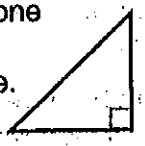
Name _____

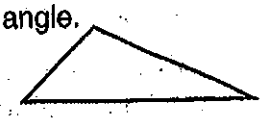
Types of Triangles

Remember

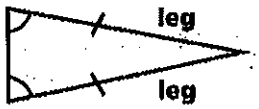
1. An **equiangular** triangle has three congruent angles. 

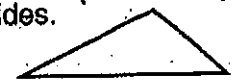
An **acute** triangle has three acute angles. 

A **right** triangle has one right angle. 

An **obtuse** triangle has one obtuse angle. 

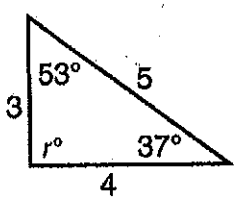
2. An **equilateral** triangle has three congruent sides. 

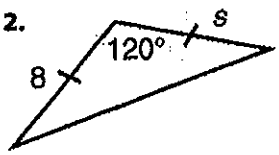
An **isosceles** triangle has at least two congruent sides. 

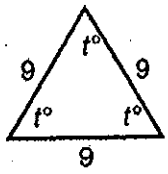
A **scalene** triangle has no congruent sides. 

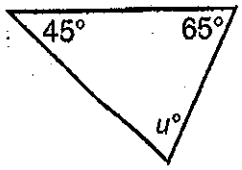
If an **isosceles** triangle has exactly two congruent sides, those sides are the legs and the third side is the base. The two base angles are congruent.

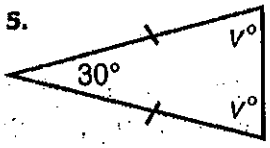
Solve for the missing triangle side lengths or angle measures. Classify each triangle and shade the corresponding column letters in the chart. There will be two or four chart answers per triangle.

1. 

2. 

3. 

4. 

5. 

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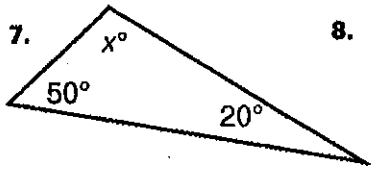
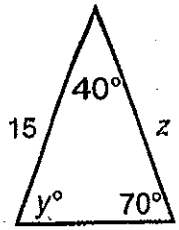
7. 

8. 

	equiangular	acute	right	obtuse	equilateral	isosceles	scalene
1.	T	R	P	A	N	G	Y
2.	B	A	L	T	E	H	R
3.	A	G	Z	T	O	R	M
4.	F	E	I	C	S	T	A
5.	J	N	K	B	O	T	E
6.	Q	R	H	A	U	E	L
7.	I	D	V	O	N	G	R
8.	W	E	X	T	R	M	Y

The formula $c^2 = a^2 + b^2$ tells the relationship between the lengths of the sides in a right triangle. What is it known as? To find out, write the shaded chart letters in order.

_____

_____

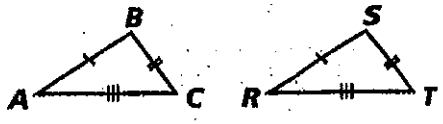
Name _____

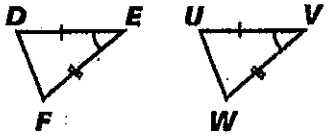
Congruent Triangles—SSS, SAS, ASA

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.

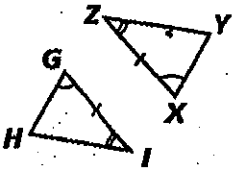
Side-Side-Side (SSS) Congruence—If three sides of one triangle are congruent to three sides of another triangle, then the triangles are congruent.





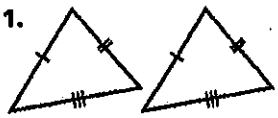
Side-Angle-Side (SAS) Congruence—If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then the triangles are congruent.

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.



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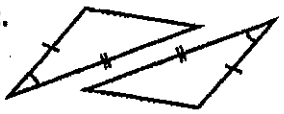
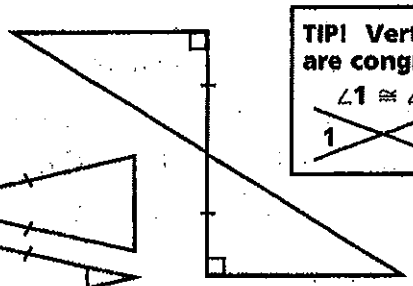


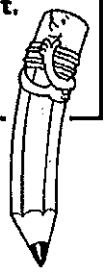
3.



TIP! Vertical angles are congruent.

$\angle 1 \cong \angle 2$

1 2



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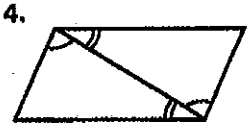

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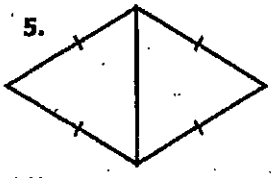

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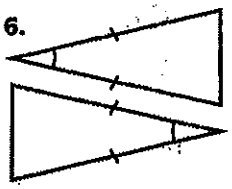
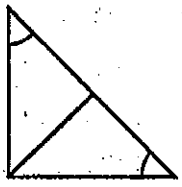
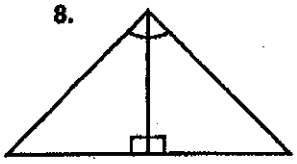


	SSS	SAS	ASA	can't
1.	P	R	D	A
2.	B	E	L	U
3.	A	G	R	T
4.	K	E	F	I
5.	E	N	O	X
6.	Q	C	H	E
7.	I	D	V	T
8.	W	U	P	I
9.	G	O	L	A
10.	S	P	J	D
11.	K	N	O	E
12.	R	Z	A	F

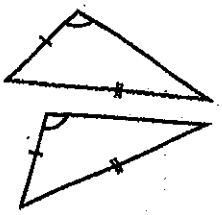
7.



8.



9.



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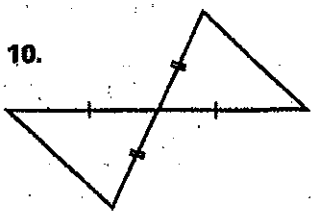
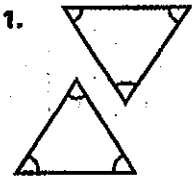
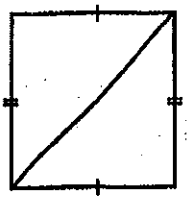


11.



12.



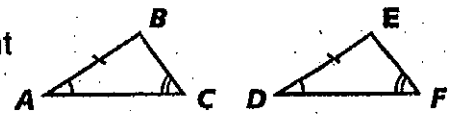
_____ _____ !

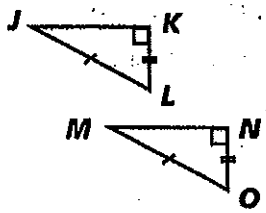
Name _____

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.



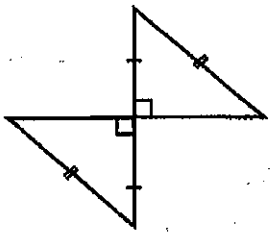


Hypotenuse-Leg (HL) Congruence—If the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and a leg of another right triangle, then the two triangles are congruent.

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.

1.



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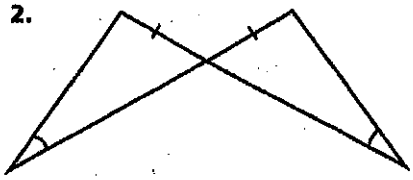
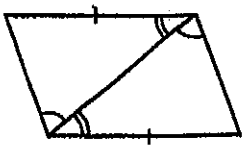


3.



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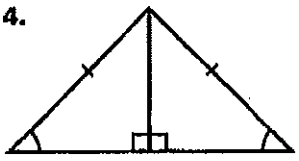

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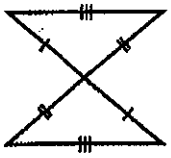

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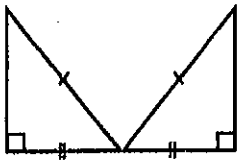

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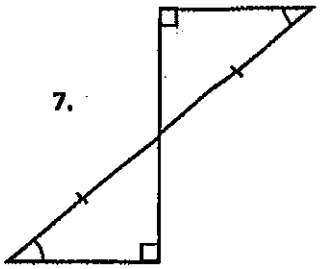
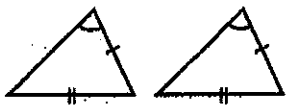


	SSS	SAS	ASA	AAS	HL	can't
1.	U	M	W	A	N	P
2.	B	R	I	O	L	Y
3.	A	N	E	C	Q	T
4.	M	E	P	A	N	R
5.	T	P	H	E	G	F
6.	Z	A	D	H	R	E
7.	I	M	O	V	G	U
8.	S	N	A	K	L	E
9.	W	I	T	B	E	X

8.



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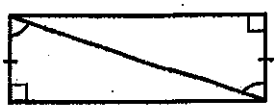


How many geometry teachers does it take to change a light bulb?

_____. THEY _____' DO IT.

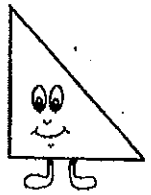
THEY CAN ONLY _____

____ CAN ____ DONE!

Name _____

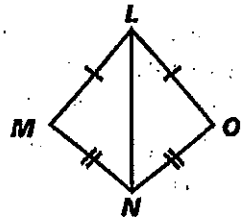
Proving Congruence

TIPS! 1. By the Reflexive Property, a segment is congruent to itself. $\overline{XY} \cong \overline{XY}$
2. This symbol $\rightarrow\!\!\!\!\rightarrow$ indicates parallel lines.



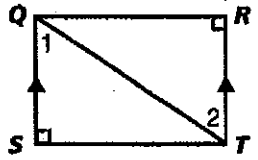
Draw straight lines to match each statement within the proof to its reason. Each set will have an extra unused reason. The uncrossed letters will spell out a word.

1.



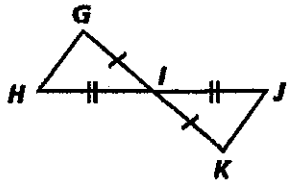
Statement		Reason
1. $\overline{LM} \cong \overline{LO}$	A	SAS Congruence
2. $\overline{MN} \cong \overline{ON}$		SSS Congruence
3. $\overline{LN} \cong \overline{LN}$	G	Given
4. $\triangle LMN \cong \triangle LON$	S	Given
		Reflexive Property

2.



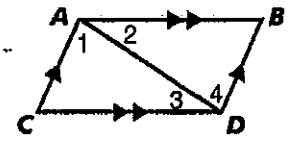
1. $\overline{QS} \parallel \overline{RT}$	W	Reflexive Property
2. $\angle R \cong \angle S$		AAS Congruence
3. $\angle 1 \cong \angle 2$	R	Alternate Interior Angles
4. $\overline{QT} \cong \overline{QT}$		SAS Congruence
5. $\triangle QST \cong \triangle TRQ$	E	Right Angle Congruence
		Given

3.



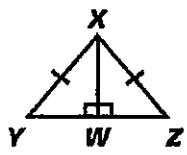
1. $\overline{GI} \cong \overline{KI}$	S	Vertical Angles
2. $\overline{HI} \cong \overline{JI}$	U	SAS Congruence
3. $\angle GIH \cong \angle KIJ$		Given
4. $\triangle GIH \cong \triangle KIJ$	O	Given
		SSS Congruence

4.



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

5.



1. $\angle XWY$ and $\angle XWZ$ are right angles	TI	Definition of Right Triangles
2. $\triangle XWY$ and $\triangle XWZ$ are right triangles		Given
3. $\overline{XY} \cong \overline{XZ}$	EI	SAS Congruence
4. $\overline{XW} \cong \overline{XW}$		HL Congruence
5. $\triangle XWY \cong \triangle XWZ$	RI	Reflexive Property
		Given